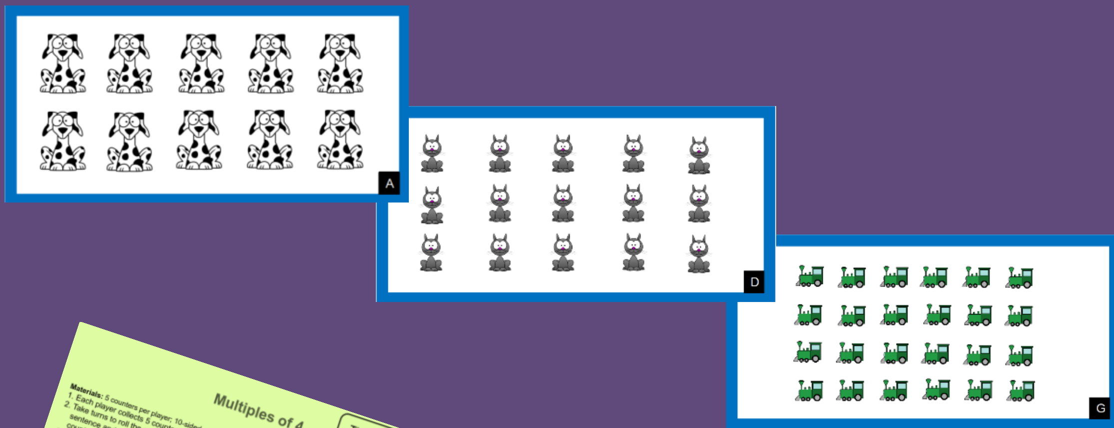
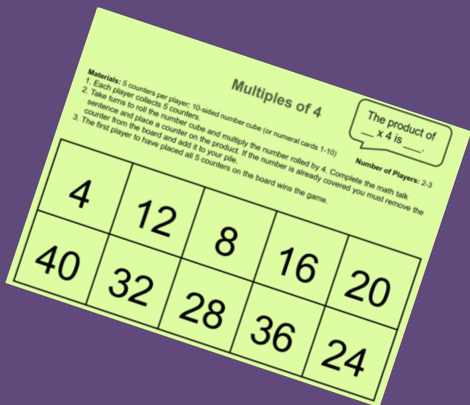
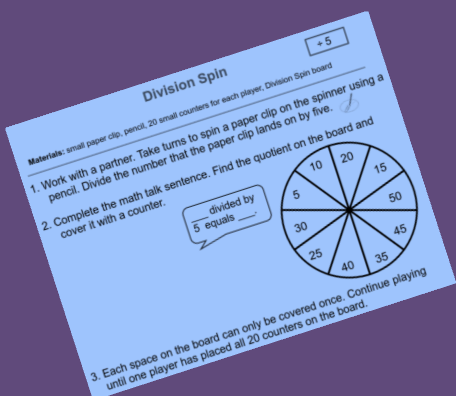
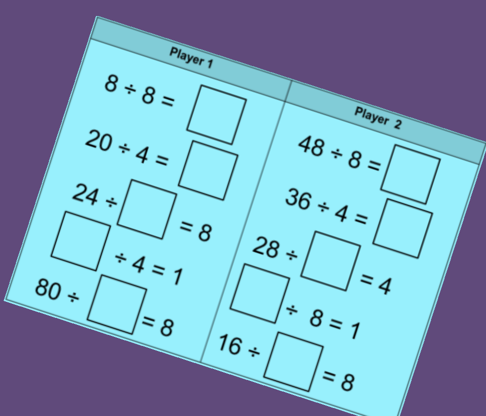




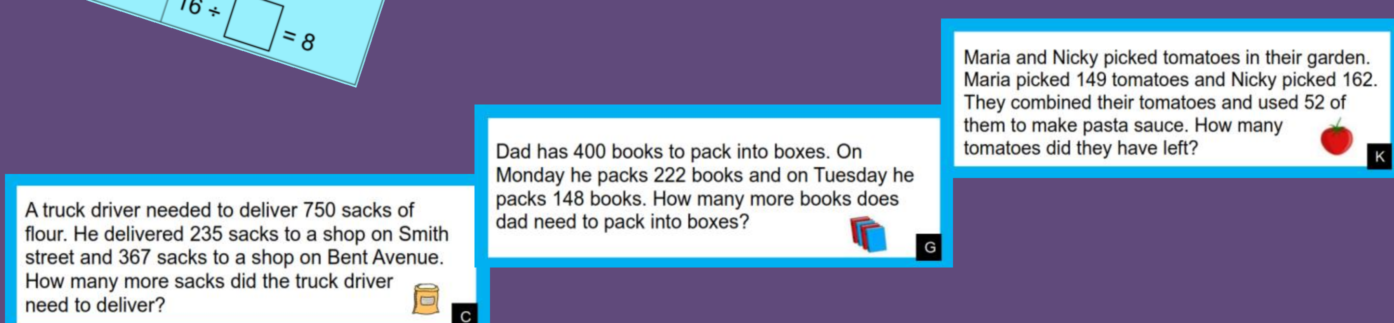




3rd Grade Math Centers

Includes over 150 Number, Geometry, Measurement and Data Centers aligned with the Common Core State Standards.

www.k-5mathteachingresources.com



*** Use the Bookmarks pane to navigate to the required CCSS.**

Operations and Algebraic Thinking

Represent and solve problems involving multiplication and division

3.OA.A.1 Interpret products of whole numbers, e.g. interpret 5 x 7 as the total number of objects in 5 groups of 7 objects each. For example, describe a context in which a total number of objects can be expressed as 5 x 7.

3.OA.A.2 Interpret whole-number quotients of whole numbers, e.g. interpret 56÷8 as the number of objects in each share when 56 objects are partitioned equally into 8 shares, or as a number of shares when 56 objects are partitioned into equal shares of 8 objects each. For example, describe a context in which a number of shares or a number of groups can be expressed as 56 ÷ 8.

3.OA.A.3 Use multiplication and division within 100 to solve word problems in situations involving equal groups, arrays, and measurement quantities, e.g. by using drawings and equations with a symbol for the unknown number to represent the problem.

3.OA.A.4 Determine the unknown whole number in a multiplication or division equation relating three whole numbers. For example, determine the unknown number that makes the equation true in each of the equations 8 x?=48, 5 = ?÷3, 6x6 =?

Understand properties of multiplication and the relationship between multiplication and division

3.OA.B.5 Apply properties of operations as strategies to multiply and divide. Examples: If 6x4=24 is known then 4x6=24 is also known (Commutative property of multiplication.) 3x5x2 can be found by 3x5=15, then 15x2=30, or by 5x2=10, then 3x10=30 (Associative property of multiplication). Knowing that 8x5=40 and 8x2=16, one can find 8x7 as 8 x (5+2) = (8x5) + (8x2) = 40 +16 =56 (Distributive property).

3.OA.B.6 Understand division as an unknown-factor problem. For example, find 32 ÷ 8 by finding the number that makes 32 when multiplied by 8.

*** Use the Bookmarks pane to navigate to the required CCSS.**

Operations and Algebraic Thinking

Multiply and divide within 100

3.OA.C.7 Fluently multiply and divide within 100, using strategies such as the relationship between multiplication and division (e.g., knowing that 8x5=40, one knows 40÷5=8) or properties of operations. By the end of Grade 3, know from memory all products of two one-digit numbers

Solve problems involving the four operations, and identify and explain patterns in arithmetic

3.OA.D.8 Solve two-step word problems using the four operations. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding.

3.OA.D.9 Identify arithmetic patterns (including patterns in the addition table or multiplication table), and explain them using properties of operations. For example, observe that 4 times a number is always even, and explain why 4 times a number can be decomposed into two equal addends.

*** Use the Bookmarks pane to navigate to the required CCSS.**

Number and Operations in Base Ten

Use place value understanding and properties of operations to perform multi-digit arithmetic

3.NBT.A.1 Use place value understanding to round whole numbers to the nearest 10 or 100.

3.NBT.A.2 Fluently add and subtract within 1000 using strategies and algorithms based on place value, properties of operations, and/or the relationship between addition and subtraction.

3.NBT.A.3 Multiply one-digit whole numbers by multiples of 10 in the range 10-90 (e.g., 9x80, 5x60) using strategies based on place value and properties of operations.

Number and Operations: Fractions

Develop understanding of fractions as numbers

3.NF.A.1 Understand a fraction 1/b as a quantity formed by 1 part when a whole is portioned into b equal parts: understand a fraction a/b as the quantity formed by a parts of size 1/b.

3.NF.A.2 Understand a fraction as a number on the number line; represent fractions on a number line diagram.
a. Represent a fraction 1/b on a number line diagram by defining the interval from 0 to 1 as the whole and portioning it into b equal parts. Recognize that each part has size 1/b and that the endpoint of the part based at 0 locates the number 1/b on the number line.

b. Represent a fraction a/b on a number line diagram by marking off a lengths 1/b from 0. Recognize that the resulting interval has size a/b and that its endpoint locates the number a/b on the number line.
Sample Activities:

*** Use the Bookmarks pane to navigate to the required CCSS.**

*** Use the Bookmarks pane to navigate to the required CCSS.**

Measurement and Data

Solve problems involving measurement and estimation of intervals of time, liquid volumes, and masses of objects

3.MD.A.1 Tell and write time to the nearest minute and measure time intervals in minutes. Solve word problems involving addition and subtraction of time intervals in minutes, e.g., by representing the problem on a number line diagram.

3.MD.A.2 Measure and estimate liquid volumes and masses of objects using standard units of grams (g), kilograms (kg), and liters (l). Add, subtract, multiply, or divide to solve one-step word problems involving masses or volumes that are given in the same units, e.g., by using drawings (such as a beaker with a measurement scale) to represent the problem.

Represent and interpret data

3.MD.B.3 Draw a scaled picture graph and a scaled bar graph to represent a date set with several categories. Solve one-and two step “how many more” and “how many less” problems using information presented in scaled bar graphs. For example, draw a bar graph in which each square in the bar graph might represent 5 pets.

3.MD.B.4 Generate measurement data by measuring lengths using rulers marked with halves and fourths of an inch. Show data by making a line plot, where the horizontal scale is marked off in appropriate units- whole numbers, halves, or quarters.

Geometric measurement: understand concepts of area and relate area to multiplication and to addition.

3.MD.C.5 Recognize area as an attribute of plane figures and understand concepts of area measurement.
a. A square with side length 1 unit, called a “unit square”, is said to have “one square unit” of area, and can be used to measure area.

*** Use the Bookmarks pane to navigate to the required CCSS.**

Measurement and Data

3MD.C5.b. A plane figure which can be covered without gaps or overlaps by n unit squares is said to have an area of n square units.

3.MD.C.6 Measure areas by counting unit squares (square cm, square m, square in, square ft, and improvised units).

3.MD.C.7 Relate area to the operations of multiplication and addition.
a. Find the area of a rectangle with whole-number side lengths by tiling it, and show that the area is the same as would be found by multiplying the side lengths.

b. Multiply side lengths to find areas of rectangles with whole-number side lengths in the context of solving real world and mathematical problems, and represent whole-number products as rectangular areas in mathematical reasoning.

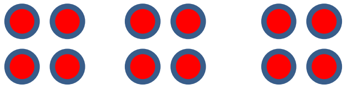
c. Use tiling to show in a concrete case that the area of a rectangle with whole-number side lengths a and b + c is the sum of axb and axc. Use area models to represent the distributive property in mathematical reasoning.

d. Recognize area as additive. Find areas of rectilinear figures by decomposing them into non-overlapping rectangles and adding the areas of the non-overlapping parts, applying this technique to solve real world problems.

Geometric measurement: recognize perimeter as an attribute of plane figures and distinguish between linear and area measures

3.MD.D.8 Solve real world and mathematical problems involving perimeters of polygons, including finding the perimeter given the side lengths, finding an unknown side length, and exhibiting rectangles with the same perimeter and different areas or with the same area and different perimeters.

Equal Groups



4, 8, 12
3 groups of 4
12 in all

Materials: counters, number cubes

---

1. Roll two number cubes. The first number rolled gives the number of equal groups. The second number rolled tells how many in each group.

2. Model the equal groups using counters.

3. Skip count to find how many counters in all.

4. Record and repeat.

Relate Addition and Multiplication

Materials: numeral cards 1-10

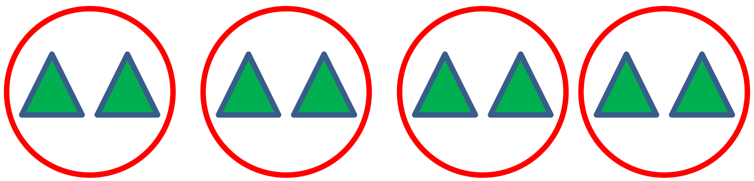
---

1. Turn over the top card in the stack. Draw this number of circles.

2. Turn over another card. Draw this many triangles in each circle.

3. Write related addition and multiplication equations for your model.

4. Repeat with other cards.



2 + 2 + 2 + 2 = 8
4 groups of 2 = 8
4 x 2 = 8

Building Arrays

Materials: number cubes, counters

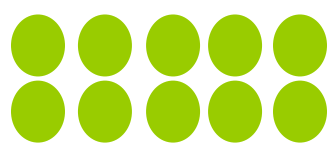
---

1. Roll a number cube twice. The first number you roll tells how many rows to make in your array. The second number you roll tells how many counters to put in each row of your array.

2. Draw the array and write an equation to express the total number of counters as a sum of equal addends.

3. Write a multiplication equation to represent your array.

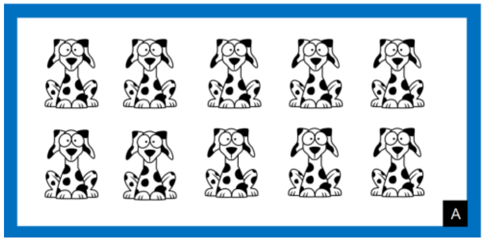
Example: Lisa rolls a 2 first and then a 5. She makes an array with 2 rows of 5.



2 rows of 5
5 + 5 = 10
2 x 5 = 10

4. Build and record ten different arrays.

Array Picture Cards



Materials: Set of *Array Picture Cards*

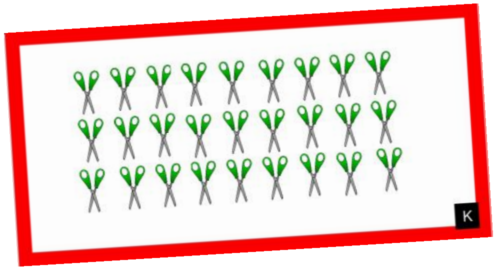
1. Choose an array picture card.

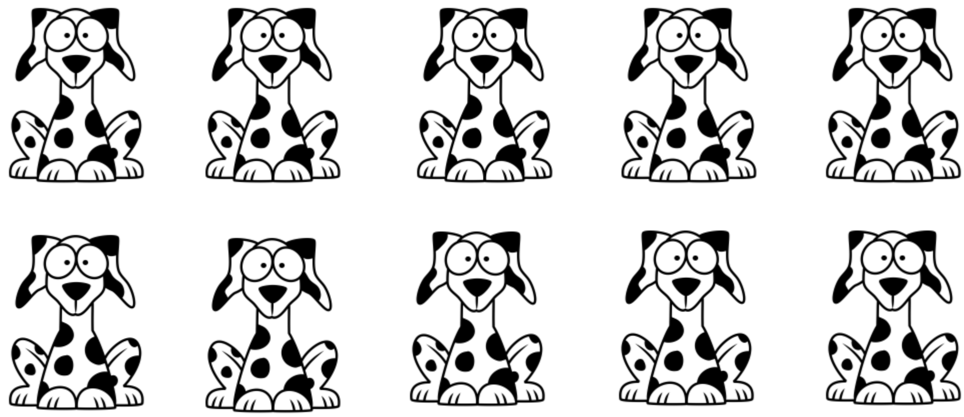
2. Write a multiplication word problem to match your card.

3. Write a multiplication equation to match your card.

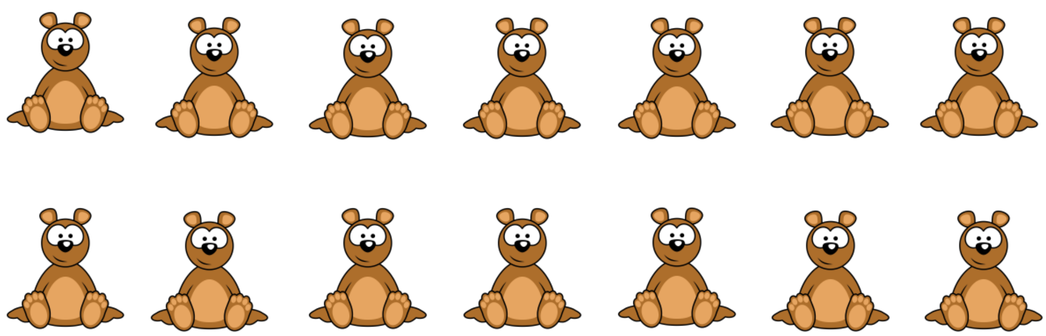
4. Write a division word problem to match your card.

5. Write a division equation to match your card.

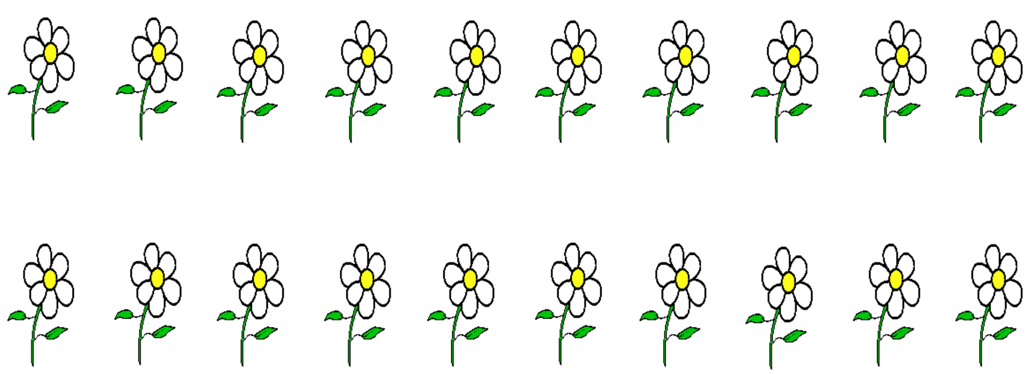




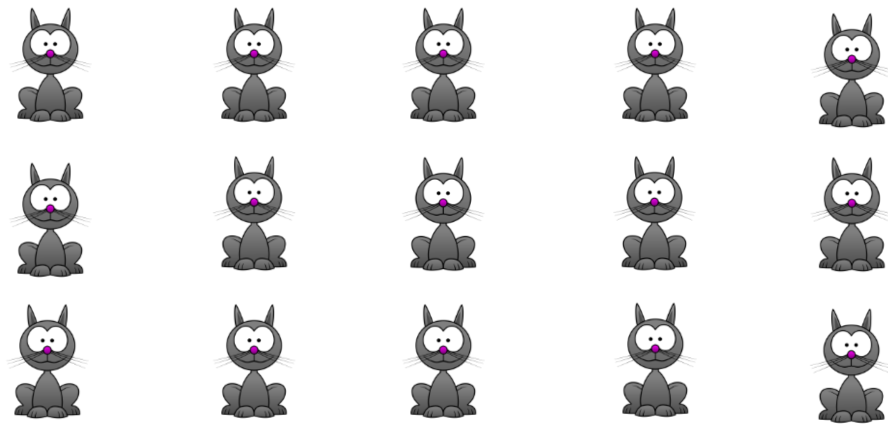
A



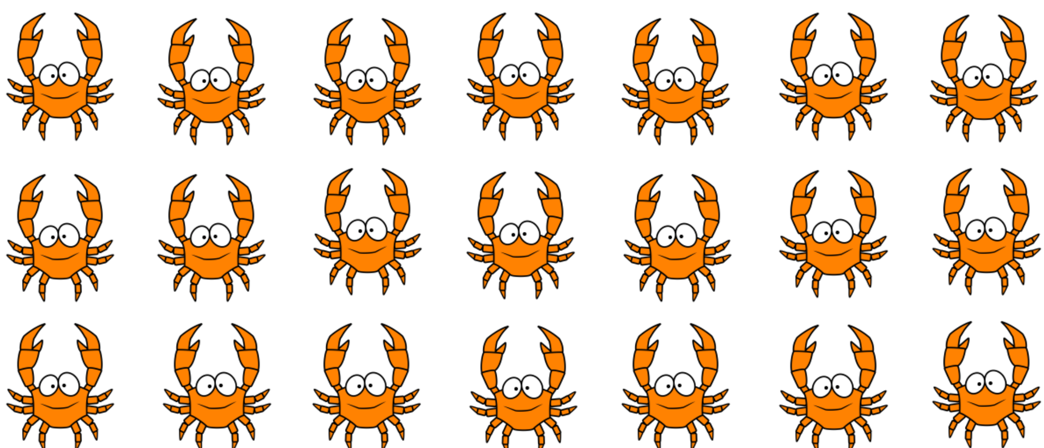
B



C

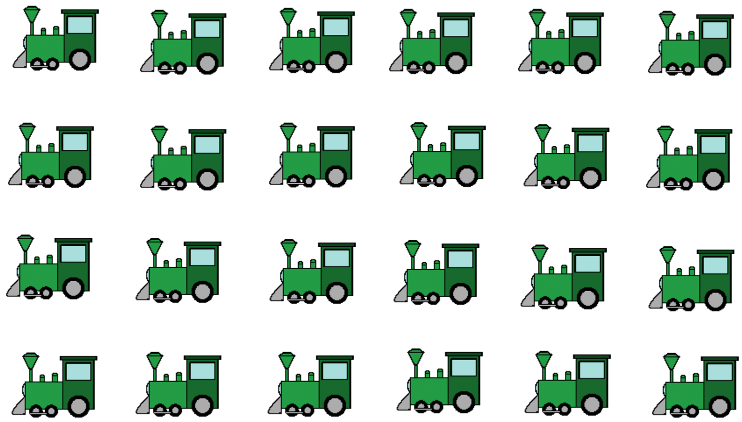


D

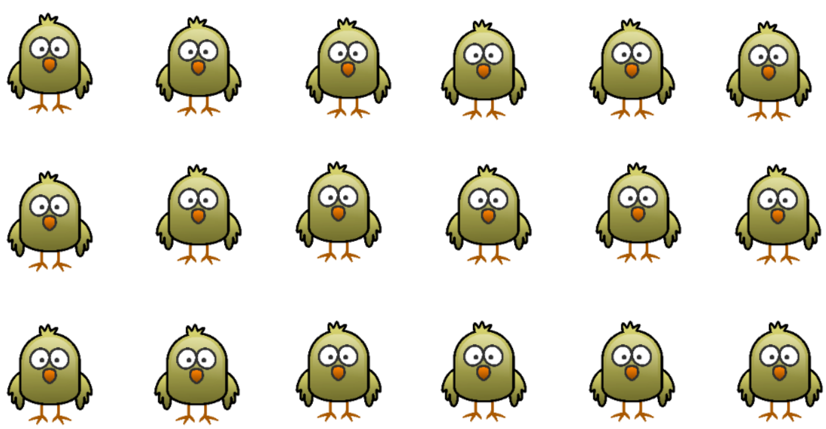


E

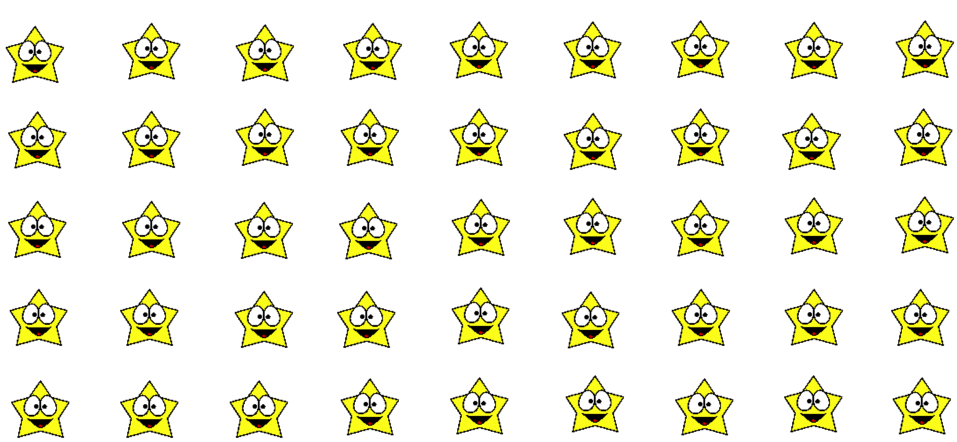
F



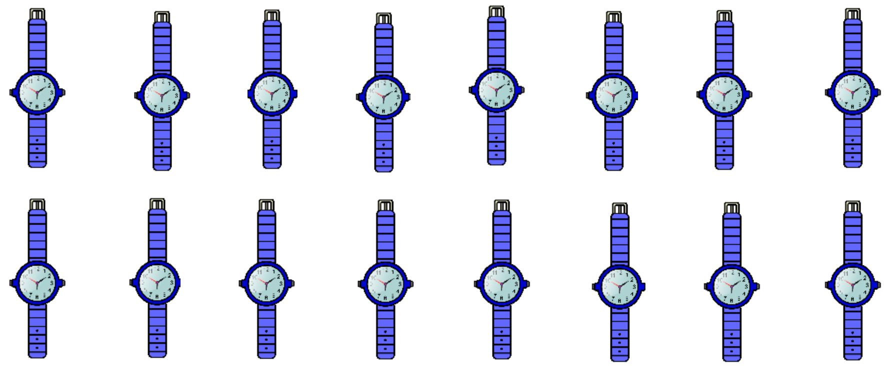
G



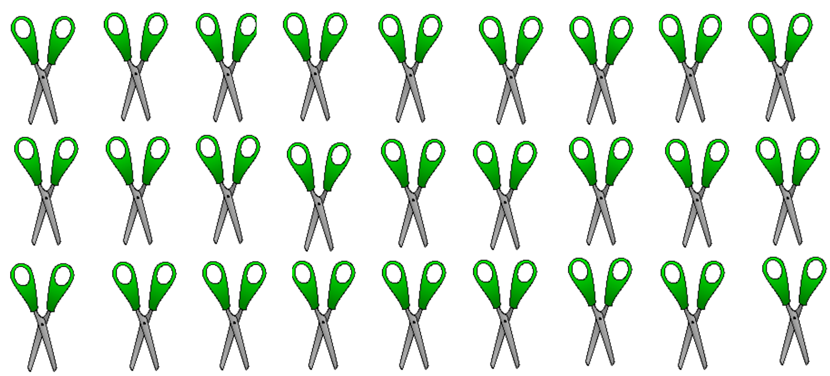
H



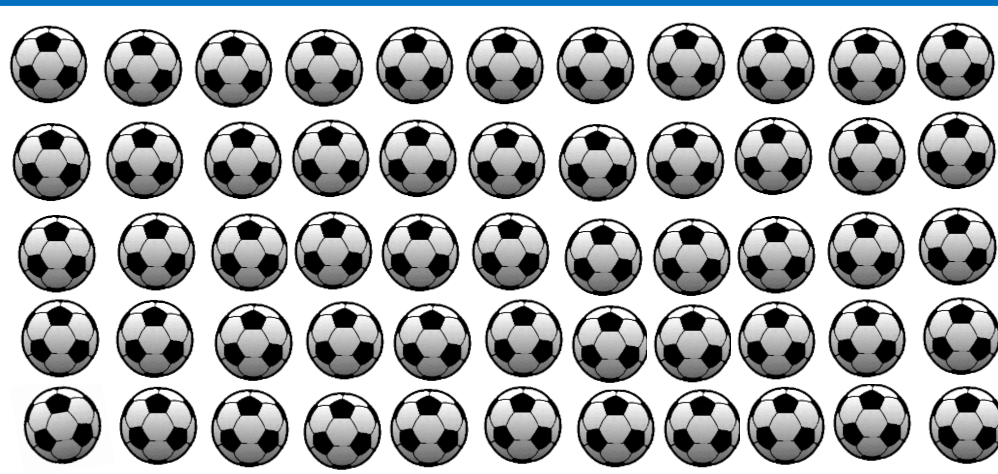
I



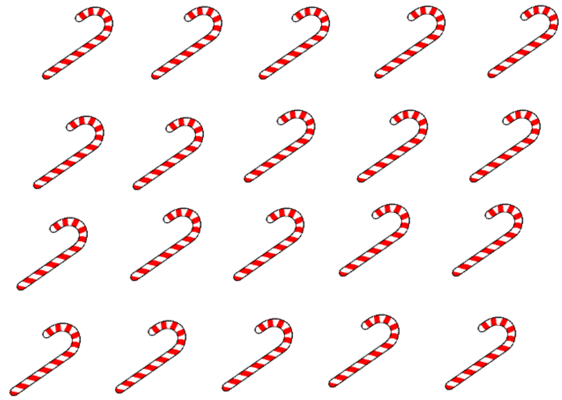
J



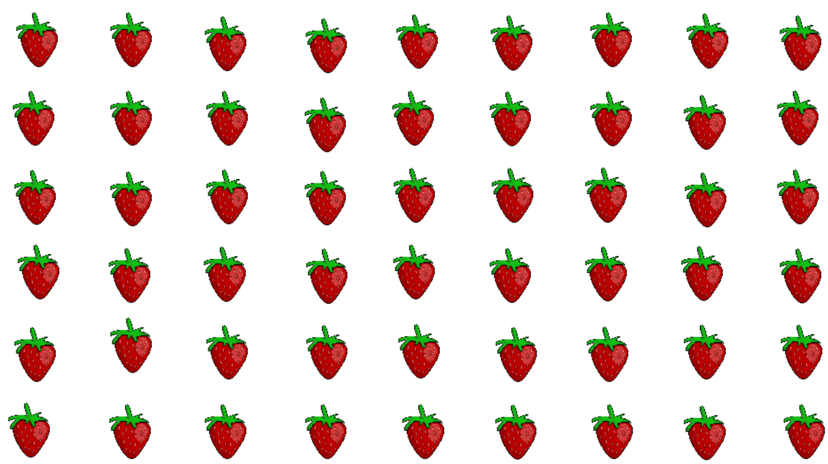
K



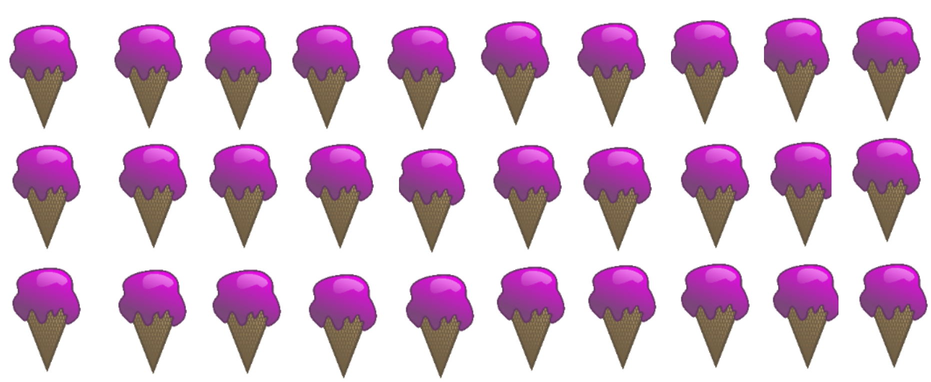
L



M

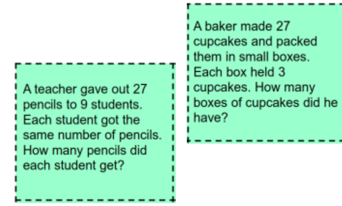


N



O

Identify the Unknown



Materials: Identify the Unknown cards and sorting mat

---

1. Read each problem and identify the unknown. Do you need to find the number of groups or the number of items in a group? Sort the problems under the appropriate headings on the table.

2. Represent each problem using an equation with a symbol for the unknown number.

3. Use pictures, numbers, or words to solve each problem.

4. Share your work with a partner. Justify your reasoning.

5. Write two story problems using the numbers 3, 5 and 15. The first one should be a "How many groups?" type problem. The second one should be a "How many in each group?" type problem. Share your problems with your partner.

Identify the Unknown

Number of Groups Unknown		Number of Items in a Group Unknown	
	Solve:		Solve:
	Solve:		Solve:
	Solve:		Solve:

Identify the Unknown cards

A teacher gave out 27 pencils to 9 students. Each student got the same number of pencils. How many pencils did each student get?	A baker made 27 cupcakes and packed them in small boxes. Each box held 3 cupcakes. How many boxes of cupcakes did he have?	A gardener had 28 seeds to plant in pots. She decided to plant 7 seeds in each pot. How many pots of seeds did she plant?
A class of 32 students were divided equally into teams for a relay race. Each relay team had 4 students. How many relay teams were there?	A shopkeeper had 28 hats to display in rows in the store window. He decided to display 4 rows with the same number of hats in each row. How many hats were in each row?	A farmer had 32 pounds of grain. He had 8 cows to feed. Each animal was given the same amount of grain. How many pounds of grain did each animal get?

Word Problems: Arrays

Materials: Word Problems: Arrays cards

1. Work with a partner. Choose five word problems that you will both solve.
2. Solve the word problems independently. For each problem:

   a) write an equation with a symbol for the unknown number

   b) draw an array to model the problem

   c) answer the question in a complete sentence

3. After completing five problems share your work with a partner. Explain how you solved each problem using accurate mathematical vocabulary.
4. Repeat with another five problems from the set.

Word Problems: Arrays (Set 1)

Two rows of apples. Three apples in each row. How many apples?

A

2 rows of cookies. 6 cookies per row. How many cookies?

B

2 rows of crabs. 8 crabs in each row. How many crabs?

C

2 rows of pumpkins. 10 pumpkins per row. How many pumpkins?

D

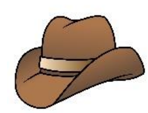
2 rows of cars. 4 cars per row. How many cars?

E

Two rows of balls. Nine balls in each row. How many balls?

F

2 rows of hats. 5 hats per row. How many hats?



G

Four rows of girls. Five girls in each row. How many girls?

H

Three rows of turtles. Five turtles in each row. How many turtles?

I

5 rows of elephants. 5 elephants per row. How many elephants?

J

Seven rows of tomatoes. Five tomatoes per row. How many tomatoes?

K

9 rows of clowns. 5 clowns in each row. How many clowns?

L

Three rows of bikes. Ten bikes per row.
How many bikes?

M

5 rows of snails. 10 snails in each row.
How many snails?

N

Six rows of monkeys. Ten monkeys in each row. How many monkeys?

O

9 rows of birds. 10 birds in each row.
How many birds?

P

Word Problems: Arrays

Materials: Word Problems: Arrays cards

---

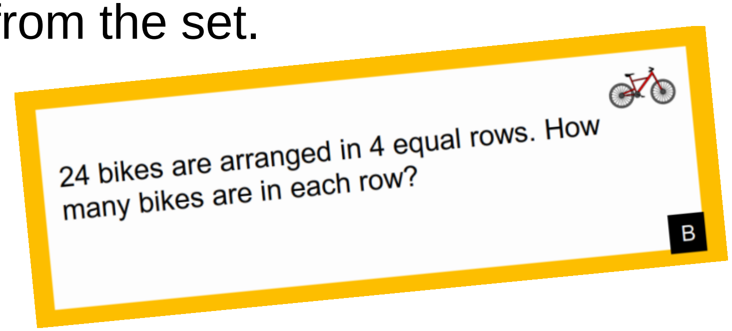
1. Work with a partner. Choose five word problems that you will both solve.
2. Solve the word problems independently. For each problem:

   a) write an equation with a symbol for the unknown number

   b) draw an array to model the problem

   c) answer the question in a complete sentence

3. After completing five problems share your work with a partner. Explain how you solved each problem using accurate mathematical vocabulary.
4. Repeat with another five problems from the set.



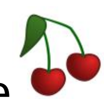
Word Problems: Arrays (Set 2)

If 18 books are arranged in 3 equal rows, how many books will be in each row?

A

24 bikes are arranged in 4 equal rows. How many bikes are in each row?

B



In the orchard, there are 5 rows with the same number of cherry trees in each row. If there are 15 trees in all, how many cherry trees are in each row?

C

If 28 flower pots are arranged in 7 equal rows, How many flower pots are in each row?

D

If 32 bottles of orange juice in the refrigerator are lined up in 8 equal rows, how many bottles of orange juice are in each row?

E

In the parking lot there are 10 rows with the same number of vehicles in each row. If there are 40 vehicles all together, how many vehicles are in each row?

F

At the dry cleaners, there are 10 rows with the same number of shirts in each row. If there are 60 shirts in all, how many shirts are in each row?

G

21 puppies in the dog show are sitting in 7 equal rows. How many puppies are in each row?

H

If 48 toy trucks are lined up neatly with 6 toy trucks in each row, how many rows are there?

I

24 apricot trees in the orchard are planted with 4 trees in each row. How many rows are there?

J

If 54 birthday cakes on the bakery shelf are placed with 6 birthday cakes in each row, how many rows are there?

K

On the bakery shelf, there are 3 apple pies in each row and 27 apple pies in all. How many rows are there?

L

If 21 students are standing with 3 students in each row, how many rows are there?

M

On the table at the farmer’s market, there are 6 pumpkins in each row and 48 pumpkins in all. How many rows are there?

N

On a table, there are 2 plates in each row and 12 plates in all. How many rows are there?

O

If 49 sandwiches are arranged in equal rows of 7 sandwiches, how many rows will there be?

P

Word Problems: Equal Groups

Materials: Word Problems: Equal Groups cards

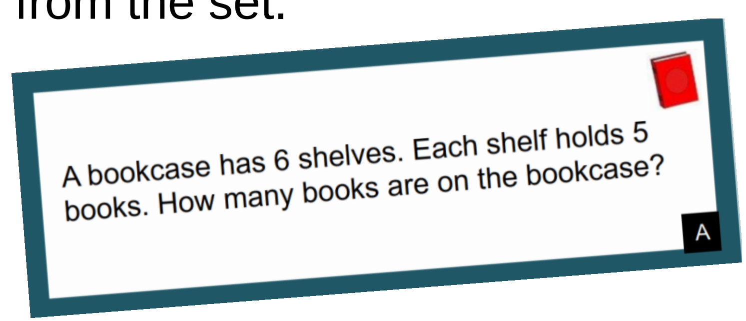
1. Work with a partner. Choose five word problems that you will both solve.
2. Solve the word problems independently. For each problem:

   a) write an equation with a symbol for the unknown number

   b) draw a quick picture, array or number line to model the problem

   c) answer the question in a complete sentence

3. After completing five problems share your work with a partner. Explain how you solved each problem using accurate mathematical vocabulary.
4. Repeat with another five problems from the set.



Word Problems: Equal Groups

A bookcase has 6 shelves. Each shelf holds 5 books. How many books are on the bookcase?

A

Peter rides his bike 5 miles each day for one week. How many miles does Peter ride in one week?

B

Jack plays basketball for 2 hours each day. How many hours does Jack spend playing basketball in one week?

C

Lisa has 3 vases. She puts 6 flowers in each vase. How many flowers in all does Lisa put in vases?

D

Miguel has 4 bowls. He puts 8 strawberries in each bowl. How many strawberries in all?

E

9 cars are in a parking lot. Each car has 4 wheels. How many wheels in all?

F

There are 3 bags of lemons. Each bag holds 7 lemons. How many lemons are there in all?

G

There are 7 trays. Each tray has 6 glasses of water. How many glasses of water are on the trays in all?

H

Ben and Lisa built 4 snowmen that each had 3 buttons. How many buttons in all?

I

At a birthday party there are 3 cakes. Each cake has 5 candles. How many candles in all?

J

Mark buys 7 bunches of bananas. Each bunch has 3 bananas. How many bananas in all?

K

Jack puts his books in 9 piles. Each pile has 4 books. How many books in all?

L

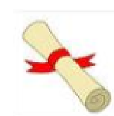
Jody swims 8 laps of the swimming pool each morning. How many laps does Jody swim in 5 days?

M

There are 9 boxes of calculators. Each box holds 6 calculators. How many calculators in all?

N

Sarah needs to cut 5 lengths of ribbon. Each ribbon must be 9 centimeters long. How much ribbon does Sarah need altogether?



O

Jessie bakes 8 trays of cookies. Each tray holds 6 cookies. How many cookies does Jessie bake in all?

P

Word Problems: Number of Equal Groups

Materials: Word Problems: Number of Equal Groups cards

---

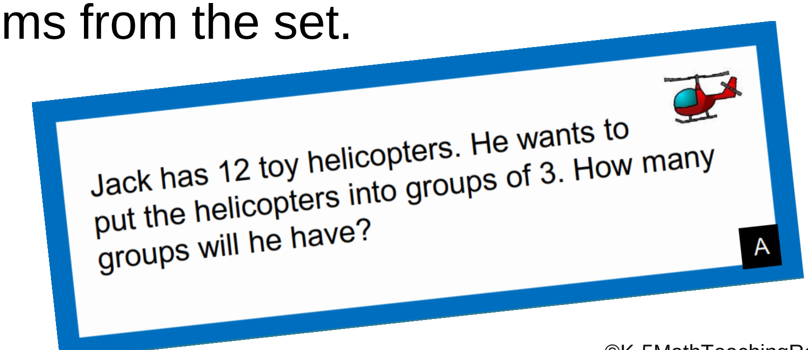
1. Work with a partner. Choose five word problems that you will both solve.
2. Solve the word problems independently. For each problem:

   a) write an equation with a symbol for the unknown number

   b) draw a quick picture, array or number line to model the problem

   c) answer the question in a complete sentence

3. After completing five problems share your work with a partner. Explain how you solved each problem using accurate mathematical vocabulary.
4. Repeat with another five problems from the set.



Word Problems: Number of Equal Groups

Jack has 12 toy helicopters. He wants to put the helicopters into groups of 3. How many groups will he have?

A

Lisa has 28 apricots to put in bags. She wants to put 7 apricots in each bag. How many bags will she need?

B

Jack has 40 chocolates. He wants to put 8 chocolates on each plate. How many plates will he need?

C

Tom has 12 golf balls. He puts them in groups of 3. How many groups?

D

A store has 45 t-shirts in boxes of 5. How many boxes?

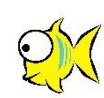
E

Tim places 35 books on his bookshelf with 7 books on each shelf. How many shelves does Tim need?

F

Each pile of laundry has 6 socks. If there are 30 socks in all, how many piles of laundry are there?

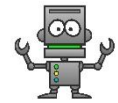
G



Each fish tank at the pet store has 7 goldfish. If there are 42 goldfish in all, how many fish tanks are there?

H

There are 40 robots in a toy store. The store owner put 8 robots on each shelf. How many shelves had robots on them?



I

There were 21 children. The teacher put the children into groups of three. How many groups were there?

J

Jack has 27 dollars. How many 9 dollar kites can he buy with 28 dollars?

K

There are 12 slices of pizza. Each child gets 4 slices of pizza. How many children are there?

L

Kate has 30 cookies. She puts 5 cookies in each bag. How many bags does Kate need?

M

Each group in the gym has 7 third graders. If there are 42 third graders in all, how many groups are there?

N

Each cage at the pet store has 4 puppies. If there are 28 puppies in all, how many cages are there?

O

Each parking lot at the mall has 8 motor bikes. If there are 24 motor bikes in all, how many parking lots are there?

P

Word Problems: Size of Equal Groups

Materials: Word Problems: Size of Equal Groups cards

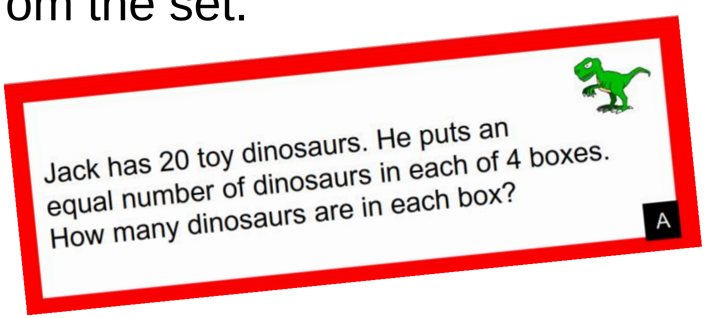
1. Work with a partner. Choose five word problems that you will both solve.
2. Solve the word problems independently. For each problem:

   a) write an equation with a symbol for the unknown number

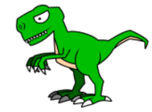
   b) draw a quick picture, array or number line to model the problem

   c) answer the question in a complete sentence

3. After completing five problems share your work with a partner. Explain how you solved each problem using accurate mathematical vocabulary.
4. Repeat with another five problems from the set.



Word Problems: Size of Equal Groups



Jack has 20 toy dinosaurs. He puts an equal number of dinosaurs in each of 4 boxes. How many dinosaurs are in each box?

A

Lisa has 24 roses. She puts them into 6 equal groups. How many roses does Lisa put in each group?

B

Jack has a box of 36 chocolate cookies. He divides them equally among 6 friends. How many chocolate cookies does each friend get?

C

Sarah buys 32 cupcakes. She separates them into 8 equal groups. How many cupcakes are in each group?

D

Lizette picks 25 flowers from the garden. She gives an equal number of flowers to 5 people. How many flowers does each person get?

E

You have 32 crayons. You have 4 boxes. Each box has the same number of crayons. How many crayons are in each box?

F

You see 18 birds. You see 2 trees. Each tree has the same number of birds. How many birds are in each tree?

G

You have 25 candy canes. You have 5 plates. Each plate has the same number of candy canes. How many candy canes are on each plate?

H

Jack puts 15 basketballs into 3 equal groups. How many basketballs are in each group?

I

Mr. Humby had 28 pencils, which he shared equally between 7 students. How many pencils did each student receive?

J

Megan has 20 notebooks. She puts the notebooks into 4 piles, with the same number in each pile. How many notebooks are in each pile?

K

Karen had 16 ladybugs. She put the ladybugs into 4 jars, with the same number in each jar. How many ladybugs did Karen put in each jar?

L

Max put 42 chocolates in boxes. He had 7 boxes and put the same number of chocolates in each box. How many chocolates did Max put in each box?

M

Sue put 48 tennis balls in containers. She had 6 containers and placed the same number of tennis balls in each container. How many tennis balls did Sue place in each container?

N

Meg has 28 eggs. She wants to put the same amount of eggs in each carton. If she has 4 cartons, how many eggs will she put in each one?

O

Scott bought 7 ice-cream cones that each cost the same amount. He spent a total of $21. How much did each ice-cream cone cost?

P

Equal Rows in a Marching Band

Materials: counters for building arrays

1. Choose one of the following numbers ….12, 24, or 36.

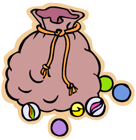
2. Suppose that this number of musicians in a marching band were getting ready for a parade. How many different ways could the musicians arrange themselves in equal rows?

3. Build and draw possible arrays. Write an equation for each array.

4. Answer the question in a complete sentence.

Sharing Marbles

Materials: counters

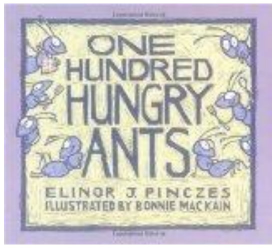


1. Choose one of the following numbers ….10, 16, or 28.

2. Imagine that you had this number of marbles. How many friends could you share them with so that you all had an equal number of marbles? Use drawings and equations to show all possible solutions.

3. How many different solutions did you find? How can you be sure that you have found all possible solutions?

One Hundred Hungry Ants



Materials: counters, copy of *One Hundred Hungry Ants* by Elinor J. Pinczes

---

1. After listening to the story *One Hundred Hungry Ants* choose one of the following numbers: 12, 24, or 36.

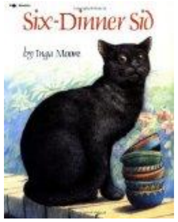
2. Suppose that this number of ants were going to a picnic. How many different ways could the ants arrange themselves in equal rows?

3. Use counters to build as many different arrays as you can for the number you chose.

4. Record each array you build. Write an equation to represent each array.

5. Be sure to answer the question in a complete sentence.

Six Dinner Sid



Materials: copy of *Six Dinner Sid* by Inga Moore

---

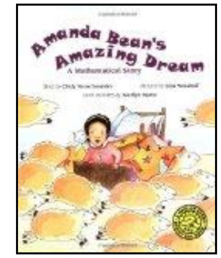
1. After listening to the story *Six Dinner Sid,* solve the following problem:

   If Sid ate six dinners in just one day, how many dinners would he eat in one week?

2. Use pictures, numbers or words to explain your thinking.

3. **Challenge:** How many dinners would Sid eat in the month of May? Explain your thinking.

Amanda Bean's Amazing Dream



Materials: copy of *Amanda Bean's Amazing Dream* by Cindy Neuschwander

---

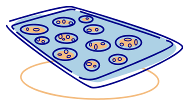
1. After listening to the story solve the following problems:

   Which has more chairs – 8 rows of 2 chairs or 3 rows of 6 chairs?

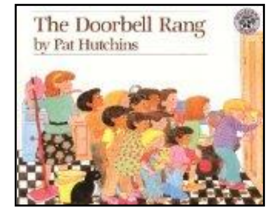
   Which has more books - 7 shelves with 4 books on each shelf, or 6 shelves with 5 books on each shelf?

2. Use pictures, numbers or words to explain your thinking.

3. Write and solve your own 'Which has more?' problem.



The Doorbell Rang



Materials: copy of *The Doorbell Rang* by Pat Hutchins

1. After listening to the story *The Doorbell Rang*, choose one of the following numbers: 16, 24, or 32.

2. Suppose that you had this number of cookies. How many friends could you share them with so that you all had an equal number of cookies?

3. Show as many different ways as you can to share the cookies equally. Draw a picture and write an equation for each solution.

4. How many different solutions did you find? How do you know that you have found all the possible solutions for the number you chose?

Missing Numbers: Multiplication

3 × ◯ = 18	6 × 0 = ◯
◯ × 6 = 30	◯ × 6 = 6
3 × 3 = ◯	6 × ◯ = 42
6 × ◯ = 18	◯ × 3 = 24
◯ × 3 = 12	6 × ◯ = 12

Materials: Missing Numbers boards, counters marked 0-9

---

1. Choose a Missing Numbers board. Collect 10 counters marked 0-9.

2. Place the counters on the board to complete the equations.

3. Share your work with a classmate. Check one another's work.

4. Repeat with a different board.

5. Create your own Missing Numbers board for a classmate to complete. Your board must have 10 multiplication equations with the missing numbers 0-9 in different positions. Swap boards with a classmate and complete one another's board.

Missing Numbers: Multiplication

$2 \times \bigcirc = 12$	$1 \times 2 = \bigcirc$
$\bigcirc \times 5 = 25$	$5 \times \bigcirc = 5$
$0 \times 2 = \bigcirc$	$\bigcirc \times 5 = 35$
$2 \times \bigcirc = 16$	$\bigcirc \times 2 = 8$
$\bigcirc \times 5 = 45$	$5 \times \bigcirc = 15$

B.

Missing Numbers: Multiplication

5 x ◯ = 45	5 x 0 = ◯
◯ x 10 = 70	◯ x 10 = 60
1 x 5 = ◯	5 x ◯ = 40
10 x ◯ = 40	◯ x 10 = 20
◯ x 5 = 15	10 x ◯ = 10

c.

Missing Numbers: Multiplication

10 × ◯ = 90	2 × 0 = ◯
◯ × 5 = 35	◯ × 5 = 25
3 × 2 = ◯	10 × ◯ = 30
2 × ◯ = 16	◯ × 2 = 4
◯ × 5 = 20	10 × ◯ = 10

D.

Missing Numbers: Multiplication

3 x ◯ = 27	4 x 0 = ◯
◯ x 6 = 24	◯ x 3 = 9
3 x 2 = ◯	4 x ◯ = 28
4 x ◯ = 20	◯ x 3 = 6
◯ x 3 = 24	4 x ◯ = 4

Missing Numbers: Multiplication

3 x ◯ = 18	6 x 0 = ◯
◯ x 6 = 30	◯ x 6 = 6
3 x 3 = ◯	6 x ◯ = 42
6 x ◯ = 18	◯ x 3 = 24
◯ x 3 = 12	6 x ◯ = 12

F.

Missing Numbers: Multiplication

$3 \times \bigcirc = 12$	$4 \times 0 = \bigcirc$
$\bigcirc \times 8 = 72$	$\bigcirc \times 8 = 16$
$2 \times 4 = \bigcirc$	$8 \times \bigcirc = 40$
$4 \times \bigcirc = 28$	$\bigcirc \times 4 = 24$
$\bigcirc \times 8 = 24$	$8 \times \bigcirc = 8$

Missing Numbers: Multiplication

7 x ◯ = 35	9 x 0 = ◯
◯ x 6 = 48	◯ x 7 = 21
1 x 7 = ◯	9 x ◯ = 18
6 x ◯ = 54	◯ x 7 = 7
◯ x 7 = 28	7 x ◯ = 42

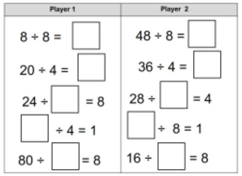
Missing Numbers: Multiplication

$4 \times \bigcirc = 0$	$2 \times 1 = \bigcirc$
$\bigcirc \times 6 = 24$	$\bigcirc \times 9 = 27$
$3 \times 2 = \bigcirc$	$4 \times \bigcirc = 20$
$4 \times \bigcirc = 32$	$\bigcirc \times 6 = 42$
$\bigcirc \times 5 = 45$	$5 \times \bigcirc = 5$

Missing Numbers: Multiplication

2 x ◯ = 18	9 x 0 = ◯
◯ x 9 = 36	◯ x 8 = 24
2 x 4 = ◯	4 x ◯ = 20
11 x ◯ = 11	◯ x 8 = 16
◯ x 5 = 35	8 x ◯ = 48

Missing Numbers: Division



Player 1	Player 2
8 ÷ 8 = □	48 ÷ 8 = □
20 ÷ 4 = □	36 ÷ 4 = □
24 ÷ □ = 8	28 ÷ □ = 4
□ ÷ 4 = 1	□ ÷ 8 = 1
80 ÷ □ = 8	16 ÷ □ = 8

Materials: color tiles numbered 1-10

Number of Players: 2

1. Collect a set of color tiles numbered 1-10. Place the tiles in random order with the numerals facedown in a row above the gameboard.

2. Take turns to turn over a color tile and try to use the number on the tile to make a true equation on your side of the board. If you can use the number read aloud the equation. If you cannot use the number place it back facedown above the gameboard.

3. The first player to complete all five equations on his or her side of the board wins the round.

4. Play another round using a different board.

5. Create your own Missing Numbers board. Your board must have 10 division equations with the missing numbers 1-10 in different positions. Try out your board with a classmate.

Player 1	Player 2
$5 \div 5 = \square$	$20 \div 10 = \square$
$60 \div 10 = \square$	$90 \div 10 = \square$
$20 \div \square = 5$	$40 \div \square = 5$
$\square \div 2 = 5$	$15 \div \square = 5$
$70 \div \square = 10$	$\square \div 1 = 5$

Player 1	Player 2
$2 \div 2 = \square$	$4 \div 2 = \square$
$30 \div 5 = \square$	$45 \div 5 = \square$
$8 \div \square = 2$	$16 \div \square = 2$
$\square \div 5 = 2$	$6 \div \square = 2$
$35 \div \square = 5$	$\square \div 1 = 5$

Player 1	Player 2
$4 \div 4 = \square$	$12 \div 4 = \square$
$10 \div 2 = \square$	$18 \div 2 = \square$
$24 \div \square = 4$	$20 \div \square = 10$
$\square \div 2 = 5$	$\square \div 4 = 2$
$28 \div \square = 4$	$\square \div 1 = 4$

Player 1	Player 2
$8 \div 8 = \square$	$48 \div 8 = \square$
$20 \div 4 = \square$	$36 \div 4 = \square$
$24 \div \square = 8$	$28 \div \square = 4$
$\square \div 4 = 1$	$\square \div 8 = 1$
$80 \div \square = 8$	$16 \div \square = 8$

Player 1	Player 2
$3 \div 3 = \square$	$42 \div 6 = \square$
$30 \div 6 = \square$	$12 \div 3 = \square$
$27 \div \square = 9$	$48 \div \square = 6$
$\square \div 6 = 1$	$\square \div 3 = 3$
$30 \div \square = 3$	$12 \div \square = 6$

Player 1	Player 2
$7 \div 7 = \square$	$42 \div 7 = \square$
$45 \div 9 = \square$	$36 \div 9 = \square$
$21 \div \square = 7$	$72 \div \square = 9$
$\square \div 9 = 1$	$\square \div 7 = 1$
$70 \div \square = 7$	$18 \div \square = 9$

Turn Your Array

Materials: color tiles or counters

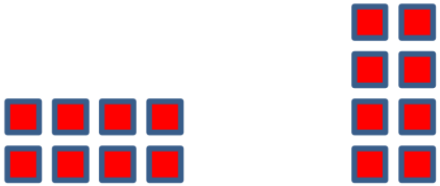
---

1. Choose one of the following numbers: 10, 12, 15, 18, 20, 21, or 24. Collect this number of color tiles and arrange them in equal rows.

2. Draw your array. Write a multiplication equation to represent your array.

3. Turn your array, so the rows become the columns. Draw the array and write a multiplication equation to represent the Commutative Property of Multiplication.

4. Repeat with other numbers.



If 2 x 4 = 8, then 4 x 2 = 8

Decompose a Factor

1. Solve the problems below. For each problem, show one way to find the product by decomposing one factor into addends, multiplying each term, and adding the partial products.

   a) 6 x 4 b) 7 x 8 c) 9 x 6 d) 8 x 9 e) 6 x 8 f) 9 x 7

   Example: 8 x 6 = ?
   8 x (5 + 1) = (8 x 5) + (8 x 1) = 40 + 8 = 48
   or 8 x (3 + 3) = (8 x 3) + (8 x 3) = 24 + 24 = 48

2. Create your own 1-digit x 1-digit problem. Explain how you could decompose a factor to quickly find the product of the two numbers mentally.

   Example: 6 x 7 = ?
   I split 7 into 5 and 2. In my mind I can quickly compute 6 x 5 = 30, then 6 x 2= 12, and add 30 plus 12. The product of 6 x 7 is 42.

Decompose a Factor

1. Solve the problems below. For each problem, show **one way** to find the product by decomposing one factor, multiplying each term, and adding the partial products.

a) 5 x 15   b) 24 x 3   c) 6 x 13   d) 16 x 4   e) 14 x 4   f) 7 x 13

Example: 4 x 23 = ?
4 x 23 = (4 x 20) + (4 x 3) = 80 + 12 = 92
or 4 x 23 = (4 x 10) + (4 x 10) + (4 x 3) = 40 + 40 + 12 = 92

2. Create your own 1-digit x 2-digit problem. Explain how you could decompose a factor to quickly find the product of the two numbers mentally.

Example: 3 x 24 = ?
I decompose 24 into 20 and 4. In my mind I quickly compute 3 x 20 = 60 and 3 x 4 = 12, then add 60 plus 12. The product of 3 x 24 is 72.

Division as an Unknown Factor

Materials: game board for each player, division fact cards **Number of Players:** 2

---

1. Shuffle the cards and place them facedown on the table in a pile.

2. Take turns to turn over a division card from the top of the pile and look for a related multiplication fact on your board. Cover the multiplication fact with the division card and explain how the two facts are related. If the multiplication fact is already covered return the division card to the bottom of the pile.

__ times __ equals __ , so
__ divided by __ equals __.

3. Continue taking turns until one player has covered all the division facts on his or her board.

___ times ___ equals ___ , so ___ divided by ___ equals ___.

___ times ___ equals ___ , so ___ divided by ___ equals ___.

___ times ___ equals ___ , so ___ divided by ___ equals ___.

___ times ___ equals ___ , so ___ divided by ___ equals ___.

ver. 1

Division as an Unknown Factor

5 x ? = 10	8 x ? = 8	6 x ? = 12	8 x ? = 16
5 x ? = 5	10 x ? = 10	4 x ? = 4	7 x ? = 14
9 x ? = 18	3 x ? = 6	10 x ? = 20	2 x ? = 4
6 x ? = 6	3 x ? = 3	7 x ? = 7	10 x ? = 10

Ver. 1 cards – copy and cut out two sets

$10 \div 5 = ?$	$8 \div 8 = ?$	$12 \div 6 = ?$	$16 \div 8 = ?$
$5 \div 5 = ?$	$10 \div 10 = ?$	$4 \div 4 = ?$	$14 \div 7 = ?$
$18 \div 9 = ?$	$6 \div 3 = ?$	$20 \div 10 = ?$	$4 \div 2 = ?$
$6 \div 6 = ?$	$3 \div 3 = ?$	$7 \div 7 = ?$	$10 \div 10 = ?$

ver. 2

Division as an Unknown Factor

3 x ? = 15	8 x ? = 80	4 x ? = 20	6 x ? = 60
6 x ? = 30	9 x ? = 90	8 x ? = 40	5 x ? = 50
7 x ? = 35	3 x ? = 30	2 x ? = 10	4 x ? = 40
5 x ? =25	7 x ? = 70	9 x ? = 45	2 x ? = 20

Ver. 2 cards – copy and cut out two sets

$15 \div 3 = ?$	$80 \div 8 = ?$	$20 \div 4 = ?$	$60 \div 6 = ?$
$30 \div 6 = ?$	$90 \div 9 = ?$	$40 \div 8 = ?$	$50 \div 5 = ?$
$35 \div 7 = ?$	$30 \div 3 = ?$	$10 \div 2 = ?$	$40 \div 4 = ?$
$25 \div 5 = ?$	$70 \div 7 = ?$	$45 \div 9 = ?$	$20 \div 2 = ?$

ver. 3

Division as an Unknown Factor

5 x ? = 15	10 x ? = 60	7 x ? = 21	7 x ? = 42
2 x ? = 6	9 x ? = 54	1 x ? = 3	8 x ? = 48
3 x ? = 9	5 x ? = 30	4 x ? = 12	6 x ? = 36
6 x ? = 18	3 x ? = 18	10 x ? = 30	1 x ? = 6

Ver. 3 cards – copy and cut out two sets

$15 \div 5 = ?$	$60 \div 10 = ?$	$21 \div 7 = ?$	$42 \div 7 = ?$
$6 \div 2 = ?$	$54 \div 9 = ?$	$3 \div 1 = ?$	$48 \div 8 = ?$
$9 \div 3 = ?$	$30 \div 5 = ?$	$12 \div 4 = ?$	$36 \div 6 = ?$
$18 \div 6 = ?$	$18 \div 3 = ?$	$30 \div 10 = ?$	$6 \div 1 = ?$

Division as an Unknown Factor

ver. 4

5 x ? = 20	8 x ? = 64	3 x ? = 12	6 x ? = 48
7 x ? = 28	5 x ? = 40	4 x ? = 16	7 x ? = 56
2 x ? = 8	2 x ? = 16	9 x ? = 36	9 x ? = 72
6 x ? = 24	1 x ? = 8	8 x ? = 32	10 x ? = 80

Ver. 4 cards – copy and cut out two sets

$20 \div 5 = ?$	$64 \div 8 = ?$	$12 \div 3 = ?$	$48 \div 6 = ?$
$28 \div 7 = ?$	$40 \div 5 = ?$	$16 \div 4 = ?$	$56 \div 7 = ?$
$8 \div 2 = ?$	$16 \div 2 = ?$	$36 \div 9 = ?$	$72 \div 9 = ?$
$24 \div 6 = ?$	$8 \div 1 = ?$	$32 \div 8 = ?$	$80 \div 10 = ?$

Division as an Unknown Factor

6 x ? = 42	7 x ? = 63	9 x ? = 63	8 x ? = 72
5 x ? = 35	5 x ? = 45	1 x ? = 7	2 x ? = 18
3 x ? = 21	4 x ? = 36	4 x ? = 28	3 x ? = 27
2 x ? = 14	6 x ? = 54	8 x ? = 56	9 x ? = 81

Ver. 5 cards – copy and cut out two sets

$42 \div 6 = ?$	$63 \div 7 = ?$	$63 \div 9 = ?$	$72 \div 8 = ?$
$35 \div 5 = ?$	$45 \div 5 = ?$	$7 \div 1 = ?$	$18 \div 2 = ?$
$21 \div 3 = ?$	$36 \div 4 = ?$	$28 \div 4 = ?$	$27 \div 3 = ?$
$14 \div 2 = ?$	$54 \div 6 = ?$	$56 \div 8 = ?$	$81 \div 9 = ?$

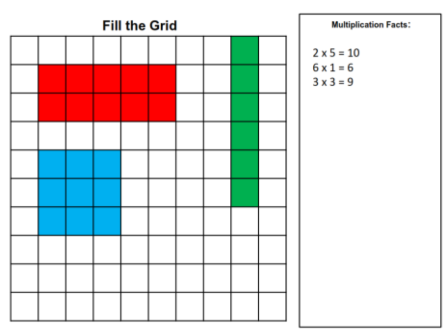
Fill the Grid

Materials: Fill the Grid board per player, number cubes **Number of Players:** 2

1. Take turns to roll two number cubes and use the numbers rolled to draw an array on your 100 grid. For example, if you roll 5 and 4 you may color a 5 x 4 array or a 4 x 5 array. You can put the array anywhere on the grid but your goal is to get the grid as full as possible by the end of the game, Write an equation to describe each array you draw.

2. Continue to take turns to roll and draw arrays. If you cannot fit a rectangle with the dimensions rolled you must wait for your next turn.

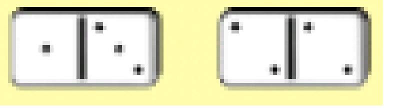
3. The game ends when both players cannot draw any more rectangles on the grid. The winner is the player with the most area colored at the end of the game.



Fill the Grid

Multiplication Facts:

Domino Multiplication



1 x 3 = 3 2 x 2 = 4

Materials: dominoes

---

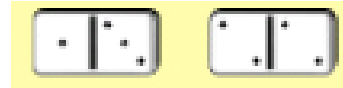
1. Place 12 dominoes facedown on the table.

2. Each player turns over one domino and multiplies the two numbers represented by the dots.

3. Players write their multiplication equation on the gameboard. The player with the largest product each round gets one bonus point.

4. Play continues for six rounds. Players calculate the sum of their six products and bonus points for a final score. The player with the largest final score wins the game.

Domino Multiplication



1 x 3 = 3 2 x 2 = 4

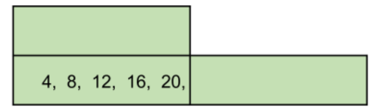
Player One	Bonus Points	Player Two	Bonus Points
1. ____ x ____ = ____		1. ____ x ____ = ____	
2.		2.	
3.		3.	
4.		4.	
5.		5.	
6.		6.	
Total:		**Total:**	
Final Score:		**Final Score:**	

Multiples Look, Say, Cover, Write, Check

Materials: Multiples cards with flaps, pencil and paper

---

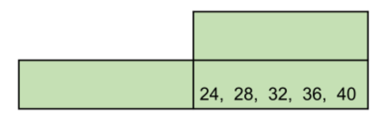
1. **Look** at the multiples under the left flap.
   Say the multiples in order three times.



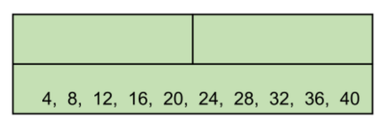
2. **Cover** the multiples with the flap. **Write** the multiples in order from memory.

3. Lift the flap to **check** your work.
   All correct? – Yes: Move to Step 4.
   No: Repeat the Look, Say, Cover, Write, Check process.

4. Repeat steps 1- 3 with the multiples under the right flap.
   All correct? - Yes: Move to Step 5.
   No: Repeat the Look, Say, Cover, Write, Check process.



5. Repeat steps 1- 3 with all multiples.
   All correct? – Yes: Well done!
   No: Try again.



2, 4, 6, 8, 10, 12, 14, 16, 18, 20	

3, 6, 9, 12, 15, 18, 21, 24, 27, 30	

4, 8, 12, 16, 20, 24, 28, 32, 36, 40	

5, 10, 15, 20, 25, 30, 35, 40, 45, 50	

<table>
<tr><td></td><td></td></tr>
<tr><td colspan="2">6, 12 18, 24, 30, 36, 42, 48, 54, 60</td></tr>
</table>

<table>
<tr><td></td><td></td></tr>
<tr><td colspan="2">7, 14, 21, 28, 35, 42, 49, 56, 63, 70</td></tr>
</table>

8, 16, 24, 32, 40, 48, 56, 64, 72, 80	

9, 18, 27, 36, 45, 54, 63, 72, 81, 90	

10, 20, 30, 40, 50, 60, 70, 80, 90, 100	

25, 50, 75, 100, 125, 150, 175, 200, 225, 250	

X 2

Multiplication Bump

Materials: number cube marked 1-10, 10 snap cubes per player of same color **Number of Players:** 2

---

1. Work with a partner. Take turns to roll a number cube, multiply the number rolled by two, and complete the math talk sentence.

> I rolled ___.
> ___ multiplied by 2 equals ___.

2. Cover the product on the board with a snap cube. If your opponent's snap cube is on the number **BUMP** it off. If you already have a snap cube on the number, link two cubes together to **FREEZE** the spot.

3. Continue playing until one player has placed all 10 snap cubes on the board.

X 2

Multiplication Bump

20 4 10 14 16

8 2 6 12 18

X 3

Multiplication Bump

Materials: number cube marked 1-10, 10 snap cubes per player of same color **Number of Players:** 2

---

1. Work with a partner. Take turns to roll a number cube, multiply the number rolled by three, and complete the math talk sentence.

I rolled ___.
___ multiplied by 3 equals ___.

2. Cover the product on the board with a snap cube. If your opponent's snap cube is on the number **BUMP** it off. If you already have a snap cube on the number, link two cubes together to **FREEZE** the spot.

3. Continue playing until one player has placed all 10 snap cubes on the board.

X 3

Multiplication Bump

12 6 15 30 27

3 9 21 18 24

Multiplication Bump

X 4

Materials: number cube marked 1-10, 10 snap cubes per player of same color **Number of Players:** 2

1. Work with a partner. Take turns to roll a number cube, multiply the number rolled by four, and complete the math talk sentence.

I rolled ___.
___ multiplied by 4 equals ___.

2. Cover the product on the board with a snap cube. If your opponent's snap cube is on the number **BUMP** it off. If you already have a snap cube on the number, link two cubes together to **FREEZE** the spot.

3. Continue playing until one player has placed all 10 snap cubes on the board.

Multiplication Bump

X 4

12

8

20

28

40

4

16

24

36

32

X 5

Multiplication Bump

Materials: number cube marked 1-10, 10 snap cubes per player of same color **Number of Players:** 2

1. Work with a partner. Take turns to roll a number cube, multiply the number rolled by five, and complete the math talk sentence.

I rolled ___.
___ multiplied by 5 equals ___.

2. Cover the product on the board with a snap cube. If your opponent's snap cube is on the number **BUMP** it off. If you already have a snap cube on the number, link two cubes together to **FREEZE** the spot.

3. Continue playing until one player has placed all 10 snap cubes on the board.

X 5

Multiplication Bump

10

15

20

45

40

5

25

30

35

50

X 6

Multiplication Bump

Materials: number cube marked 1-10, 10 snap cubes per player of same color **Number of Players:** 2

---

1. Work with a partner. Take turns to roll a number cube, multiply the number rolled by six, and complete the math talk sentence.

> I rolled ___.
> ___ multiplied by 6 equals ___.

2. Cover the product on the board with a snap cube. If your opponent's snap cube is on the number **BUMP** it off. If you already have a snap cube on the number, link two cubes together to **FREEZE** the spot.

3. Continue playing until one player has placed all 10 snap cubes on the board.

X 6

Multiplication Bump

12

18

36

42

48

6

24

30

60

54

X 7

Multiplication Bump

Materials: number cube marked 1-10, 10 snap cubes per player of same color **Number of Players:** 2

---

1. Work with a partner. Take turns to roll a number cube, multiply the number rolled by seven, and complete the math talk sentence.

I rolled ___.
___ multiplied by 7 equals ___.

2. Cover the product on the board with a snap cube. If your opponent's snap cube is on the number **BUMP** it off. If you already have a snap cube on the number, link two cubes together to **FREEZE** the spot.

3. Continue playing until one player has placed all 10 snap cubes on the board.

X 7

Multiplication Bump

14 28 35 49 70

7 21 42 56 63

X 8

Multiplication Bump

Materials: number cube marked 1-10, 10 snap cubes per player of same color **Number of Players:** 2

---

1. Work with a partner. Take turns to roll a number cube, multiply the number rolled by eight, and complete the math talk sentence.

> I rolled ___.
> ___ multiplied by 8 equals ___.

2. Cover the product on the board with a snap cube. If your opponent's snap cube is on the number **BUMP** it off. If you already have a snap cube on the number, link two cubes together to **FREEZE** the spot.

3. Continue playing until one player has placed all 10 snap cubes on the board.

X 8

Multiplication Bump

16 24 48 56 72

8 32 40 64 80

X 9

Multiplication Bump

Materials: number cube marked 1-10, 10 snap cubes per player of same color **Number of Players:** 2

---

1. Work with a partner. Take turns to roll a number cube, multiply the number rolled by nine, and complete the math talk sentence.

> I rolled ___.
> ___ multiplied by 9 equals ___.

2. Cover the product on the board with a snap cube. If your opponent's snap cube is on the number **BUMP** it off. If you already have a snap cube on the number, link two cubes together to **FREEZE** the spot.

3. Continue playing until one player has placed all 10 snap cubes on the board.

X 9

Multiplication Bump

18 27 45 63 81

9 36 54 72 90

Multiplication Bump

X 10

Materials: number cube marked 1-10, 10 snap cubes per player of same color **Number of Players:** 2

---

1. Work with a partner. Take turns to roll a number cube, multiply the number rolled by ten, and complete the math talk sentence.

I rolled ___.
___ multiplied by 10 equals ___.

2. Cover the product on the board with a snap cube. If your opponent's snap cube is on the number **BUMP** it off. If you already have a snap cube on the number, link two cubes together to **FREEZE** the spot.

3. Continue playing until one player has placed all 10 snap cubes on the board.

X 10

Multiplication Bump

20 40 30 80 100

10 60 50 70 90

Multiplication: Four in a Row

Materials: 2 paper clips, counters (different color for each player) **Number of Players:** 2

1. Player 1: Put paper clips on any two numbers below the square. Multiply the two factors and cover one square on the board containing the product with a counter. Say the multiplication fact.

2. Player 2: Move **one** paper clip to a different number. Multiply the two factors and cover the resulting product on the board with a counter. Say the multiplication fact.

3. Think carefully about the next product you want to cover before moving a paper clip. You may only move one paper clip each turn. You may place both paper clips on the same number.

4. Continue taking turns until one player has four counters in a horizontal, vertical, or diagonal line.

The product of ___ times ___ is ___.

___ multiplied by ___ is ___.

The product of ___ times ___ is ___.

___ multiplied by ___ is ___.

Multiplication Four in a Row

10	25	50	10	5	50
5	50	10	5	4	20
2	20	10	4	2	10
10	25	50	10	20	50
20	10	50	5	1	5
2	5	10	1	2	10

1 2 5 10

Multiplication Four in a Row

36	18	50	24	30	12
20	24	18	15	20	16
9	12	15	25	30	12
12	18	50	24	18	36
20	24	25	15	20	30
9	12	15	30	16	12

3 4 5 6

Multiplication Four in a Row

48	54	42	72	81	36
56	63	64	81	56	72
56	42	48	54	49	63
81	54	63	72	81	56
56	63	64	48	56	72
36	42	48	54	49	42

6 7 8 9

Multiples of 2

The product of
__ x 2 is ___.

Materials: 5 counters per player; 10-sided number cube (or numeral cards 1-10) **Number of Players:** 2-3

1. Each player collects 5 counters.
2. Take turns to roll the number cube and multiply the number rolled by 2. Complete the math talk sentence and place a counter on the product. If the number is already covered you must remove the counter from the board and add it to your pile.
3. The first player to have placed all 5 counters on the board wins the game.

2	8	6	18	10
20	4	14	16	12

Multiples of 3

The product of
__ x 3 is ___.

Materials: 5 counters per player; 10-sided number cube (or numeral cards 1-10) **Number of Players:** 2-3

1. Each player collects 5 counters.
2. Take turns to roll the number cube and multiply the number rolled by 3. Complete the math talk sentence and place a counter on the product. If the number is already covered you must remove the counter from the board and add it to your pile.
3. The first player to have placed all 5 counters on the board wins the game.

3	9	6	15	21
27	30	24	18	12

Multiples of 4

The product of
__ x 4 is ___.

Materials: 5 counters per player; 10-sided number cube (or numeral cards 1-10) **Number of Players:** 2-3

1. Each player collects 5 counters.
2. Take turns to roll the number cube and multiply the number rolled by 4. Complete the math talk sentence and place a counter on the product. If the number is already covered you must remove the counter from the board and add it to your pile.
3. The first player to have placed all 5 counters on the board wins the game.

4	12	8	16	20
40	32	28	36	24

Multiples of 5

The product of
__ x 5 is ___.

Materials: 5 counters per player; 10-sided number cube (or numeral cards 1-10) **Number of Players:** 2-3

1. Each player collects 5 counters.
2. Take turns to roll the number cube and multiply the number rolled by 5. Complete the math talk sentence and place a counter on the product. If the number is already covered you must remove the counter from the board and add it to your pile.
3. The first player to have placed all 5 counters on the board wins the game.

5	30	50	15	20
40	45	10	35	25

Multiples of 6

The product of
__ x 6 is ___.

Materials: 5 counters per player; 10-sided number cube (or numeral cards 1-10) **Number of Players:** 2-3

1. Each player collects 5 counters.
2. Take turns to roll the number cube and multiply the number rolled by 6. Complete the math talk sentence and place a counter on the product. If the number is already covered you must remove the counter from the board and add it to your pile.
3. The first player to have placed all 5 counters on the board wins the game.

6	18	36	24	12
60	54	30	42	48

Multiples of 7

The product of
__ x 7 is ___.

Materials: 5 counters per player; 10-sided number cube (or numeral cards 1-10) **Number of Players:** 2-3

1. Each player collects 5 counters.
2. Take turns to roll the number cube and multiply the number rolled by 7. Complete the math talk sentence and place a counter on the product. If the number is already covered you must remove the counter from the board and add it to your pile.
3. The first player to have placed all 5 counters on the board wins the game.

7	14	49	70	35
63	21	56	42	28

Multiples of 8

The product of
__ x 8 is ___.

Materials: 5 counters per player; 10-sided number cube (or numeral cards 1-10) **Number of Players:** 2-3

1. Each player collects 5 counters.
2. Take turns to roll the number cube and multiply the number rolled by 8. Complete the math talk sentence and place a counter on the product. If the number is already covered you must remove the counter from the board and add it to your pile.
3. The first player to have placed all 5 counters on the board wins the game.

8	16	48	40	24
80	72	56	64	32

Multiples of 9

The product of
__ x 9 is ___.

Materials: 5 counters per player; 10-sided number cube (or numeral cards 1-10) **Number of Players:** 2-3

1. Each player collects 5 counters.
2. Take turns to roll the number cube and multiply the number rolled by 9. Complete the math talk sentence and place a counter on the product. If the number is already covered you must remove the counter from the board and add it to your pile.
3. The first player to have placed all 5 counters on the board wins the game.

9	18	36	45	27
90	72	81	63	54

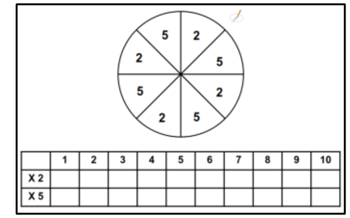
Multiples of 10

The product of
__ x 10 is ___.

Materials: 5 counters per player; 10-sided number cube (or numeral cards 1-10) **Number of Players:** 2-3

1. Each player collects 5 counters.
2. Take turns to roll the number cube and multiply the number rolled by 10. Complete the math talk sentence and place a counter on the product. If the number is already covered you must remove the counter from the board and add it to your pile.
3. The first player to have placed all 5 counters on the board wins the game.

10	50	30	40	20
90	70	80	60	100



Multiply It!

Materials: numeral cards 1-10 (2 of each), gameboard per player, paperclip **Number of Players:** 2

---

1. Shuffle the numeral cards and place them facedown in a pile on the table.

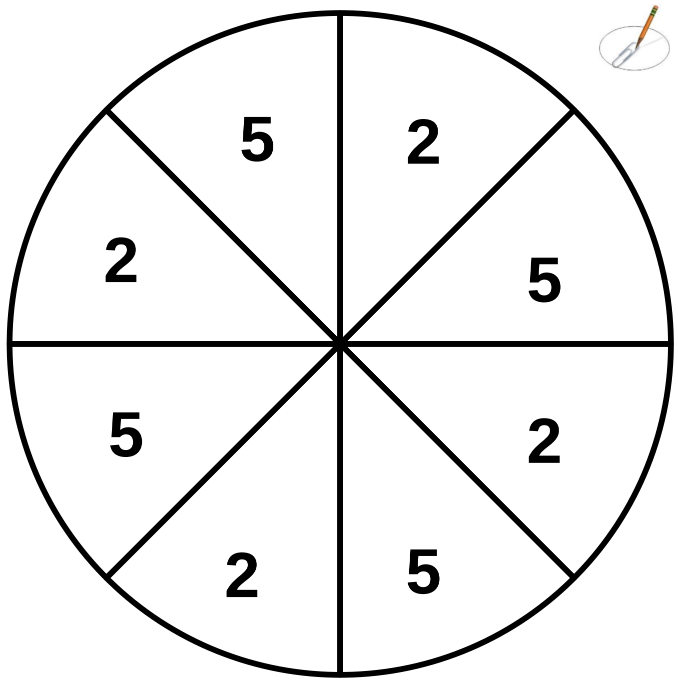
2. Take turns to turn over the top numeral card in the pile and spin the spinner on your board using a pencil and paper clip. Multiply the number on the card by the number on the spinner. Say the multiplication fact aloud before writing the product in the correct space in the table on your board.

3. Players must check their opponent's work before taking their turn.

4. Continue taking turns and checking one another's work until one player has completed all sections of his or her board.

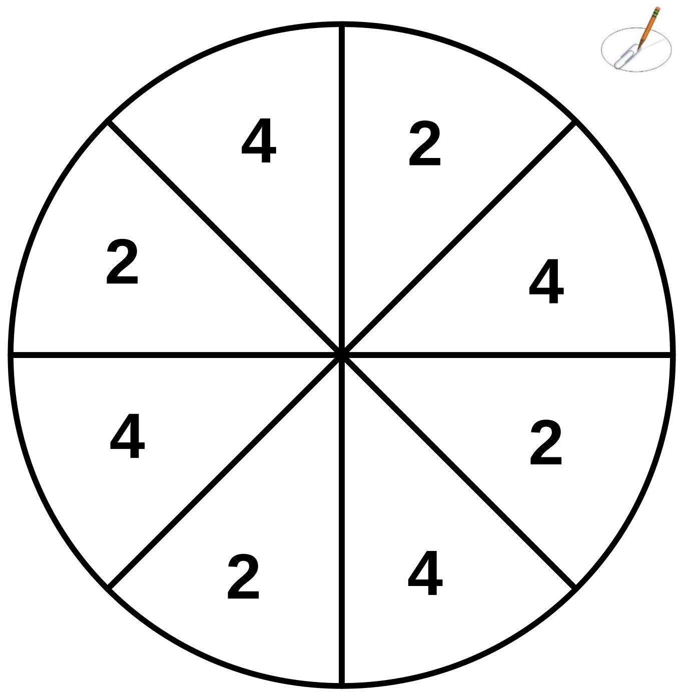
.

Multiply It!



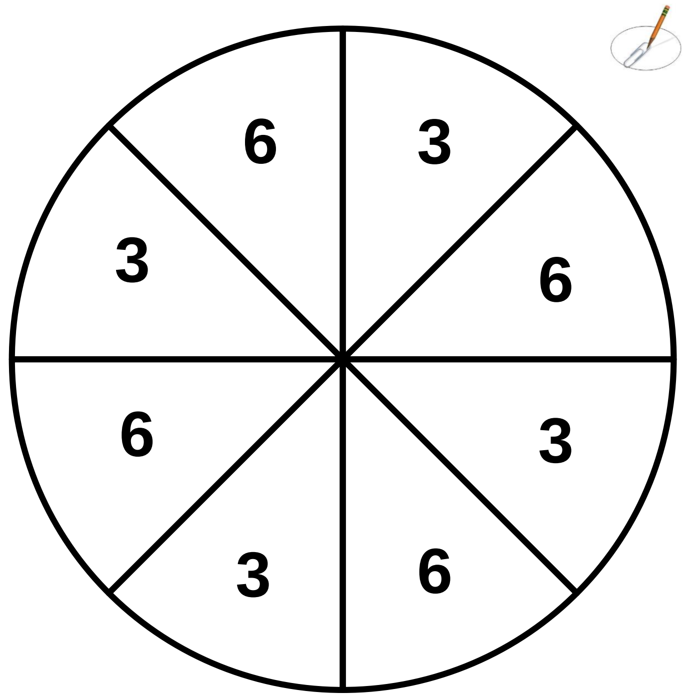
	1	2	3	4	5	6	7	8	9	10
X 2										
X 5										

Multiply It!



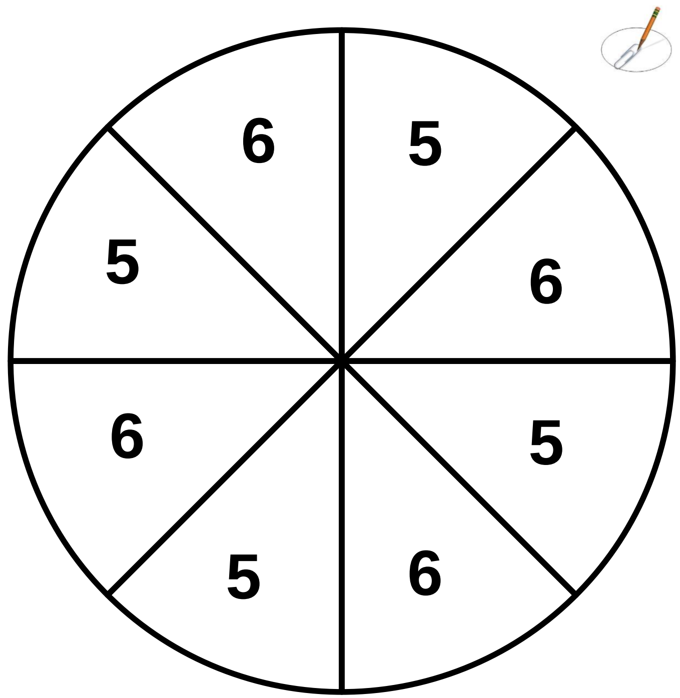
	1	2	3	4	5	6	7	8	9	10
X 2										
X 4										

Multiply It!



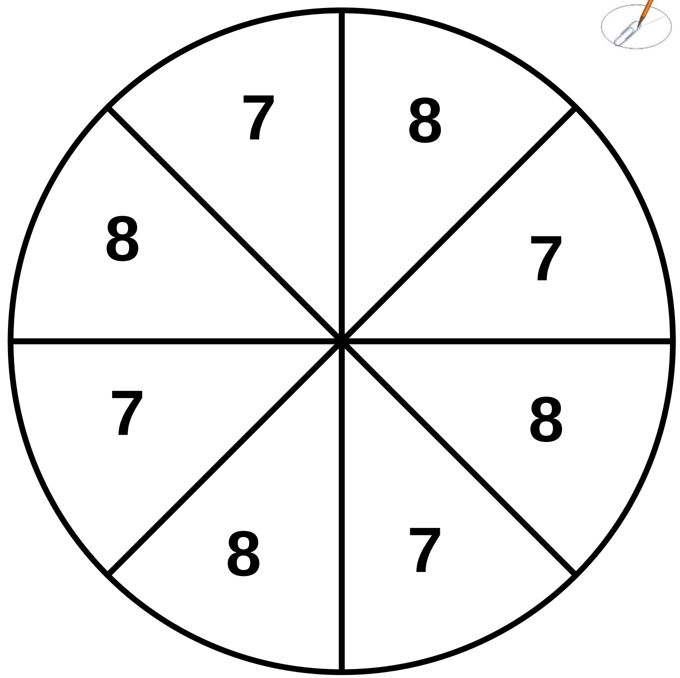
	1	2	3	4	5	6	7	8	9	10
X 3										
X 6										

Multiply It!



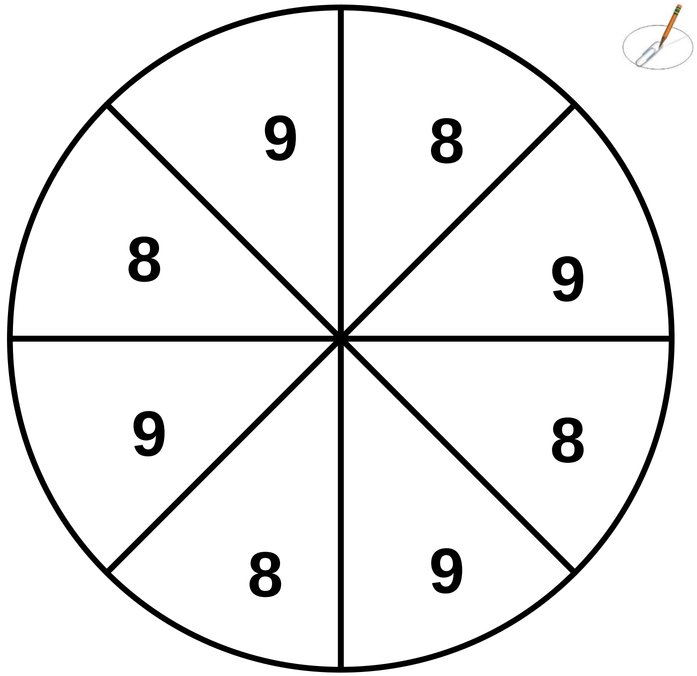
	1	2	3	4	5	6	7	8	9	10
X 5										
X 6										

Multiply It!



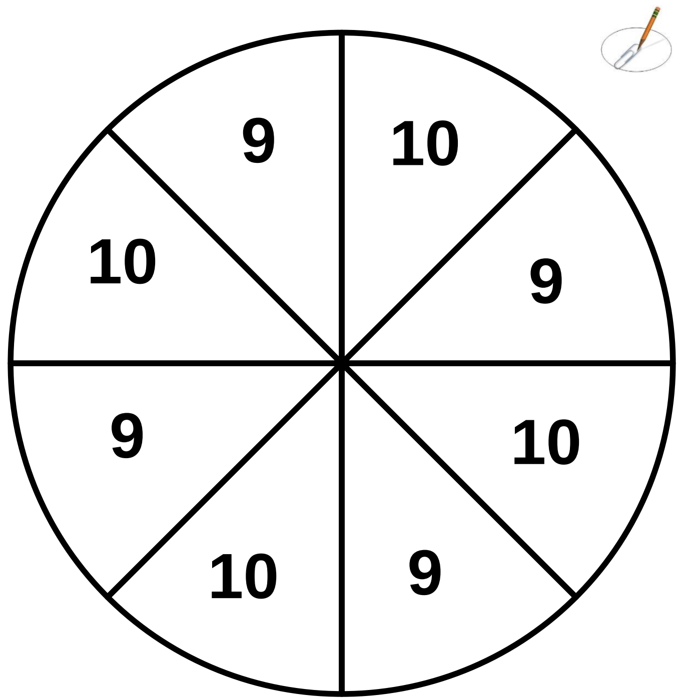
	1	2	3	4	5	6	7	8	9	10
X 7										
X 8										

Multiply It!



	1	2	3	4	5	6	7	8	9	10
X 8										
X 9										

Multiply It!



	1	2	3	4	5	6	7	8	9	10
X 9										
X 10										

I Have …. Who Has?

Materials: set of I Have …Who Has? cards

Number of Players: 3 – 4

1. Deal all cards equally among the players. All players place their cards in a row face up in front of them.
2. The player with the 'Start' card reads his or her card aloud and places it in the center of the table.
3. The player with the correct answer card names the product and reads the question on his or her card. After a card is read aloud it is added to the line of cards in the center of the table.
4. Continue playing until all cards have been played. The game will end with the same student who started play.
5. Shuffle the cards and play another round. You may like to use a stopwatch and try to improve on the time it takes to complete the game each round you play.

I have 22. Who has 1 x 5?	I have 5. Who has 3 x 5?

***Start**
I have 22.

Who has 1 x 5?

I have 5.

Who has 3 x 5?

I have 15.

Who has 5 x 5?

I have 25.

Who has 2 x 5?

I have 10.

Who has 4 x 5?

I have 20.

Who has 8 x 5?

I have 40.

Who has 6 x 5?

I have 30.

Who has 9 x 5?

I have 45.

Who has 7 x 5?

I have 35.

Who has 10 x 5?

I have 50.

Who has 0 x 5?

I have 0.

Who has 11 x 5?

I have 55. Who has 3 x 2?	I have 6. Who has 12 x 2?	I have 24. Who has 8 x 2?	I have 16. Who has 4 x 2?
I have 8. Who has 9 x 2?	I have 18. Who has 1 x 2?	I have 2. Who has 2 x 2?	I have 4. Who has 6 x 2?
I have 12. Who has 7 x 2?	I have 14. Who has 30 x 2?	I have 60. Who has 50 x 2?	I have 100. Who has 11 x 2?

I Have …. Who Has?

Materials: set of I Have …Who Has? cards **Number of Players**: 3 – 4

1. Deal all cards equally among the players. All players place their cards in a row face up in front of them.
2. The player with the ‘Start’ card reads his or her card aloud and places it in the center of the table.
3. The player with the correct answer card names the product and reads the question on his or her card. After a card is read aloud it is added to the line of cards in the center of the table.
4. Continue playing until all cards have been played. The game will end with the same student who started play.
5. Shuffle the cards and play another round. You may like to use a stopwatch and try to improve on the time it takes to complete the game each round you play.

I have 500. Who has 2 x 10?	I have 20. Who has 3 x 2?

***Start**

I have 500.

Who has 2 x 10?

I have 20.

Who has 3 x 2?

I have 6.

Who has 3 x 10?

I have 30.

Who has 1 x 2?

I have 2.

Who has 0 x 10?

I have 0.

Who has 8 x 2?

I have 16.

Who has 4 x 10?

I have 40.

Who has 2 x 2?

I have 4.

Who has 5 x 10?

I have 50.

Who has 12 x 10?

I have 120.

Who has 4 x 2?

I have 8.

Who has 6 x 10?

I have 60. Who has 9 x 2?	I have 18. Who has 9 x 10?	I have 90. Who has 1 x 10?	I have 10. Who has 11 x 2?
I have 22. Who has 7 x 10?	I have 70. Who has 6 x 2?	I have 12. Who has 10 x 10?	I have 100. Who has 7 x 2?
I have 14. Who has 8 x 10?	I have 80. Who has 12 x 2?	I have 24. Who has 11 x 10?	I have 110. Who has 50 x 10?

I Have …. Who Has?

Materials: set of I Have …Who Has? cards **Number of Players**: 3 – 4

1. Deal all cards equally among the players. All players place their cards in a row face up in front of them.
2. The player with the 'Start' card reads his or her card aloud and places it in the center of the table.
3. The player with the correct answer card names the product and reads the question on his or her card. After a card is read aloud it is added to the line of cards in the center of the table.
4. Continue playing until all cards have been played. The game will end with the same student who started play.
5. Shuffle the cards and play another round. You may like to use a stopwatch and try to improve on the time it takes to complete the game each round you play.

I have 100. Who has 1 x 5?	I have 5. Who has 3 x 2?

***Start**
I have 100.

Who has 1 x 5?

I have 5.

Who has 3 x 2?

I have 3.

Who has 2 x 5?

I have 10.

Who has 3 x 3?

I have 9.

Who has 0 x 3?

I have 0.

Who has 4 x 5?

I have 20.

Who has 4 x 3?

I have 12.

Who has 5 x 5?

I have 25.

Who has 5 x 3?

I have 15.

Who has 7 x 5?

I have 35.

Who has 6 x 3?

I have 18.

Who has 8 x 5?

I have 40.

Who has 8 x 3?

I have 24.

Who has 10 x 5?

I have 50.

Who has 7 x 3?

I have 21.

Who has 12 x 5?

I have 60.

Who has 9 x 3?

I have 27.

Who has 11 x 5?

I have 55.

Who has 10 x 3?

I have 30.

Who has 9 x 5?

I have 45.

Who has 11 x 3?

I have 33.

Who has 2 x 3?

I have 6.

Who has 12 x 3?

I have 36.

Who has 20 x 5?

I Have …. Who Has?

Materials: set of I Have …Who Has? cards **Number of Players**: 3 – 4

1. Deal all cards equally among the players. All players place their cards in a row face up in front of them.
2. The player with the 'Start' card reads his or her card aloud and places it in the center of the table.
3. The player with the correct answer card names the product and reads the question on his or her card. After a card is read aloud it is added to the line of cards in the center of the table.
4. Continue playing until all cards have been played. The game will end with the same student who started play.
5. Shuffle the cards and play another round. You may like to use a stopwatch and try to improve on the time it takes to complete the game each round you play.

I have 36. Who has 0 x 3?	I have 0. Who has 1 x 7?

***Start**
I have 36.

Who has 0 x 3?

I have 0.

Who has 1 x 7?

I have 7.

Who has 3 x 3?

I have 9.

Who has 2 x 7?

I have 14.

Who has 1 x 3?

I have 3.

Who has 3 x 7?

I have 21.

Who has 2 x 3?

I have 6.

Who has 5 x 7?

I have 35.

Who has 5 x 3?

I have 15.

Who has 10 x 7?

I have 70.

Who has 4 x 3?

I have 12.

Who has 4 x 7?

I have 28. Who has 6 x 3?	I have 18. Who has 6 x 7?	I have 42. Who has 8 x 3?	I have 24. Who has 7 x 7?
I have 49. Who has 9 x 3?	I have 27. Who has 8 x 7?	I have 56. Who has 10 x 3?	I have 30. Who has 9 x 7?
I have 63. Who has 11 x 7?	I have 77. Who has 11 x 3?	I have 33. Who has 12 x 7?	I have 84. Who has 12 x 3?

I Have …. Who Has?

Materials: set of I Have …Who Has? cards **Number of Players**: 3 – 4

1. Deal all cards equally among the players. All players place their cards in a row face up in front of them.
2. The player with the 'Start' card reads his or her card aloud and places it in the center of the table.
3. The player with the correct answer card names the product and reads the question on his or her card. After a card is read aloud it is added to the line of cards in the center of the table.
4. Continue playing until all cards have been played. The game will end with the same student who started play.
5. Shuffle the cards and play another round. You may like to use a stopwatch and try to improve on the time it takes to complete the game each round you play.

I have 12. Who has 1 x 6?	I have 6. Who has 2 x 4?

***Start**
I have 12.

Who has 1 x 6?

I have 6.

Who has 2 x 4?

I have 8.

Who has 3 x 6?

I have 18.

Who has 1 x 4?

I have 4.

Who has 8 x 4?

I have 32.

Who has 5 x 6?

I have 30.

Who has 0 x 6?

I have 0.

Who has 4 x 4?

I have 16.

Who has 7 x 6?

I have 42.

Who has 5 x 4?

I have 20.

Who has 9 x 6?

I have 54.

Who has 6 x 4?

I have 24.

Who has 7 x 4?

I have 28.

Who has 10 x 6?

I have 60.

Who has 6 x 6?

I have 36.

Who has 10 x 4?

I have 40.

Who has 11 x 6?

I have 66.

Who has 11 x 4?

I have 44.

Who has 12 x 6?

I have 72.

Who has 12 x 4?

I have 48.

Who has 20 x 4?

I have 80.

Who has 13 x 6?

I have 78.

Who has 13 x 4?

I have 52.

Who has 3 x 4?

I Have …. Who Has?

Materials: set of I Have …Who Has? cards **Number of Players**: 3 – 4

1. Deal all cards equally among the players. All players place their cards in a row face up in front of them.
2. The player with the 'Start' card reads his or her card aloud and places it in the center of the table.
3. The player with the correct answer card names the product and reads the question on his or her card. After a card is read aloud it is added to the line of cards in the center of the table.
4. Continue playing until all cards have been played. The game will end with the same student who started play.
5. Shuffle the cards and play another round. You may like to use a stopwatch and try to improve on the time it takes to complete the game each round you play.

I have 200. Who has 0 x 4?	I have 0. Who has 2 x 10?

***Start**
I have 200.

Who has 0 x 4?

I have 0.

Who has 2 x 10?

I have 20.

Who has 3 x 4?

I have 12.

Who has 1 x 10?

I have 10.

Who has 2 x 4?

I have 8.

Who has 6 x 10?

I have 60.

Who has 6 x 4?

I have 24.

Who has 3 x 10?

I have 30.

Who has 4 x 6?

I have 4.

Who has 5 x 10?

I have 50.

Who has 4 x 4?

I have 16.

Who has 8 x 10?

I have 80.

Who has 7 x 4?

I have 28.

Who has 12 x 10?

I have 120.

Who has 10 x 4?

I have 40.

Who has 9 x 10?

I have 90.

Who has 8 x 4?

I have 32.

Who has 10 x 10?

I have 100.

Who has 9 x 4?

I have 36.

Who has 7 x 10?

I have 70.

Who has 11 x 4?

I have 44.

Who has 11 x 10?

I have 110.

Who has 12 x 4?

I have 48.

Who has 20 x 10?

I Have …. Who Has?

Materials: set of I Have …Who Has? cards **Number of Players**: 3 – 4

1. Deal all cards equally among the players. All players place their cards in a row face up in front of them.
2. The player with the 'Start' card reads his or her card aloud and places it in the center of the table.
3. The player with the correct answer card names the product and reads the question on his or her card. After a card is read aloud it is added to the line of cards in the center of the table.
4. Continue playing until all cards have been played. The game will end with the same student who started play.
5. Shuffle the cards and play another round. You may like to use a stopwatch and try to improve on the time it takes to complete the game each round you play.

I have 96. Who has 1 x 6?	I have 6. Who has 1 x 8?

***Start**
I have 96.

Who has 1 x 6?

I have 6.

Who has 1 x 8?

I have 8.

Who has 3 x 6?

I have 18.

Who has 2 x 8?

I have 16.

Who has 2 x 6?

I have 12.

Who has 3 x 8?

I have 24.

Who has 5 x 6?

I have 30.

Who has 4 x 8?

I have 32.

Who has 10 x 6?

I have 60.

Who has 5 x 8?

I have 40.

Who has 6 x 6?

I have 36.

Who has 6 x 8?

I have 48. Who has 7 x 6?	I have 42. Who has 10 x 8?	I have 80. Who has 11 x 6?	I have 66. Who has 9 x 6?
I have 54. Who has 8 x 8?	I have 64. Who has 11 x 8?	I have 88. Who has 9 x 8?	I have 72. Who has 7 x 8?
I have 56. Who has 0 x 6?	I have 0. Who has 100 x 8?	I have 800. Who has 20 x 6?	I have 120. Who has 12 x 8?

I Have …. Who Has?

Materials: set of I Have …Who Has? cards **Number of Players**: 3 – 4

1. Deal all cards equally among the players. All players place their cards in a row face up in front of them.
2. The player with the ‘Start’ card reads his or her card aloud and places it in the center of the table.
3. The player with the correct answer card names the product and reads the question on his or her card. After a card is read aloud it is added to the line of cards in the center of the table.
4. Continue playing until all cards have been played. The game will end with the same student who started play.
5. Shuffle the cards and play another round. You may like to use a stopwatch and try to improve on the time it takes to complete the game each round you play.

I have 84. Who has 1 x 7?	I have 7. Who has 1 x 9?

***Start**
I have 84.

Who has 1 x 7?

I have 7.

Who has 1 x 9?

I have 9.

Who has 3 x 7?

I have 21.

Who has 2 x 9?

I have 18.

Who has 10 x 7?

I have 70.

Who has 4 x 9?

I have 36.

Who has 5 x 7?

I have 35.

Who has 3 x 9?

I have 27.

Who has 4 x 7?

I have 28.

Who has 10 x 9?

I have 90.

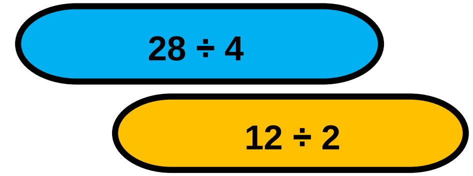
Who has 11 x 7?

I have 77.

Who has 5 x 9?

I have 45. Who has 7 x 7?	I have 49. Who has 2 x 7?	I have 14. Who has 6 x 9?	I have 54. Who has 6 x 7?
I have 42. Who has 8 x 9?	I have 72. Who has 12 x 7?	I have 84. Who has 9 x 7?	I have 63. Who has 8 x 7?
I have 56. Who has 9 x 9?	I have 81. Who has 11 x 9?	I have 99. Who has 12 x 9?	I have 108. Who has 12 x 7?

Six Sticks



Materials: 40 jumbo craft sticks with division problems

Number of Players: 3 - 5

---

1. Deal seven sticks to each player. Place one stick in the center of the table and remove any remaining sticks.

2. The objective of the game is to be the first player to get six sticks with the same quotient. Player 1 chooses one stick he or she does not want and places it facedown in front of the player on his/her left. Player 1 then picks up the one stick left in the center of the table.

3. Player 2 passes an unwanted stick to the player on his/her left before picking up the stick given by the player on his/her right.

4. Play continues clockwise with each player passing an unwanted stick to the player on the left before picking up the stick given by the player on the right. The game ends when one player says, "I have six" to indicate that he or she has six sticks with the same quotient. The player reads each division problem aloud and places them face up on the table to ensure that all players agree that the six sticks have the same quotient.

Write (or have students cut out and paste) each of the following problems on one side of a **jumbo craft stick**.

8 ÷ 2	12 ÷ 3	16 ÷ 4	20 ÷ 5	24 ÷ 6
10 ÷ 2	15 ÷ 3	20 ÷ 4	25 ÷ 5	30 ÷ 6
12 ÷ 2	18 ÷ 3	24 ÷ 4	30 ÷ 5	36 ÷ 6
14 ÷ 2	21 ÷ 3	28 ÷ 4	35 ÷ 5	42 ÷ 6
28 ÷ 7	32 ÷ 8	36 ÷ 9	40 ÷ 10	44 ÷ 11
35 ÷ 7	40 ÷ 8	45 ÷ 9	50 ÷ 10	55 ÷ 11
42 ÷ 7	48 ÷ 8	54 ÷ 9	60 ÷ 10	66 ÷ 11
49 ÷ 7	56 ÷ 8	63 ÷ 9	70 ÷ 10	77 ÷ 11

Division Race

Materials: Division Race board 1, 2, or 3, number cube, one counter per player

---

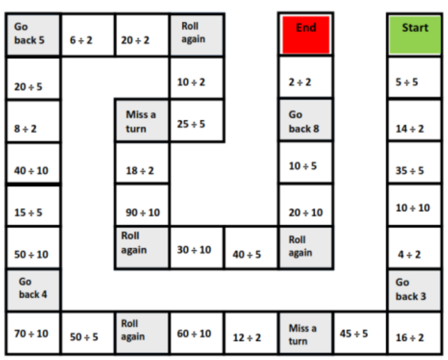
1. Each player places a counter on the box marked ‘Start’.

2. Take turns to roll a number cube and move your counter forward that number of spaces along the path. Say and write the division fact <u>or</u> follow the instruction you land on. Partners must listen carefully and check each other’s work. A player who gives an incorrect quotient must miss a turn.

3. Continue until one player reaches the box marked ‘End’.

**This game has three different gameboards.
Division Race 1 includes divisors of 2, 5, and 10.
Division Race 2 includes divisors of 3, 4, and 6.
Division Race 3 includes divisors of 7, 8, and 9.

Division Race One



Division Race 1

Go back 5	6 ÷ 2	20 ÷ 2	Roll again		End		Start
20 ÷ 5			10 ÷ 2		2 ÷ 2		5 ÷ 5
8 ÷ 2		Miss a turn	25 ÷ 5		Go back 8		14 ÷ 2
40 ÷ 10		18 ÷ 2			10 ÷ 5		35 ÷ 5
15 ÷ 5		90 ÷ 10			20 ÷ 10		10 ÷ 10
50 ÷ 10		Go back 5	30 ÷ 10	40 ÷ 5	Roll again		4 ÷ 2
Go back 4							Go back 3
70 ÷ 10	50 ÷ 5	Roll again	60 ÷ 10	12 ÷ 2	Miss a turn	45 ÷ 5	16 ÷ 2

Division Race 2

Go back 5	42 ÷ 6	28 ÷ 4	Roll again		End		Start
24 ÷ 3			32 ÷ 4		24 ÷ 4		3 ÷ 3
36 ÷ 4		Miss a turn	21 ÷ 3		Go back 8		6 ÷ 6
27 ÷ 3		18 ÷ 3			20 ÷ 4		4 ÷ 4
30 ÷ 3		48 ÷ 6			16 ÷ 4		12 ÷ 6
40 ÷ 4		Go back 5	54 ÷ 6	15 ÷ 3	Roll again		8 ÷ 4
Go back 4							Go back 3
36 ÷ 6	30 ÷ 6	Roll again	24 ÷ 6	18 ÷ 6	Miss a turn	12 ÷ 3	12 ÷ 4

Division Race 3

Go back 5	70 ÷ 7	80 ÷ 8	Roll again		End		Start
64 ÷ 8			27 ÷ 9		54 ÷ 9		7 ÷ 7
63 ÷ 7		Miss a turn	36 ÷ 9		Go back 8		8 ÷ 8
18 ÷ 9		45 ÷ 9			42 ÷ 7		81 ÷ 9
72 ÷ 8		49 ÷ 7			63 ÷ 9		14 ÷ 7
56 ÷ 8		Go back 5	72 ÷ 9	35 ÷ 7	Roll again		28 ÷ 7
Go back 4							Go back 3
40 ÷ 8	48 ÷ 8	Roll again	32 ÷ 8	24 ÷ 8	Miss a turn	16 ÷ 8	21 ÷ 7

Division Squares

$20 \div 2$

$50 \div 5$

Materials: Division Squares board, division cards, calculator

Number of Players: 2

1. Shuffle the division cards and place them facedown in a pile. Player 1 turns over the top card in the pile, reads the problem aloud and names the quotient.

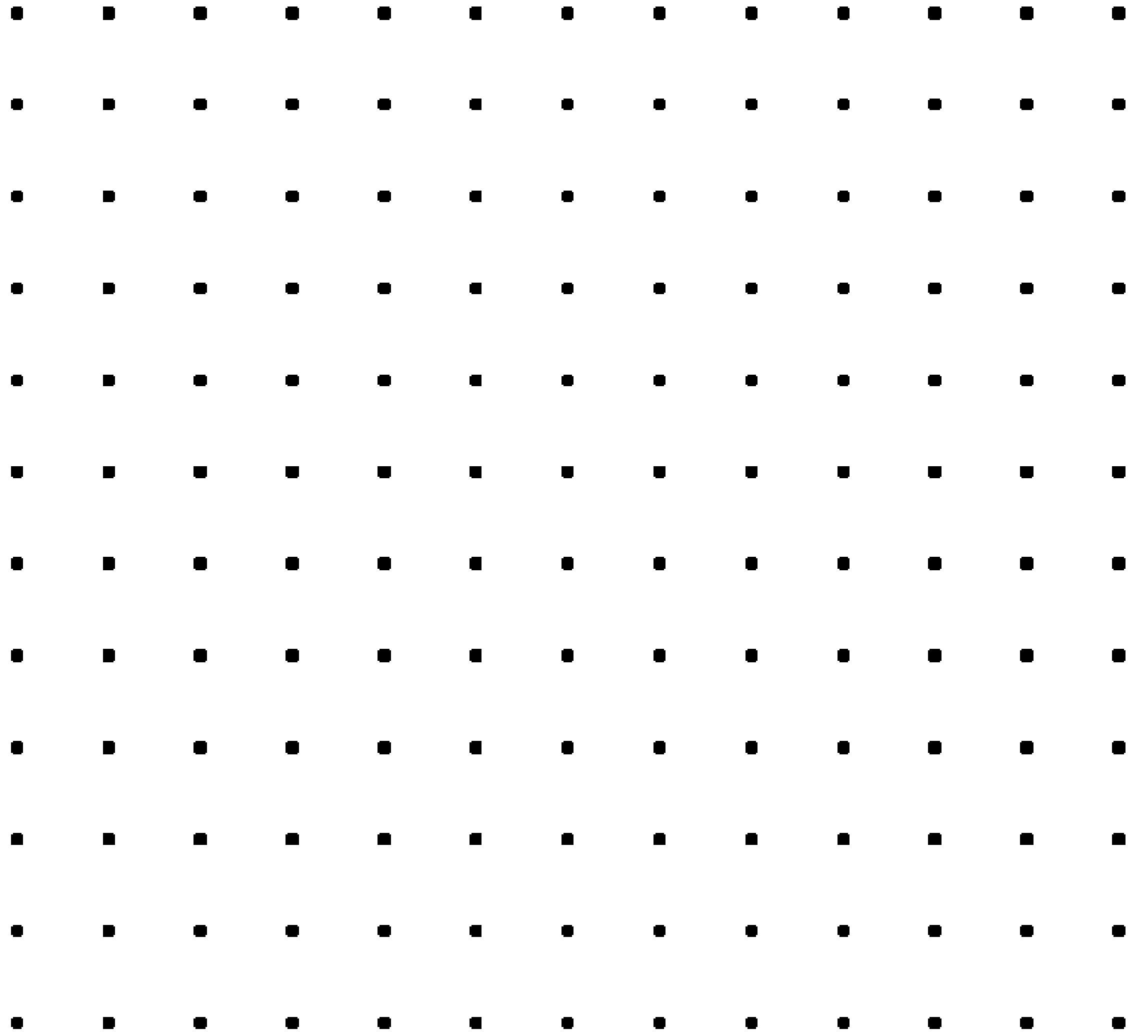
2. Player 2 checks the answer (a calculator may be used). If the answer is correct, Player 1 may draw one line segment on the board to connect two dots.

3. Player 2 turns over a card, reads the problem aloud and names the quotient. Player 1 checks the answer.

4. Players continue to take turns. A player who draws a line segment to complete a square writes his or her initials inside it. The player may then draw one extra line segment on the board.

5. At the end of the playing time, players calculate their scores. Each box with initials is worth 1 point. The player with the most points wins the game.

Division Squares



2 ÷ 2	12 ÷ 2	5 ÷ 5
4 ÷ 2	14 ÷ 2	10 ÷ 5
6 ÷ 2	16 ÷ 2	15 ÷ 5
8 ÷ 2	18 ÷ 2	20 ÷ 5
10 ÷ 2	20 ÷ 2	25 ÷ 5

30 ÷ 5	10 ÷ 10	60 ÷ 10
35 ÷ 5	20 ÷ 10	70 ÷ 10
40 ÷ 5	30 ÷ 10	80 ÷ 10
45 ÷ 5	40 ÷ 10	90 ÷ 10
50 ÷ 5	50 ÷ 10	100 ÷ 10

3 ÷ 3	18 ÷ 3	6 ÷ 6
6 ÷ 3	21 ÷ 3	12 ÷ 6
9 ÷ 3	24 ÷ 3	18 ÷ 6
12 ÷ 3	27 ÷ 3	24 ÷ 6
15 ÷ 3	30 ÷ 3	30 ÷ 6

36 ÷ 6	9 ÷ 9	54 ÷ 9
42 ÷ 6	18 ÷ 9	63 ÷ 9
48 ÷ 6	27 ÷ 9	72 ÷ 9
54 ÷ 6	36 ÷ 9	81 ÷ 9
60 ÷ 6	45 ÷ 9	90 ÷ 9

4 ÷ 4	24 ÷ 4	7 ÷ 7
8 ÷ 4	28 ÷ 4	14 ÷ 7
12 ÷ 4	32 ÷ 4	21 ÷ 7
16 ÷ 4	36 ÷ 4	28 ÷ 7
20 ÷ 4	40 ÷ 4	35 ÷ 7

42 ÷ 7	8 ÷ 8	48 ÷ 8
49 ÷ 7	16 ÷ 8	56 ÷ 8
56 ÷ 7	24 ÷ 8	64 ÷ 8
63 ÷ 7	32 ÷ 8	72 ÷ 8
70 ÷ 7	40 ÷ 8	80 ÷ 8

Division Spin

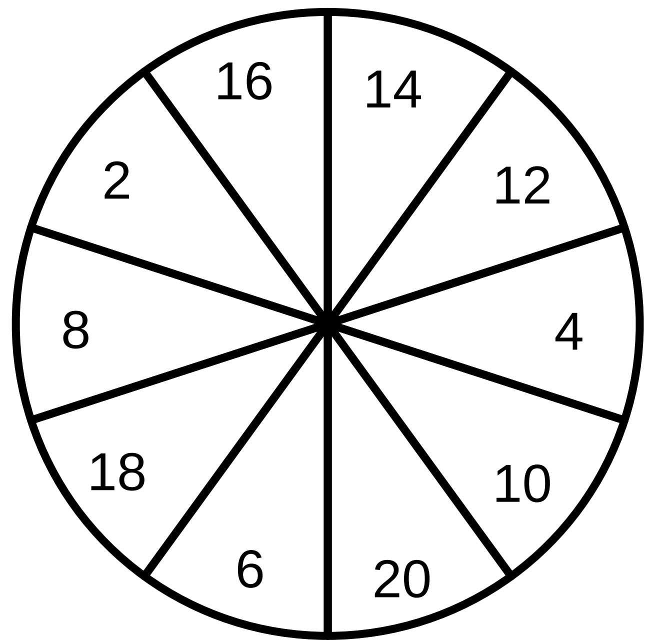
÷ 2

Materials: small paper clip, pencil, 20 small counters for each player, Division Spin board

1. Work with a partner. Take turns to spin a paper clip on the spinner using a pencil. Divide the number that the paper clip lands on by two. 

2. Complete the math talk sentence. Find the quotient on the board and cover it with a counter.

___ divided by 2 equals ___.



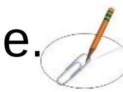
3. Each space on the board can only be covered once. Continue playing until one player has placed all 20 counters on the board.

Division Spin

÷ 3

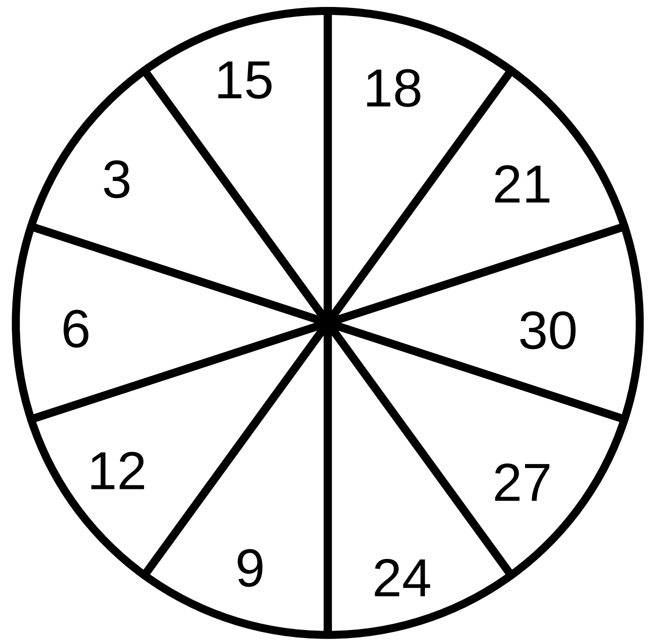
Materials: small paper clip, pencil, 20 small counters for each player, Division Spin board

---

1. Work with a partner. Take turns to spin a paper clip on the spinner using a pencil. Divide the number that the paper clip lands on by three. 

2. Complete the math talk sentence. Find the quotient on the board and cover it with a counter.

___ divided by 3 equals ___.



3. Each space on the board can only be covered once. Continue playing until one player has placed all 20 counters on the board.

Division Spin

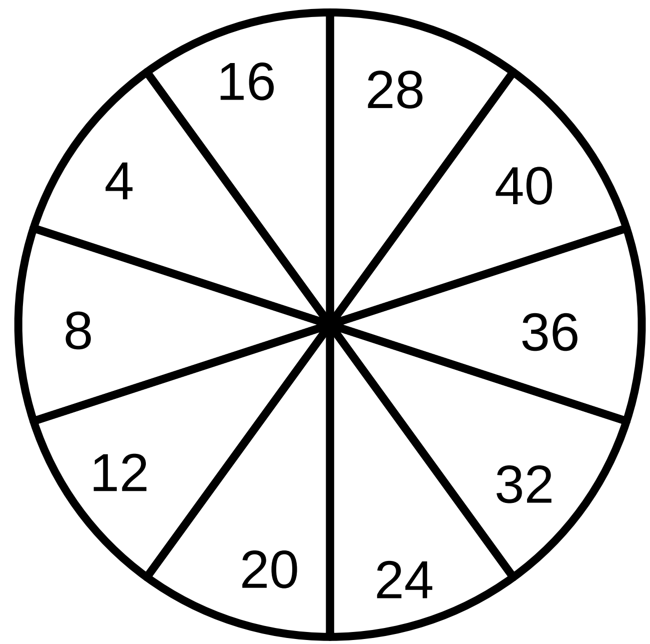
÷ 4

Materials: small paper clip, pencil, 20 small counters for each player, Division Spin board

1. Work with a partner. Take turns to spin a paper clip on the spinner using a pencil. Divide the number that the paper clip lands on by four. 

2. Complete the math talk sentence. Find the quotient on the board and cover it with a counter.

___ divided by 4 equals ___.



3. Each space on the board can only be covered once. Continue playing until one player has placed all 20 counters on the board.

Division Spin

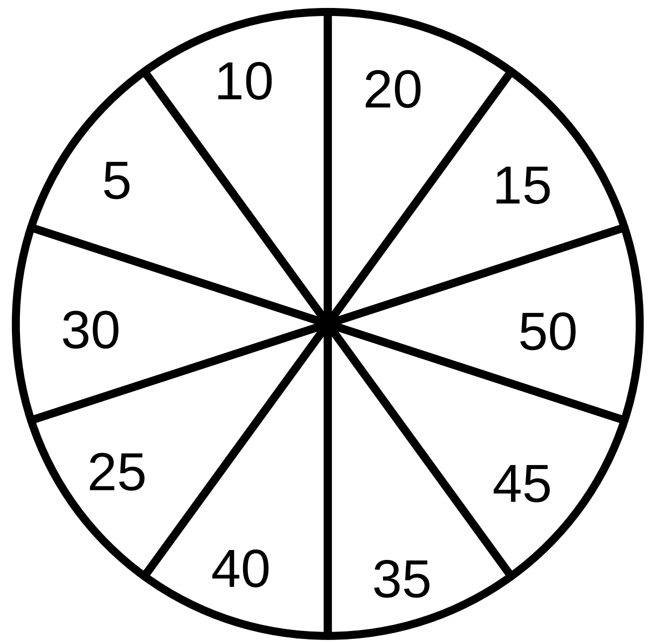
÷ 5

Materials: small paper clip, pencil, 20 small counters for each player, Division Spin board

1. Work with a partner. Take turns to spin a paper clip on the spinner using a pencil. Divide the number that the paper clip lands on by five.

2. Complete the math talk sentence. Find the quotient on the board and cover it with a counter.

___ divided by 5 equals ___.



3. Each space on the board can only be covered once. Continue playing until one player has placed all 20 counters on the board.

Division Spin

÷ 6

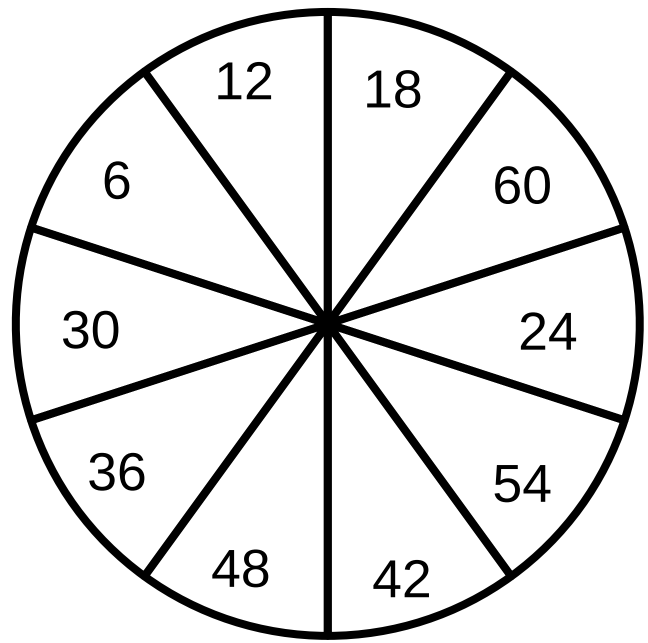
Materials: small paper clip, pencil, 20 small counters for each player, Division Spin board

---

1. Work with a partner. Take turns to spin a paper clip on the spinner using a pencil. Divide the number that the paper clip lands on by six. 

2. Complete the math talk sentence. Find the quotient on the board and cover it with a counter.

___ divided by 6 equals ___.



3. Each space on the board can only be covered once. Continue playing until one player has placed all 20 counters on the board.

Division Spin

÷ 7

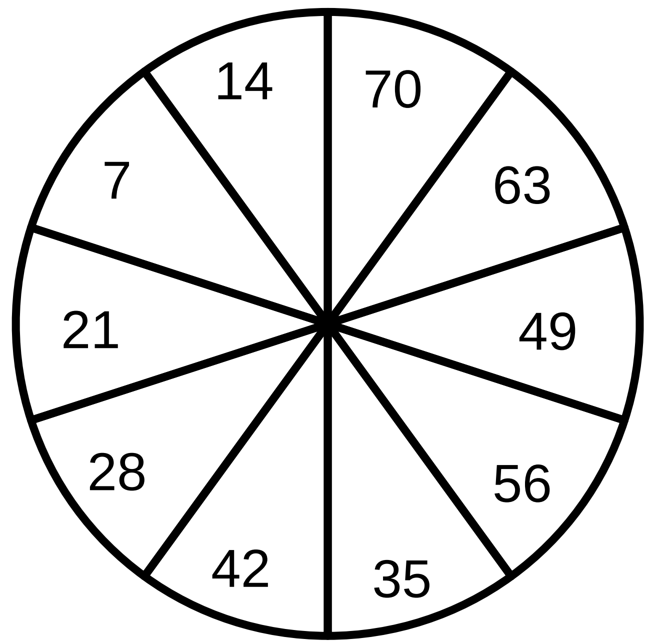
Materials: small paper clip, pencil, 20 small counters for each player, Division Spin board

---

1. Work with a partner. Take turns to spin a paper clip on the spinner using a pencil. Divide the number that the paper clip lands on by seven. 

2. Complete the math talk sentence. Find the quotient on the board and cover it with a counter.

___ divided by 7 equals ___.



3. Each space on the board can only be covered once. Continue playing until one player has placed all 20 counters on the board.

Division Spin

÷ 8

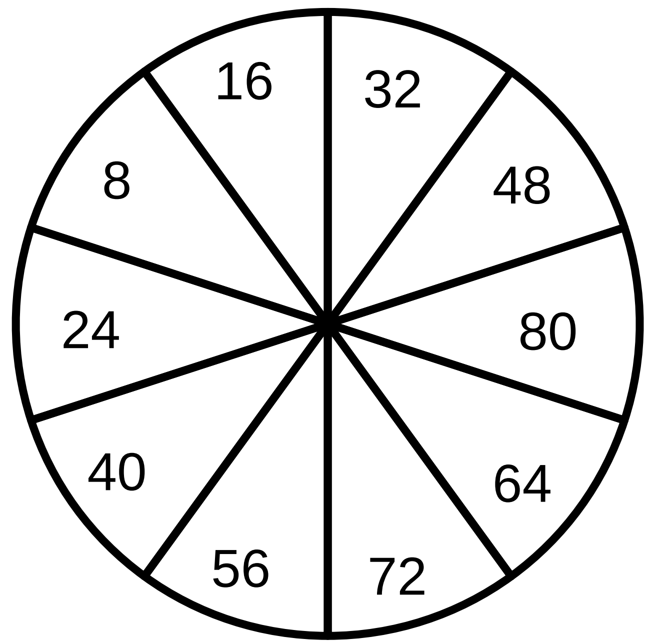
Materials: small paper clip, pencil, 20 small counters for each player, Division Spin board

---

1. Work with a partner. Take turns to spin a paper clip on the spinner using a pencil. Divide the number that the paper clip lands on by eight.

2. Complete the math talk sentence. Find the quotient on the board and cover it with a counter.

___ divided by 8 equals ___.



3. Each space on the board can only be covered once. Continue playing until one player has placed all 20 counters on the board.

Division Spin

÷ 9

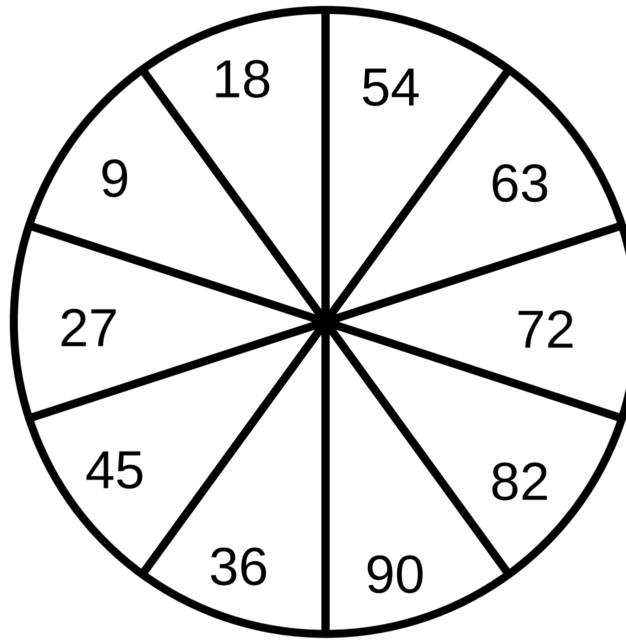
Materials: small paper clip, pencil, 20 small counters for each player, Division Spin board

---

1. Work with a partner. Take turns to spin a paper clip on the spinner using a pencil. Divide the number that the paper clip lands on by nine.

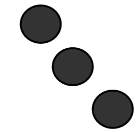
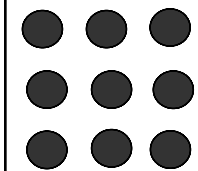
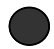
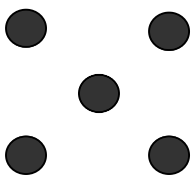
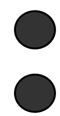
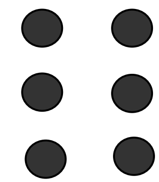
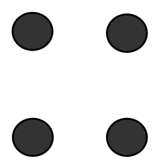
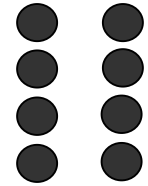
2. Complete the math talk sentence. Find the quotient on the board and cover it with a counter.

___ divided by 9 equals ___.



3. Each space on the board can only be covered once. Continue playing until one player has placed all 20 counters on the board.

Division Spin Board

nine	4	9	10	5	6		1
7	one	8	four	2		six	3
two	3		1	five	4	seven	1
	5	three	6		2	8	
10	9	7		eight	4	nine	ten
five	nine	3	7	6		ten	2

Division Bump! (÷ 2)

Players: 2 **Materials:** 16 snap cubes (8 each of 2 different colors), numeral cards 1-10

Each player takes 8 snap cubes of one color. Take turns to flip over a numeral card and place a snap cube on the expression with a matching quotient. If your partner's cube is on the expression BUMP it off. If your cube is on the expression link the two cubes together to FREEZE the spot. Say and write the division fact. Keep going until one player has used all 8 cubes.

2 ÷ 2	14 ÷ 2	16 ÷ 2	
8 ÷ 2	10 ÷ 2	12 ÷ 2	
18 ÷ 2	4 ÷ 2	6 ÷ 2	20 ÷ 2

Division Bump! (÷ 3)

Players: 2 **Materials:** 16 snap cubes (8 each of 2 different colors), numeral cards 1-10

Each player takes 8 snap cubes of one color. Take turns to flip over a numeral card and place a snap cube on the expression with a matching quotient. If your partner's cube is on the expression BUMP it off. If your cube is on the expression link the two cubes together to FREEZE the spot. Say and write the division fact. Keep going until one player has used all 8 cubes.

$3 \div 3$	$18 \div 3$	$21 \div 3$	
$6 \div 3$	$15 \div 3$	$24 \div 3$	
$12 \div 3$	$9 \div 3$	$30 \div 3$	$27 \div 3$

Division Bump! (÷ 4)

Players: 2 **Materials:** 16 snap cubes (8 each of 2 different colors), numeral cards 1-10

Each player takes 8 snap cubes of one color. Take turns to flip over a numeral card and place a snap cube on the expression with a matching quotient. If your partner's cube is on the expression BUMP it off. If your cube is on the expression link the two cubes together to FREEZE the spot. Say and write the division fact. Keep going until one player has used all 8 cubes.

$4 \div 4$	$20 \div 4$	$24 \div 4$	
$8 \div 4$	$16 \div 4$	$28 \div 4$	
$12 \div 4$	$40 \div 4$	$32 \div 4$	$36 \div 4$

Division Bump! (÷ 5)

Players: 2 **Materials:** 16 snap cubes (8 each of 2 different colors), numeral cards 1-10

Each player takes 8 snap cubes of one color. Take turns to flip over a numeral card and place a snap cube on the expression with a matching quotient. If your partner's cube is on the expression BUMP it off. If your cube is on the expression link the two cubes together to FREEZE the spot. Say and write the division fact. Keep going until one player has used all 8 cubes.

$5 \div 5$	$10 \div 5$	$20 \div 5$	
$15 \div 5$	$35 \div 5$	$25 \div 5$	
$50 \div 5$	$40 \div 5$	$45 \div 5$	$30 \div 5$

Division Bump! (÷ 6)

Players: 2 **Materials:** 16 snap cubes (8 each of 2 different colors), numeral cards 1-10

Each player takes 8 snap cubes of one color. Take turns to flip over a numeral card and place a snap cube on the expression with a matching quotient. If your partner's cube is on the expression BUMP it off. If your cube is on the expression link the two cubes together to FREEZE the spot. Say and write the division fact. Keep going until one player has used all 8 cubes.

6 ÷ 6	12 ÷ 6	24 ÷ 6	
30 ÷ 6	54 ÷ 6	48 ÷ 6	
60 ÷ 6	36 ÷ 6	42 ÷ 6	18 ÷ 6

Division Bump! (÷ 7)

Players: 2 **Materials:** 16 snap cubes (8 each of 2 different colors), numeral cards 1-10

Each player takes 8 snap cubes of one color. Take turns to flip over a numeral card and place a snap cube on the expression with a matching quotient. If your partner's cube is on the expression BUMP it off. If your cube is on the expression link the two cubes together to FREEZE the spot. Say and write the division fact. Keep going until one player has used all 8 cubes.

7 ÷ 7	14 ÷ 7	35 ÷ 7
21 ÷ 7	49 ÷ 7	42 ÷ 7

28 ÷ 7	56 ÷ 7	63 ÷ 7	70 ÷ 7

Division Bump! (÷ 8)

Players: 2 **Materials:** 16 snap cubes (8 each of 2 different colors), numeral cards 1-10

Each player takes 8 snap cubes of one color. Take turns to flip over a numeral card and place a snap cube on the expression with a matching quotient. If your partner's cube is on the expression BUMP it off. If your cube is on the expression link the two cubes together to FREEZE the spot. Say and write the division fact. Keep going until one player has used all 8 cubes.

8 ÷ 8	80 ÷ 8	16 ÷ 8	
72 ÷ 8	48 ÷ 8	32 ÷ 8	
64 ÷ 8	56 ÷ 8	40 ÷ 8	24 ÷ 8

Division Bump! (÷ 9)

Players: 2 **Materials:** 16 snap cubes (8 each of 2 different colors), numeral cards 1-10

Each player takes 8 snap cubes of one color. Take turns to flip over a numeral card and place a snap cube on the expression with a matching quotient. If your partner's cube is on the expression BUMP it off. If your cube is on the expression link the two cubes together to FREEZE the spot. Say and write the division fact. Keep going until one player has used all 8 cubes.

9 ÷ 9	18 ÷ 9	36 ÷ 9
63 ÷ 9	45 ÷ 9	27 ÷ 9

54 ÷ 9	81 ÷ 9	90 ÷ 9	72 ÷ 9

Division Bump! (÷ 10)

Players: 2 **Materials:** 16 snap cubes (8 each of 2 different colors), numeral cards 1-10

Each player takes 8 snap cubes of one color. Take turns to flip over a numeral card and place a snap cube on the expression with a matching quotient. If your partner's cube is on the expression BUMP it off. If your cube is on the expression link the two cubes together to FREEZE the spot. Say and write the division fact. Keep going until one player has used all 8 cubes.

10 ÷ 10	20 ÷ 10	40 ÷ 10	
60 ÷ 10	100 ÷ 10	50 ÷ 10	
70 ÷ 10	80 ÷ 10	90 ÷ 10	30 ÷ 10

Word Problems: Two-Step

Materials: Word Problems: Two-Step cards (Set 1)

---

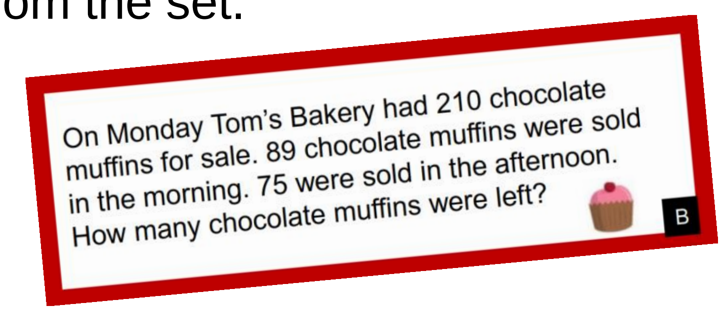
1. Work with a partner. Choose five word problems that you will both solve.
2. Solve the word problems independently. For each problem:

   a) write an equation with a symbol for the unknown number

   b) draw a quick picture to model the problem

   c) answer the question in a complete sentence

3. After completing five problems share your work with a partner. Explain how you solved each problem using accurate mathematical vocabulary.
4. Repeat with another five problems from the set.



Word Problems: Two-Step – Set 1

A greengrocer had 115 green apples and 83 red apples. On Monday he sold 72 apples. How many apples did the greengrocer have left?

A

On Monday Tom’s Bakery had 210 chocolate muffins for sale. 89 chocolate muffins were sold in the morning. 75 were sold in the afternoon. How many chocolate muffins were left?

B

A truck driver needed to deliver 750 sacks of flour. He delivered 235 sacks to a shop on Smith street and 367 sacks to a shop on Bent Avenue. How many more sacks did the truck driver need to deliver?

C

Peter had 150 crayons. He gave 25 crayons to his brother and 32 to a friend. How many crayons did Peter have left?

D

After spending $55.00 on a soccer ball and $124.00 on a pair of shoes Tom had $40.00 left in his wallet. How much money did Tom have to begin with?

E

A school had 146 green and 152 yellow tennis balls. 250 tennis balls were stored in the gymnasium and the rest were stored in classrooms. How many tennis balls were stored in classrooms?

F

Dad has 400 books to pack into boxes. On Monday he packs 222 books and on Tuesday he packs 148 books. How many more books does dad need to pack into boxes?

G

There are 157 girls and 201 boys in Grade 3 at Sunset Park Elementary School. 244 of the 3^{rd} graders have a brother. How many 3^{rd} graders do not have a brother?

H

A shoe factory produced 345 pairs of shoes on Monday and 354 pairs on Tuesday. 673 pairs were delivered to a store. How many pairs were not delivered to the store?

I

A farmer sold $145.00 worth of pumpkins and $273.00 worth of carrots at the market. Before going home he bought a new ladder for $89.00. How much money did he have left?

J

Maria and Nicky picked tomatoes in their garden. Maria picked 149 tomatoes and Nicky picked 162. They combined their tomatoes and used 52 of them to make pasta sauce. How many tomatoes did they have left?

K

James wants to buy a soccer ball for $95.00 and a bike for $349.00. If he only has $375.00 how much more money does he need to save?

L

Mrs. Green had 560 lemons. She sold 470 lemons at the market and threw away 34 rotten lemons. How many lemons did Mrs. Green have left?

M

A farmer has 840 kilograms of grain. He feeds 240 kilograms to his sheep and 360 kilograms to his pigs. How much grain does the farmer have left?

N

A farmer milks his cows twice a day. On Monday morning he got 365 liters of milk. On Monday evening he got 390 liters of milk. If he sold 565 gallons of milk to the ice cream factory, how many liters of milk did he have left?

O

Peter and James had a total of $440. After spending $60 on a microscope, Peter has $235 left. How much money did James have?

P

Word Problems: Two-Step

Materials: Word Problems: Two-Step cards (Set 2)

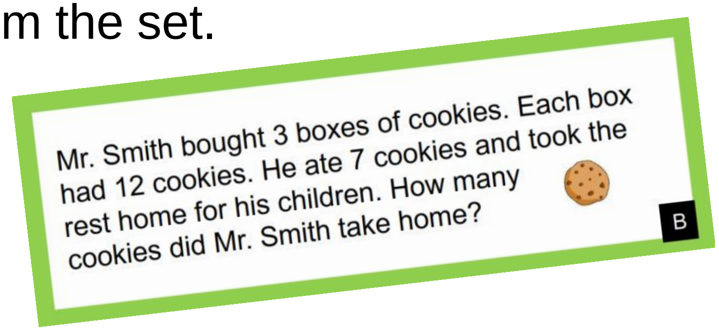
1. Work with a partner. Choose five word problems that you will both solve.
2. Solve the word problems independently. For each problem:

   a) write an equation with a symbol for the unknown number

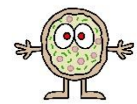
   b) draw a quick picture to model the problem

   c) answer the question in a complete sentence

3. After completing five problems share your work with a partner. Explain how you solved each problem using accurate mathematical vocabulary.
4. Repeat with another five problems from the set.



A teacher ordered 4 large pizzas for a class party. Each pizza had 8 slices. At the end of the party 5 slices were left. How many pizza slices were eaten?



A

Mr. Smith bought 3 boxes of cookies. Each box had 12 cookies. He ate 7 cookies and took the rest home for his children. How many cookies did Mr. Smith take home?

B

At snack time Leah ate 3 bunches of grapes. Each bunch had 9 grapes. Jenna ate 15 grapes. Who ate more grapes? How many more?

C

At a toy store Ben counted 9 rows of model cars on a shelf. Each row had 8 cars. By the end of the day 19 cars had been sold. How many model cars were left on the shelf?

D

Marcus had 100 crayons. He gave away 55 crayons and shared the remaining crayons equally among 9 bags. How many crayons did Marcus put in each bag?

E

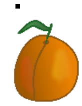
Rosa made 56 cupcakes. She packed the cupcakes equally into trays of 8 and sold them for $4.00 per tray. How much money will Rosa receive if she sells all the trays?

F

A farmer had 20 ducks and 15 pigs. How many feet did the animals have in all?

G

Mr. Murray had 9 boxes. He packed 8 oranges in each box. He had 4 oranges left after packing. How many oranges did he have altogether?



H

I have 99 cents. I buy six pencils for nine cents each. How much money do I have left?

I

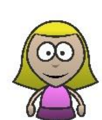
Tom has a box of 30 chocolates. He eats 6 chocolates and places the rest into 3 bags for his sisters. If Tom shares the chocolates equally, how many does he put in each bag?

J

Jack sold twice as many tickets to the school play as Lisa. Lisa sold 22 tickets. How many tickets did Lisa and Jack sell in all?

K

In a third grade class there are 9 boys. There are twice as many girls as boys. How many students are in the class in all?



L

Jose bought 4 notebooks for 80 cents each. If Jose gave the cashier $5.00, how much change should he receive?

M

A greengrocer packed 3 boxes of 6 apples and 6 boxes of 3 bananas. How many pieces of fruit did the greengrocer pack in all?

N

Mrs. James had 72 apples. She gave 22 apples to her sister and packed the remaining apples equally into trays of 10. How many trays did she need?

O

Leah baked 9 trays of chocolate cookies. Each tray had 6 cookies. Ben baked 48 raisin cookies. How many cookies did they bake in all?

P

Roll a Rule

Roll a number cube to find out what your rule will be. Next, choose a two digit even number and write it in the **bold** rectangle. Complete the number pattern. Repeat.

Rule					
+					

Rule					
+					

Rule					
+					

Roll a number cube to find out what your rule will be. Next, choose a two digit odd number and write it in the **bold** rectangle. Complete the number pattern. Repeat.

Rule					
+					

Rule					
+					

Rule					
+					

Ver. 2

Roll a Rule

Choose a two digit number and write it in the **bold** rectangle. Roll a number cube twice. The first roll tells how many to add for rule one. The second roll tells how many to subtract for rule two. Complete the pattern. Repeat.

Rule

Rule

Rule

Rule

Rule

Rule

Rule

Rule

*Create another two-step number pattern on the back of this page with a sequence of ten numbers. Start with a three digit number. Create your own rules.

Create a Number Pattern

1. Create two different number patterns, one in which the numbers increase and the other in which the numbers decrease.

2. Record ten terms in each sequence.

3. Explain the rule for each pattern.

Example:

1, 5, 9, 13, 17, 21, 25, 29, 33, 37 ……

The rule for my first pattern is add 4. Each term in the sequence increases by 4.
The rule for my second pattern is subtract 3. Each term in the sequence decreases by 3.

50, 47, 44, 41, 38, 35, 32, 29, 26, 23 ……

4. What would the 15th term in each pattern be? Explain your thinking.

Create a Number Pattern

1. Create a number pattern with a two-step rule that uses both addition and subtraction.

2. Include 10 terms in the sequence.

3. Name the two-step rule for your pattern.

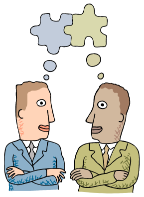
The two-step rule for my pattern is add 5, subtract 2.

Example:

32, 37, 35, 40, 38, 43, 41, 46, 44, 49 ….

4. What will the 15th term in your pattern be? Explain.

Odd and Even Sums



1. Work with a partner. Investigate whether the sum is even or odd when you add the following:

   a) odd number + even number

   b) odd number + odd number

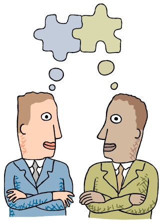
   c) even number + even number

2. Try at least ten pairs of numbers for each investigation.

3. Explain your findings.

4. When might this information be useful?

Odd and Even Products



1. Work with a partner. Investigate whether the product is even or odd when you multiply the following:

   a) odd number x even number

   b) odd number x odd number

   c) even number x even number

2. Try at least ten pairs of numbers for each investigation.

3. Explain your findings.

4. When might this information be useful?

+	0	1	2	3	4	5	6	7	8	9
0	0	1	2	3	4	5	6	7	8	9
1	1	2	3	4	5	6	7	8	9	10
2	2	3	4	5	6	7	8	9	10	11
3	3	4	5	6	7	8	9	10	11	12
4	4	5	6	7	8	9	10	11	12	13
5	5	6	7	8	9	10	11	12	13	14
6	6	7	8	9	10	11	12	13	14	15
7	7	8	9	10	11	12	13	14	15	16
8	8	9	10	11	12	13	14	15	16	17
9	9	10	11	12	13	14	15	16	17	18

Patterns in the Addition Table

Materials: copies of addition table

1. Explore the addition table. What do you notice about:

   - the diagonals going up, from left to right?
   - the diagonals going down, from left to right?

2. Draw a square around any nine numbers in the table. What do you notice about the sum of the two diagonals and the sum of the middle three numbers vertically and horizontally?

3. Double the middle number in any square of nine numbers. Compare this sum to the sum of any pair of opposite corners in the square. What do you notice?

+	0	1	2	3	4	5	6	7	8	9
0	0	1	2	3	4	5	6	7	8	9
1	1	2	3	4	5	6	7	8	9	10
2	2	3	4	5	6	7	8	9	10	11
3	3	4	5	6	7	8	9	10	11	12
4	4	5	6	7	8	9	10	11	12	13
5	5	6	7	8	9	10	11	12	13	14
6	6	7	8	9	10	11	12	13	14	15
7	7	8	9	10	11	12	13	14	15	16
8	8	9	10	11	12	13	14	15	16	17
9	9	10	11	12	13	14	15	16	17	18

Patterns in the Multiplication Table

×	0	1	2	3	4	5	6	7	8	9	10
0	0	0	0	0	0	0	0	0	0	0	0
1	0	1	2	3	4	5	6	7	8	9	10
2	0	2	4	6	8	10	12	14	16	18	20
3	0	3	6	9	12	15	18	21	24	27	30
4	0	4	8	12	16	20	24	28	32	36	40
5	0	5	10	15	20	25	30	35	40	45	50
6	0	6	12	18	24	30	36	42	48	54	60
7	0	7	14	21	28	35	42	49	56	63	70
8	0	8	16	24	32	40	48	56	64	72	80
9	0	9	18	27	36	45	54	63	72	81	90
10	0	10	20	30	40	50	60	70	80	90	100

Materials: copies of multiplication table

1. Color all the multiples of 9 between 0 and 90 on a multiplication table. What do you notice about the sum of the digits in each product? Explain your thinking.

2. The product of any number multiplied by itself is called a **square number** (e.g. 6 x 6 = 36, so 36 is a square number). Color all the square numbers on the multiplication table. What do you notice about the squares you colored?

3. Look carefully at the multiplication table. Write about other patterns that you discover.

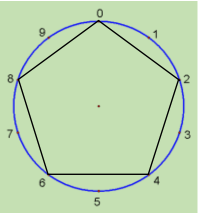
×	0	1	2	3	4	5	6	7	8	9	10
0	0	0	0	0	0	0	0	0	0	0	0
1	0	1	2	3	4	5	6	7	8	9	10
2	0	2	4	6	8	10	12	14	16	18	20
3	0	3	6	9	12	15	18	21	24	27	30
4	0	4	8	12	16	20	24	28	32	36	40
5	0	5	10	15	20	25	30	35	40	45	50
6	0	6	12	18	24	30	36	42	48	54	60
7	0	7	14	21	28	35	42	49	56	63	70
8	0	8	16	24	32	40	48	56	64	72	80
9	0	9	18	27	36	45	54	63	72	81	90
10	0	10	20	30	40	50	60	70	80	90	100

×	0	1	2	3	4	5	6	7	8	9	10
0	0	0	0	0	0	0	0	0	0	0	0
1	0	1	2	3	4	5	6	7	8	9	10
2	0	2	4	6	8	10	12	14	16	18	20
3	0	3	6	9	12	15	18	21	24	27	30
4	0	4	8	12	16	20	24	28	32	36	40
5	0	5	10	15	20	25	30	35	40	45	50
6	0	6	12	18	24	30	36	42	48	54	60
7	0	7	14	21	28	35	42	49	56	63	70
8	0	8	16	24	32	40	48	56	64	72	80
9	0	9	18	27	36	45	54	63	72	81	90
10	0	10	20	30	40	50	60	70	80	90	100

×	0	1	2	3	4	5	6	7	8	9	10
0	0	0	0	0	0	0	0	0	0	0	0
1	0	1	2	3	4	5	6	7	8	9	10
2	0	2	4	6	8	10	12	14	16	18	20
3	0	3	6	9	12	15	18	21	24	27	30
4	0	4	8	12	16	20	24	28	32	36	40
5	0	5	10	15	20	25	30	35	40	45	50
6	0	6	12	18	24	30	36	42	48	54	60
7	0	7	14	21	28	35	42	49	56	63	70
8	0	8	16	24	32	40	48	56	64	72	80
9	0	9	18	27	36	45	54	63	72	81	90
10	0	10	20	30	40	50	60	70	80	90	100

Patterns I found in the multiplication table:

Drawing Multiplication Patterns



Materials: rulers, recording sheets, enlarged circle diagrams numbered 0-9

---

1. Choose a number between 1 and 9. Color all multiples of this number on a hundred chart.

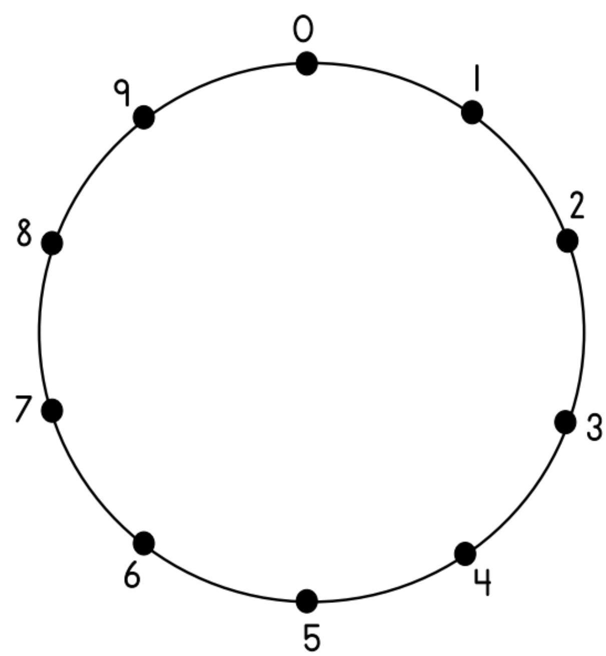
2. Write the multiplication facts to x10 for the number you chose. Write the digit in the ones place in each product.
   Example: If you record multiples of 3 write the ones digits 3, 6, 9, 2, 5, 8, 1, 4, 7, 0.

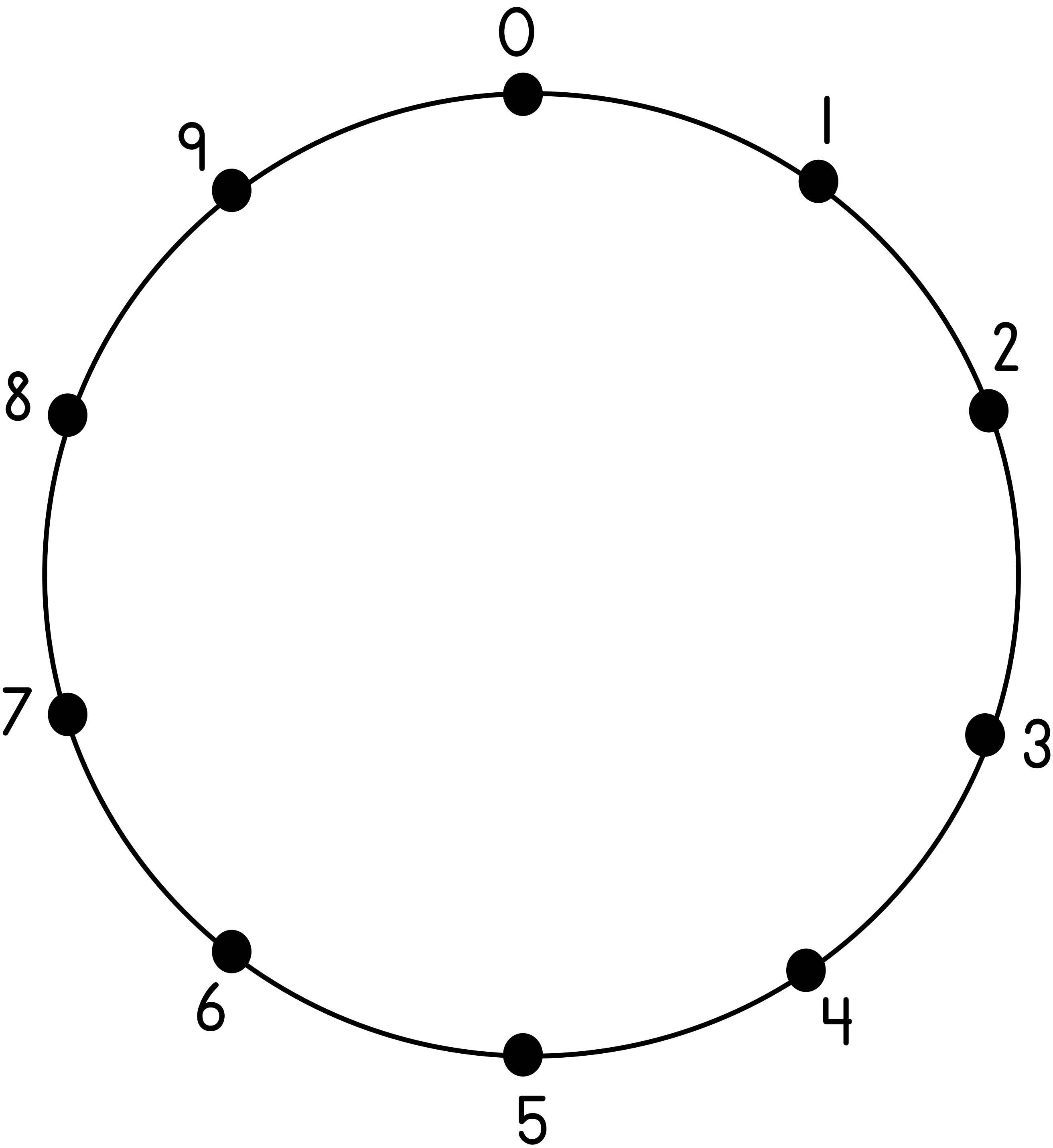
3. Put your pencil at zero on the circle diagram. Use a ruler to draw a line from zero to the first ones digit you recorded. Continue to connect the ones digits in order until you return to zero. Color your multiplication circle.
   Example: For multiples of 3 we start our pencil at 0 on the circle, then draw a line from 0 to 3, then from 3 to 6, then from 6 to 9, then from 9 to 2, then from 2 to 5, and so on.

4. Make circle patterns using other multiplication facts. Record your observations about the patterns you create. Which numbers create the same circle pattern? Do they create it the same way? Is there a relationship between the facts that create the same patterns?

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

Multiplication Fact	**Product**	**Ones Digit**




0
1
2
3
4
5
6
7
8
9

What's the Nearest Ten?

Materials: set of numeral cards (0-9) or 2 number cubes

4 3

1. Turn over 2 numeral cards (or roll 2 number cubes) to make a 2-digit number.

2. Identify the tens that your number falls between. Record the tens and the midpoint between them on a number line.

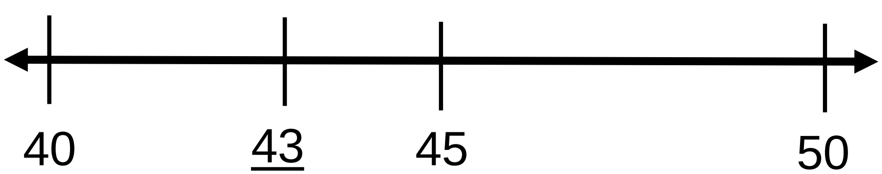
3. Plot your 2-digit number on the number line.

4. Which ten is your number closer to? Justify your reasoning.

5. Repeat five times.

6. Describe any patterns you find to determine when to round to the lesser ten or round to the next ten.

Example:



43 is between 40 and 50. It would round to 40 because it is closer to 40 than 50.

___ is between ___ and ___. It would round to ___ because it is closer to ___ than ___.

The tens that ___ falls between are ___ and ___. The closer ten is ___.

___ is between ___ and ___. It would round to ___ because it is closer to ___ than ___.

The tens that ___ falls between are ___ and ___. The closer ten is ___.

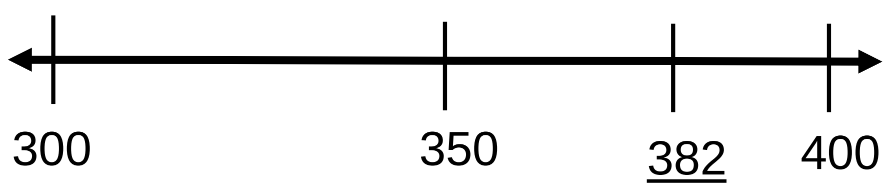
What's the Nearest Hundred?

Materials: set of numeral cards (0-9) or 3 number cubes

3 8 2

1. Turn over 3 numeral cards (or roll 3 number cubes) to make a 3-digit number.
2. Identify the hundreds that your number falls between. Record the hundreds and the midpoint between them on a number line.
3. Plot your 3-digit number on the number line.
4. Which hundred is your number closer to? Justify your reasoning.
5. Repeat five times.
6. Describe any patterns you find to determine when to round to the lesser hundred or round to the next hundred.

Example:



382 is between 300 and 400. It would round to 400 because it is closer to 400 than 300.

___ is between ___ and ___. It would round to ___ because it is closer to ___ than ___.

The hundreds that ___ falls between are ___ and ___. The closer hundred is ___.

___ is between ___ and ___. It would round to ___ because it is closer to ___ than ___.

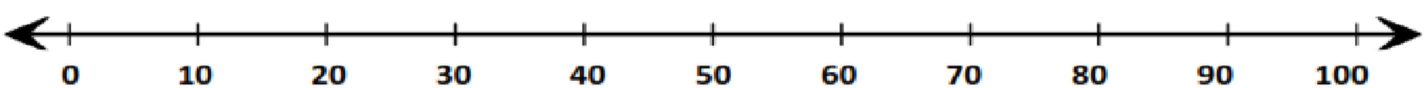
The hundreds that ___ falls between are ___ and ___. The closer hundred is ___.

Round to the Nearest Ten

Directions: Place a stack of numeral cards (0-9) facedown on the table. Each player takes two cards from the top of the stack and places them on the board in the order drawn to make a 2-digit number. Each player rounds his/her 2-digit number to the nearest ten and explains his/her thinking. The player with the largest numbers when rounded takes all four cards. Play continues until all cards have been picked up. The player with the most cards wins the round.

Player 1

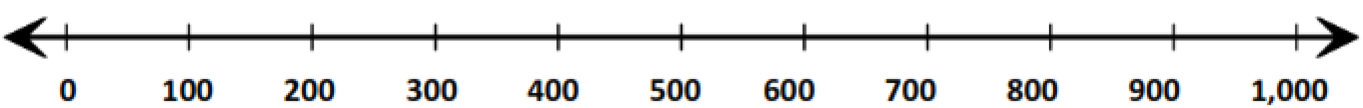
Player 2



Round to the Nearest Hundred

Directions: Place a stack of numeral cards (0-9) facedown on the table. Each player takes three cards from the top of the stack and places them on the board in the order drawn to make a 2-digit number. Each player rounds his/her 3-digit number to the nearest hundred and explains his/her thinking. The player with the largest numbers when rounded takes all six cards. Play continues until all cards have been picked up. The player with the most cards wins the round.

Player 1	Player 2



The number ___ is between ___ and ___. It is closer to ___ so is rounded to ___.

The number ___ is between ___ and ___. It is closer to ___ so is rounded to ___.

___ is between ___ and ___. The midpoint between ___ and ___ is ___. ___ is closer to ___ and therefore is rounded to ___.

___ is between ___ and ___. The midpoint between ___ and ___ is ___. ___ is closer to ___ and therefore is rounded to ___.

Estimating Sums

Materials: numeral cards (0-9)

---

1. Turn over four cards to make two 2-digit numbers.

2. Estimate the sum of the two numbers by rounding each number to the nearest ten and adding them mentally.

3. Repeat with other pairs of 2-digit numbers.

Example:

$$\begin{array}{rl} & \boxed{2}\,\boxed{2} \longrightarrow 20 \qquad 20 + 70 = 90 \\ + & \boxed{6}\,\boxed{8} \longrightarrow 70 \end{array}$$

Estimating Sums

Materials: numeral cards (0-9)

---

1. Turn over six cards to make two 3-digit numbers.

2. Estimate the sum of the two numbers by rounding each number to the nearest hundred and adding them mentally.

3. Repeat with other pairs of 3-digit numbers.

Example:

	4	1	9	→	400	400 + 300 = 700
+	2	9	4	→	300	

Estimating Differences

Materials: numeral cards (0-9)

---

1. Turn over four cards to make two 2-digit numbers.

2. Estimate the difference between the two numbers by rounding each number to the nearest ten and subtracting mentally.

3. Repeat with other pairs of 2-digit numbers.

Example:

$$\begin{array}{rl} & \boxed{7}\,\boxed{9} \longrightarrow 80 \qquad 80 - 30 = 50 \\ - & \boxed{2}\,\boxed{8} \longrightarrow 30 \end{array}$$

Estimating Differences

Materials: numeral cards (0-9)

---

1. Turn over six cards to make two 3-digit numbers.

2. Estimate the difference between the two numbers by rounding each number to the nearest hundred and subtracting mentally.

3. Repeat with other pairs of 3-digit numbers.

Example:

	$\boxed{4}$	$\boxed{1}$	$\boxed{9}$	$\longrightarrow$	400		400 - 300 = 100
-	$\boxed{2}$	$\boxed{9}$	$\boxed{4}$	$\longrightarrow$	300		

Close to Zero

$$\begin{array}{r} \boxed{4}\,\boxed{5}\,\boxed{8} \\ -\ \boxed{4}\,\boxed{3}\,\boxed{1} \end{array}$$

Materials: numeral cards 0-9 (4 of each), calculator

Number of Players: 2

---

1. Shuffle the cards and place them facedown in a stack.

2. Take six cards each from the top of the stack and use them to create a subtraction problem with two 3-digit numbers. Arrange your cards to make a difference as close to zero as possible.

3. Record and solve your subtraction problem.

4. Use a calculator to check each other's work. The player with the difference closest to zero scores one point.

5. The player with the most points after five rounds wins the game.

My problem was ___ minus ___. The difference between ___ and ___ is ___.

My problem was ___ minus ___. The difference between ___ and ___ is ___.

My problem was ___ minus ___. The difference between ___ and ___ is ___.

My problem was ___ minus ___. The difference between ___ and ___ is ___.

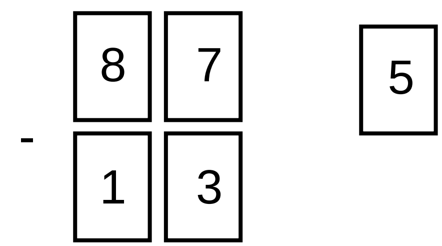
Add the Difference

Materials: numeral cards (0-9), calculator **Number of Players:** 2

1. Shuffle the cards and place them facedown in a pile. Take five cards each from the top of the pile.

2. Select four cards to keep and return one card to the bottom of the pile. Arrange your four cards to make two 2-digit numbers and calculate the difference between them. This is your score for the round.

Example: Tom picks up 1, 5, 8, 7 and 3. He returns 5 to the bottom of the pile and arranges the four cards to make 87 – 13. The difference between 87 and 13 is 74, so Tom scores 74 points for the round.



3. Play another round. Calculate the difference between your two 2-digit numbers and add this number to your score. Use a calculator to check your opponent's work.

4. Continue to make 2-digit numbers, calculate the difference between them and add this number to your score. The first player to reach a score of 500 points wins the game.

3-Digit Addition Split

Materials: Addition Split Board (3-digit + 3-digit)

---

1. Choose a line of four problems from the Addition Split board (vertically, horizontally, or diagonally).

2. Solve each problem by decomposing the addends into hundreds, tens and ones before adding. Show your work.

Example 1: $\boxed{146 + 235}$

$$\begin{array}{r} 100 + 40 + 6 \\ + \underline{200 + 30 + 5} \\ 300 + 70 + 11 = 381 \end{array}$$

Example 2: $\boxed{186 + 235}$

$$\begin{array}{r} 100 + 80 + 6 \\ \underline{+ 200 + 30 + 5} \\ 300 + 110 + 11 = 421 \end{array}$$

3. Repeat with another line of four problems.

3-Digit Addition Split

112 + 171	132 + 263	151 + 212	134 + 254
243 + 233	252 + 134	244 + 132	255 + 133
331 + 517	332 + 516	333 + 516	334 + 515
431 + 316	432 + 317	433 + 315	435 + 314

3-Digit Addition Split

122 + 179	136 + 267	155 + 245	164 + 229
245 + 328	257 + 234	264 + 128	218 + 274
339 + 447	352 + 338	489 + 311	337 + 457
474 + 327	363 + 428	442 + 429	417 + 335

3-Digit Addition Split

142 + 179	136 + 287	155 + 265	164 + 259
245 + 298	257 + 364	264 + 278	258 + 374
339 + 487	352 + 378	399 + 311	337 + 489
474 + 347	463 + 368	482 + 349	496 + 335

3-Digit Subtraction Split

Materials: Subtraction Split Boards (3-digit - 3-digit)

---

1. Choose a line of four problems from the Subtraction Split board (vertically, horizontally, or diagonally).

2. Solve each problem by decomposing the addends into hundreds, tens and ones before subtracting. Show your work. Sometimes you will need to split the larger number so that each part is larger than each part of the smaller number.

Example 1: $\boxed{764 - 436}$

$$\begin{array}{r} 700 + 60 + 4 \\ -\ 400 + 30 + 6 \\ \hline \end{array}$$

becomes

$$\begin{array}{r} \overset{50}{\cancel{60}} + \mathbf{1}4 \\ 700 +   \\ -\ 400 + 30 + 6 \\ \hline 300 + 20 + 8 = 328 \end{array}$$

Example 2: $\boxed{734 - 447}$

$$\begin{array}{r} 700 + 30 + 4 \\ -\ 400 + 40 + 7 \\ \hline \end{array}$$

becomes

$$\begin{array}{r} \overset{600}{\cancel{700}} + \overset{120}{\cancel{30}} + \mathbf{1}4 \\ -\ 400 + 40 + 7 \\ \hline 200 + 80 + 7 = 287 \end{array}$$

3. Repeat with another line of four problems.

3-Digit Subtraction Split

268 - 136	478 - 255	297 - 145	466 - 245
549 - 236	688 - 256	787 - 344	956 - 233
446 - 222	898 - 556	487 - 334	258 - 134
549 - 338	967 - 756	649 - 232	656 - 232

3-Digit Subtraction Split

563 - 236	694 - 256	783 - 344	962 - 233
573 - 256	684 - 256	766 - 347	961 - 233
481 - 222	895 - 557	464 - 337	292 - 134
558 - 339	957 - 729	645 - 226	686 - 239

3-Digit Subtraction Split

523 - 136	644 - 256	723 - 344	922 - 233
547 - 258	664 - 286	756 - 357	961 - 243
431 - 252	875 - 586	562 - 375	252 - 164
748 - 369	937 - 758	645 - 256	656 - 289

Doubling to 1000

1. Choose one of these numbers: 2, 3, 5, or 6.

2. Double the number you chose.

3. Double the sum.

4. Keep on doubling until you get a sum that is greater than 1,000.

5. How close to 1,000 is the number you reached?

2 + 2 = 4
4 + 4 = 8
8 + 8 = 16
16 + 16 = ?

Multiples of Ten Multiply

Materials: set of numeral cards (0-9), counters **Number of Players:** 2

---

1. Shuffle the cards and place them face down in a stack. Players flip over two cards each from the top of the stack and place a zero after the second digit to make a 1 x 2-digit multiplication problem.

2. Multiply the two factors mentally. Explain your thinking.

Example: Tom turns over 8 and 5. He places a zero after the 5 and multiplies 8 x 50 mentally for a product of 400.

8 x 5 0

I know that 8 x 5 is 40, so 8 x 5 tens equals 40 tens or 400.

3. The player with the largest product places a counter in his or her circle on the board.

4. Continue taking turns to turn over two cards, create 1 x 2-digit multiplication problems with multiples of ten and compare your products. The first player to have 10 counters in his or her circle wins the game.

Multiples of Ten Multiply

Player One

Player Two

I know that ___ times ___ is ___ , so ___ times ___ tens equals ___ tens or ___.

I know that ___ times ___ is ___ , so ___ times ___ tens equals ___ tens or ___.

___ times ___ means ___ groups of ___ tens, which is ___ tens or ___.

___ times ___ means ___ groups of ___ tens, which is ___ tens or ___.

Multiply One-Digit Numbers by Multiples of Ten

Materials: Multiply One-Digit Numbers by Multiples of Ten Board, base ten blocks

---

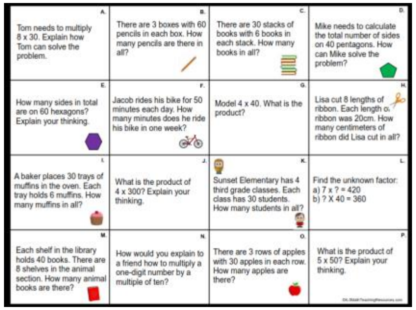
1. Work with a partner. Choose a line of four problems (vertically, horizontally, or diagonally) from the board that you will both solve.

2. Solve the problems independently. Use base ten blocks to make equal groups of tens.

3. Draw a quick picture of the base ten blocks. Draw a stick to represent a ten and a square to represent a hundred.

4. When you have solved the four problems share your solutions and strategies with your partner.

5. Repeat with another line of four problems.



A. Tom needs to multiply 8 x 30. Explain how Tom can solve the problem.	B. There are 3 boxes with 60 pencils in each box. How many pencils are there in all?	C. There are 30 stacks of books with 6 books in each stack. How many books in all?	D. Mike needs to calculate the total number of sides on 40 pentagons. How can Mike solve the problem?
E. How many sides in total are on 60 hexagons? Explain your thinking.	F. Jacob rides his bike for 50 minutes each day. How many minutes does he ride his bike in one week?	G. Model 4 x 40. What is the product?	H. Lisa cut 8 lengths of ribbon. Each length of ribbon was 20cm. How many centimeters of ribbon did Lisa cut in all?
I. A baker places 30 trays of muffins in the oven. Each tray holds 6 muffins. How many muffins in all?	J. What is the product of 4 x 300? Explain your thinking.	K. Sunset Elementary has 4 third grade classes. Each class has 30 students. How many students in all?	L. Find the unknown factor: a) 7 x ? = 420 b) ? X 40 = 360
M. Each shelf in the library holds 40 books. There are 8 shelves in the animal section. How many animal books are there?	N. How would you explain to a friend how to multiply a one-digit number by a multiple of ten?	O. There are 3 rows of apples with 30 apples in each row. How many apples are there?	P. What is the product of 5 x 50? Explain your thinking.

A.

Tom needs to multiply 8 x 30. Explain how Tom can solve the problem.

B.

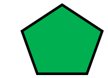
There are 3 boxes with 60 pencils in each box. How many pencils are there in all?

C.

There are 30 stacks of books with 6 books in each stack. How many books in all?

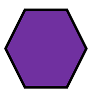
D.

Mike needs to calculate the total number of sides on 40 pentagons. How can Mike solve the problem?



E.

How many sides in total are on 60 hexagons? Explain your thinking.



F.

Jacob rides his bike for 50 minutes each day. How many minutes does he ride his bike in one week?

G.

Model 4 x 40. What is the product?

H.

Lisa cut 8 lengths of ribbon. Each length of ribbon was 20cm. How many centimeters of ribbon did Lisa cut in all?

I.

A baker places 30 trays of muffins in the oven. Each tray holds 6 muffins. How many muffins in all?

J.

What is the product of 4 x 300? Explain your thinking.

K.

Sunset Elementary has 4 third grade classes. Each class has 30 students. How many students in all?

L.

Find the unknown factor:

a) 7 x ? = 420

b) ? X 40 = 360

M.

Each shelf in the library holds 40 books. There are 8 shelves in the animal section. How many animal books are there?

N.

How would you explain to a friend how to multiply a one-digit number by a multiple of ten?

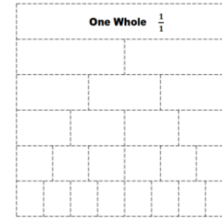
O.

There are 3 rows of apples with 30 apples in each row. How many apples are there?

P.

What is the product of 5 x 50? Explain your thinking.

Making Fraction Strips



Materials: fraction strips template, scissors, envelopes

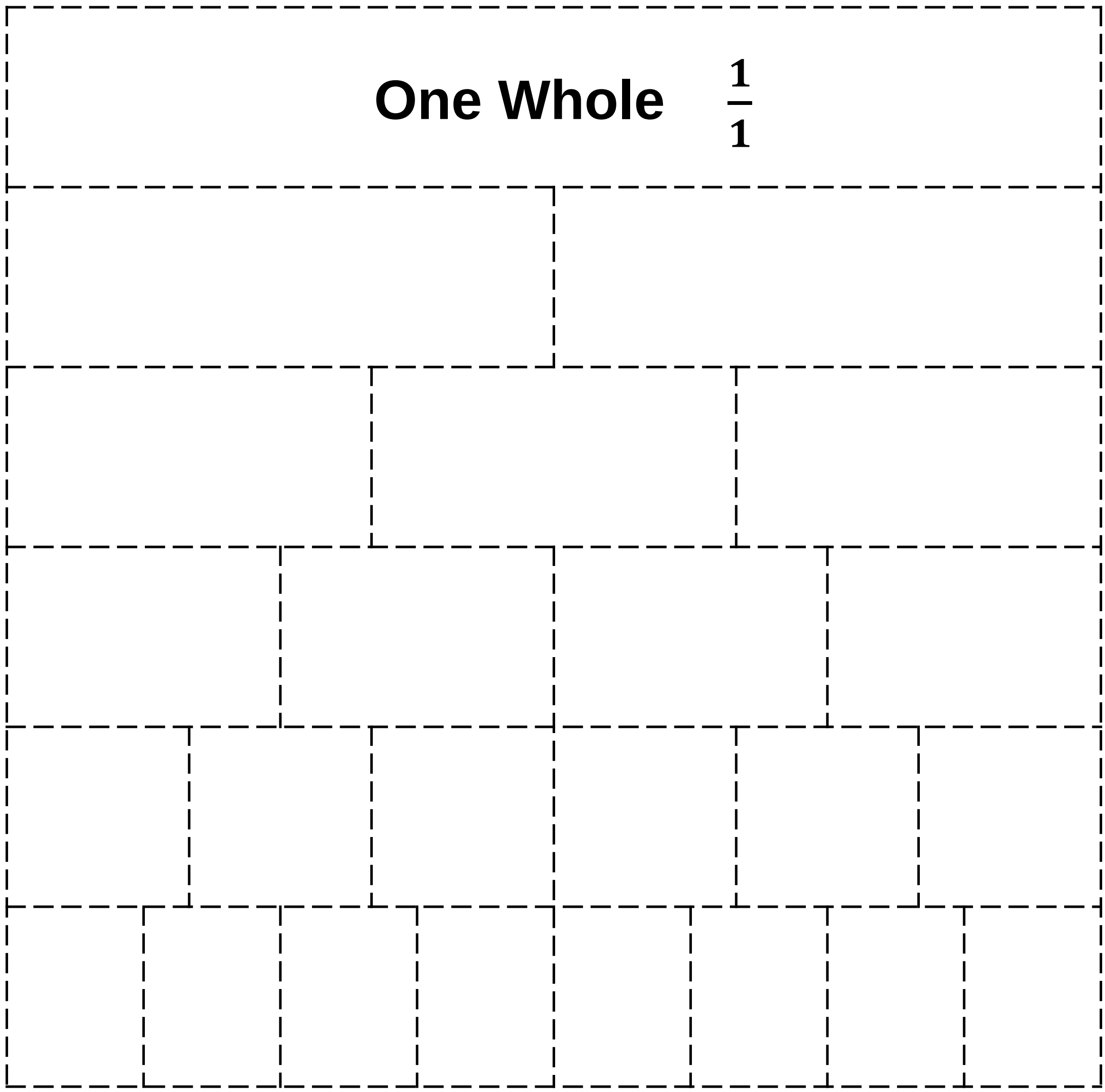
1. Label the longest strip as one whole, $\frac{1}{1}$. Color the strip yellow.

2. Label the parts of each strip with the correct unit fraction. Shade each strip a different color.

3. Cut out and order the fraction strips from the largest to the smallest sized pieces. What do you notice about the numerators? What do you notice about the denominators? Record your observations.

4. Write your initials on the back of each fraction strip and store them in an envelope.

Fraction Strips – Grade 3 (denominators 2, 3, 4, 6, and 8 only)



Making Fraction Strips

Materials: paper, rulers, scissors, envelopes

---

1. Draw six strips on a sheet of paper that are each 24cm long and the width of your ruler. Cut out the strips and shade each one a different color.

2. The first strip represents one whole. Label the strip: one whole, $\frac{1}{1}$

3. On the second strip, draw a line so that the strip is divided into two equal 12cm long sections and label each section.

$\frac{1}{2}$	$\frac{1}{2}$

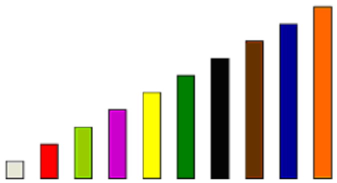
4. Divide the remaining strips as follows and label each section:

   Strip 3: Divide into thirds (three 8cm sections)
   Strip 4: Divide into fourths (four 6cm sections)
   Strip 5: Divide into sixths (six 4cm sections)
   Strip 6: Divide into eighths (eight 3cm sections)

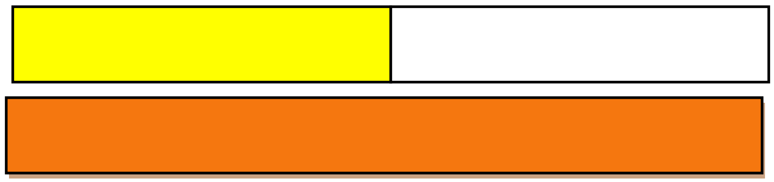
5. Store your fraction strips in an envelope for future use.

Cuisenaire Fractions

Materials: cuisenaire rods



1. Work with a partner. If the orange rod has the value of one, what is the value of the yellow rod?



2 Find the value of all other rods in relation to the orange rod. Record your work.

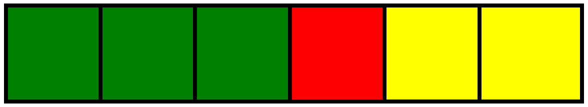
3. Give the yellow rod the value of one. Find the value of all other rods in relation to the yellow rod. Record your work.

4. Give another rod the value of one and repeat the process.

5. How can the same rod have different fractional names? Explain.

My Fraction Bar Riddle

Materials: color tiles, index cards



1. Choose 6, 8, or 10 color tiles of three different colors. Arrange the color tiles to make a fraction bar.

2. Draw your fraction bar. Use an index card to make a flap to cover your drawing.

3. Write three clues to describe your fraction bar. For example, $\frac{2}{6}$ of my fraction bar is yellow.

4. Swap riddles with a partner. Read the clues and try to build your partner’s fraction bar without looking under the flap.

5. Lift the flap and compare the fraction bar you built with your partner’s drawing.

6. Discuss your results with your partner.

My Fraction Bar Riddle

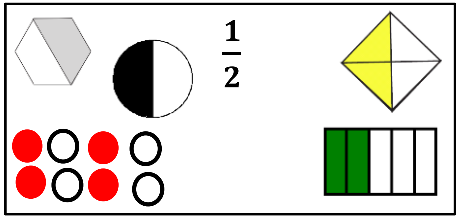
_____ of my fraction bar is ______________________ .

_____ of my fraction bar is ______________________ .

_____ of my fraction bar is ______________________ .

What might my fraction bar look like?

Fraction Posters



Materials: pattern blocks, fraction kits, geoboards, counters

---

1. Work with a partner. Choose one of the following fractions:

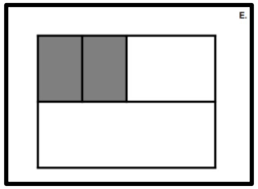
$$\frac{1}{2} \qquad \frac{1}{3} \qquad \frac{1}{4}$$

2. Represent the fraction you chose in different ways using materials such as pattern blocks, fraction kits, geoboards, or counters. You may include equivalent fractions.

3. Draw each representation on a poster. Include one non-example: a model that does not represent the fraction you chose.

4. Exchange posters with another partnership. Look carefully at their poster to find the non-example. Explain, in writing, why this model does not belong on the poster.

Name the Fraction



Materials: Name the Fraction cards

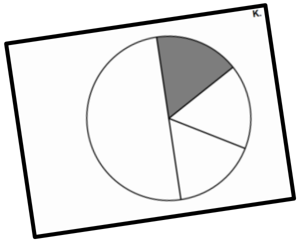
---

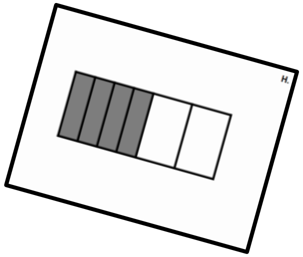
1. Choose a card. Sketch the shape.

2. What fraction of the shape is shaded? What fraction of the shape is not shaded? Explain your thinking.

3. Repeat with other cards from the pack.

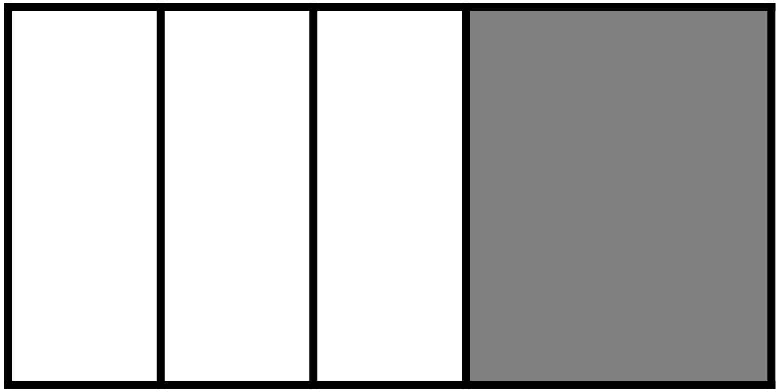
4. After you have completed all cards in the set discuss your work with a classmate. Use mathematical reasoning to justify your answers.



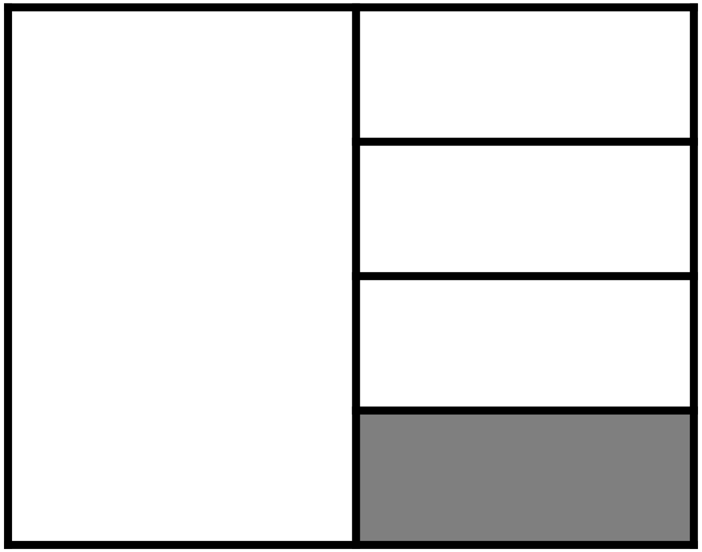


A.

B.



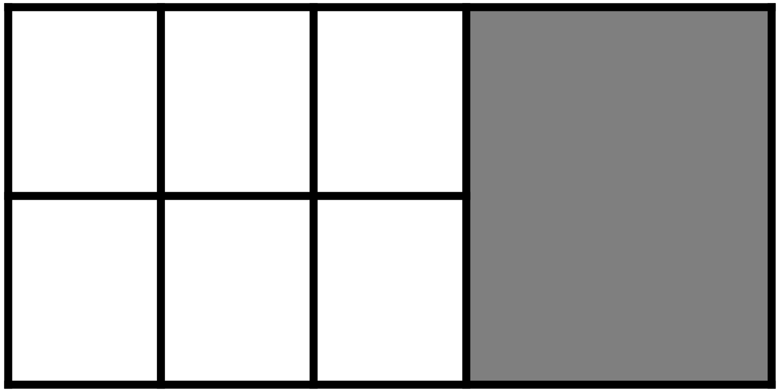
C.



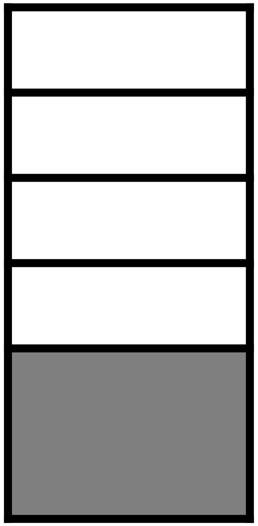
D.

E.

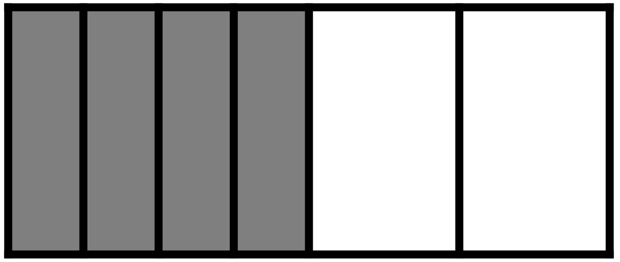
F.



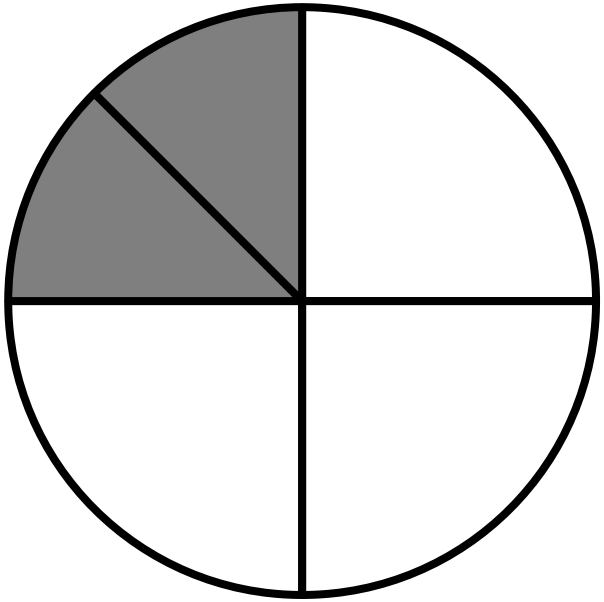
G.



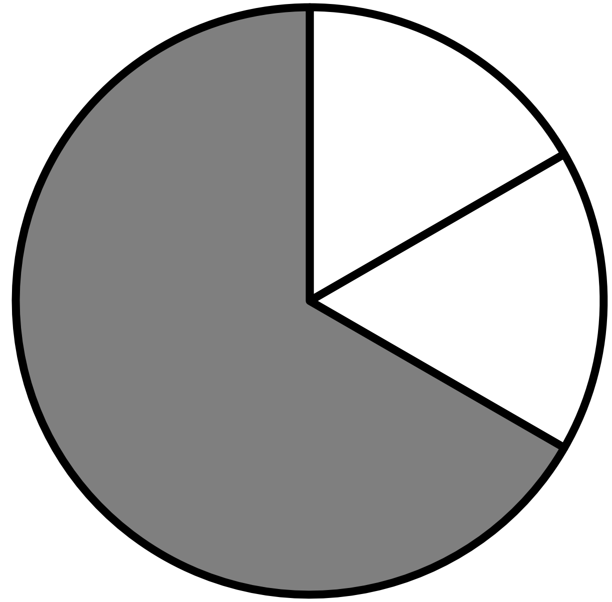
H.



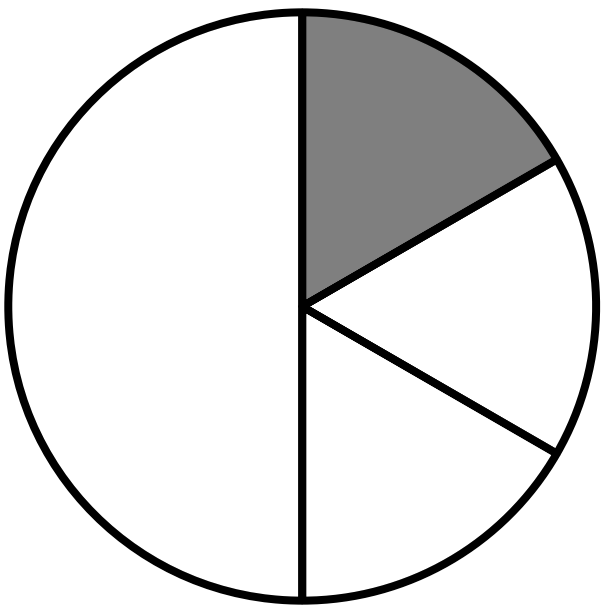
I.



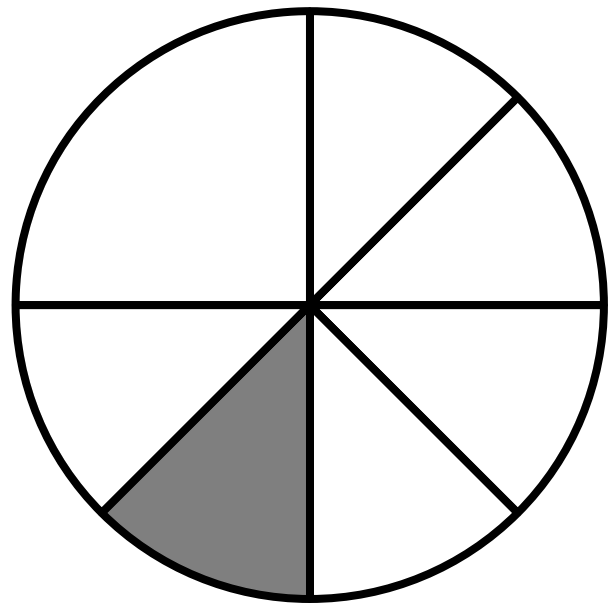
J.



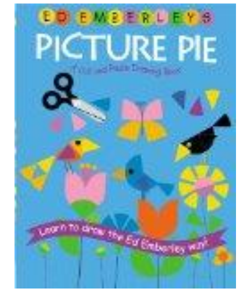
K.



L.



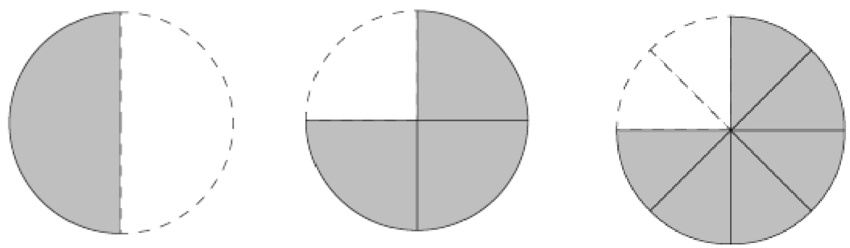
Picture Pie



Materials: copy of *Picture Pie* by Ed Emberley, fraction circles, scissors, glue

1. Look closely at the artwork in *Picture Pie*.

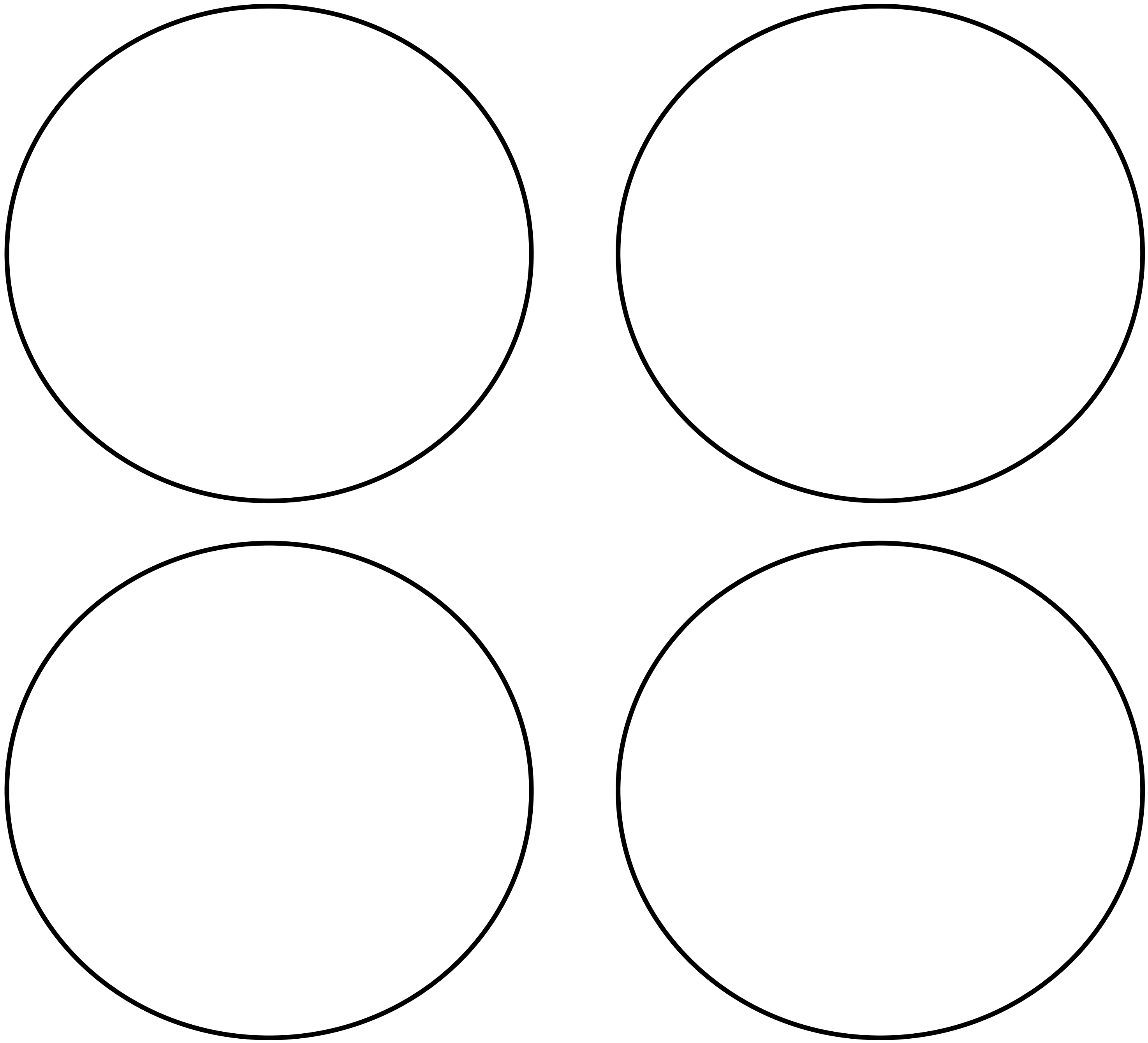
2. Fold paper circles into halves, fourths or eighths.



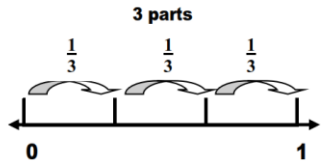
3. Cut, paste and color your circle pieces to create a picture.

4. Name the fractions used to create your picture.

Challenge: Put together pieces from a fraction kit to find the total value of your picture. Explain your thinking.



Fractions on a Number Line



Materials: ruler, number cubes (1-6)

1. Draw a six inch number line that begins with 0 and ends with 1.

2. Roll a number cube (1-6). Partition the distance from 0 to 1 into this number of equal parts.

3. Label the segments as unit fractions. Justify your reasoning.

4. Repeat steps 1-3 until you have five different number lines.

Roll a Fraction

Materials: Roll a Fraction boards, 2 number cubes (1-10) **Number of Players**: 2

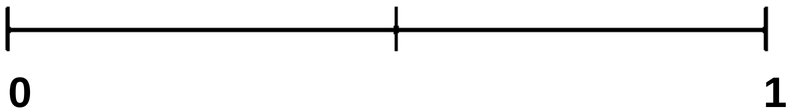
---

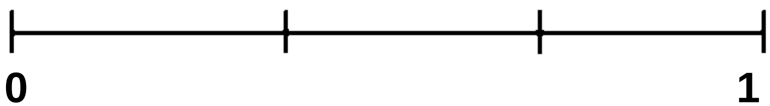
1. Each player chooses a board. Take turns to roll two number cubes to create a fraction. You may decide which number will be the numerator and which number will the denominator.

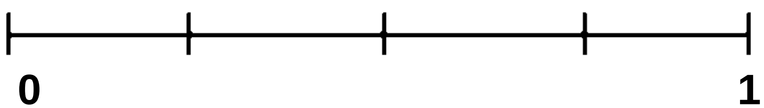
2. If the fraction you rolled belongs on a number line on your board write it below the appropriate point and explain your thinking. If the fraction does not belong on any of your number lines you must wait until your next turn. You may use equivalent fractions. For example, if you roll $\frac{1}{2}$ you may record $\frac{2}{4}$, $\frac{3}{6}$ or $\frac{4}{8}$ because all of these fractions are equivalent to $\frac{1}{2}$.

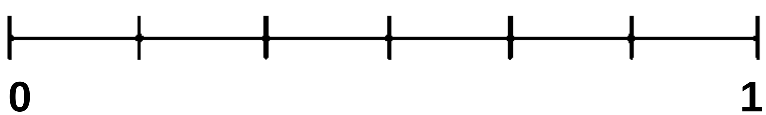
3. The first player to label ten points on the number lines on his or her board wins the game.

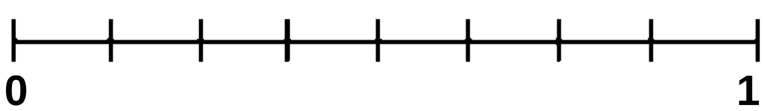
Roll a Fraction



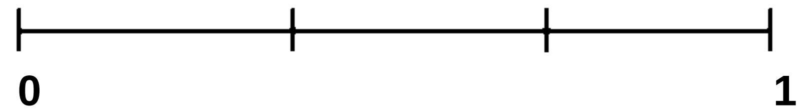


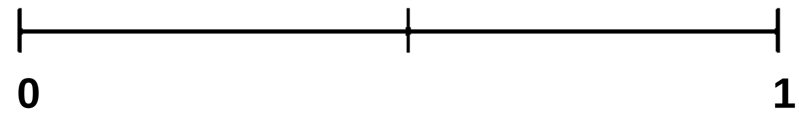


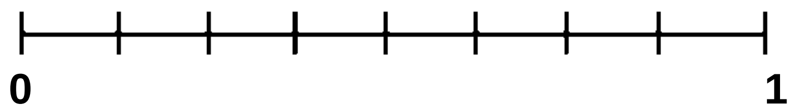


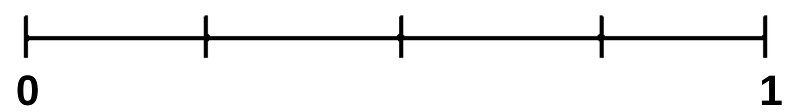


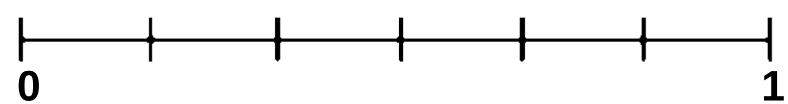
Roll a Fraction



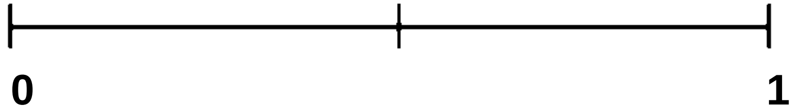


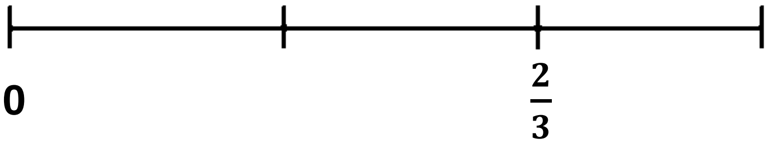


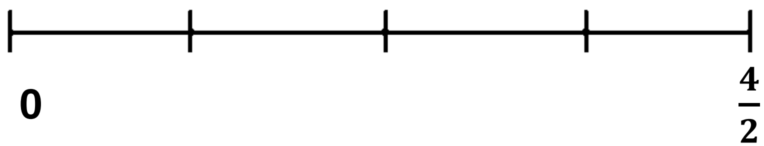


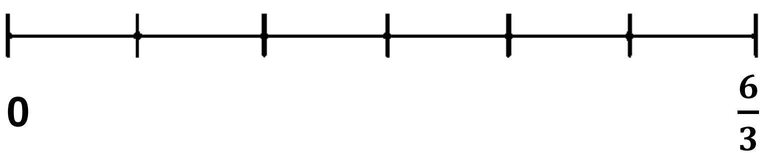


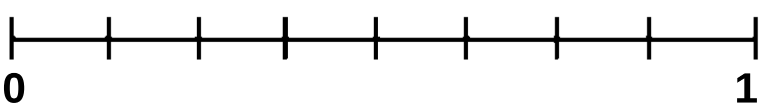
Roll a Fraction



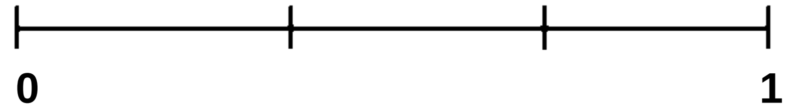


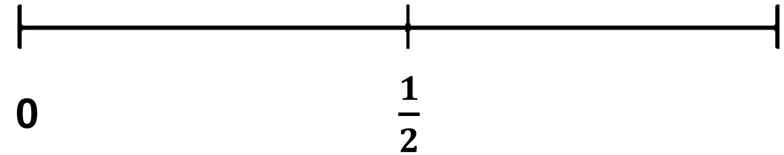


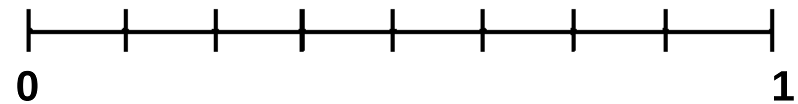


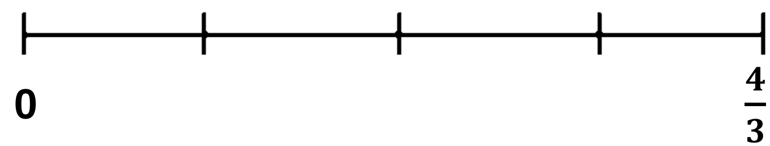


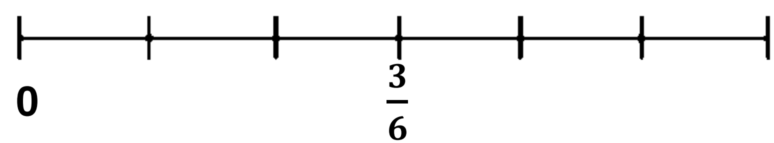
Roll a Fraction











Pizza for Dinner

Materials: fraction kits (optional)

Leo and Tom were talking about what they had for dinner the previous evening. Leo said, “My family bought a large pizza and I ate $\frac{2}{4}$ of it.” Tom replied, “I ate more than you. My family bought a large pizza and I ate $\frac{4}{8}$ of it.” Sarah said, “Tom you didn’t eat more pizza than Tom. You ate the same amount.”

Who is correct? Explain your thinking. Use a fraction model to justify your conclusions.

Equivalent Fractions Exploration

Materials: fraction kits (circular and rectangular)

---

1. Give the largest piece in your fraction kit the value of one whole. Name the other size pieces in your kit in relation to the whole.

2. How many different ways can you make one half using pieces in your fraction kit of the same shape and size? Draw and label the equivalent fractions you find.

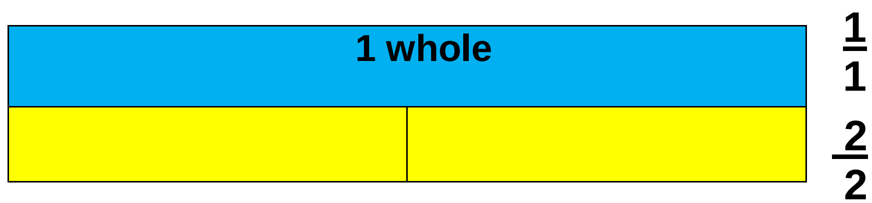
3. Order your data. Describe any patterns that you notice.

4. How many different ways can you make one third using pieces in your fraction kit of the same shape and size? What about one fourth? Record your findings and describe any patterns that you notice.

Equivalent Fractions Exploration

Materials: fraction strips

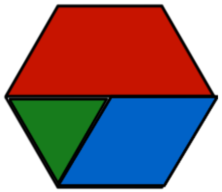
1. Use your fraction strips. Line up each of the fraction strips in turn under the one whole strip. How many different fractions can you find that are equivalent to one whole? Sketch and label the equivalent strips. Name the equivalent fraction.



2. Next, line up each of the fraction strips in turn under a one half strip. How many different fractions can you find that are equivalent to one half? Sketch and label the equivalent strips. Name the equivalent fraction.

3. What patterns do you notice in the numerators and denominators of fractions that are equivalent to one half? Explain.

Build Eight Hexagons



Materials: 2 number cubes, pattern blocks (hexagons, trapezoids, blue rhombi, triangles), gameboard per player

Number of Players: 2

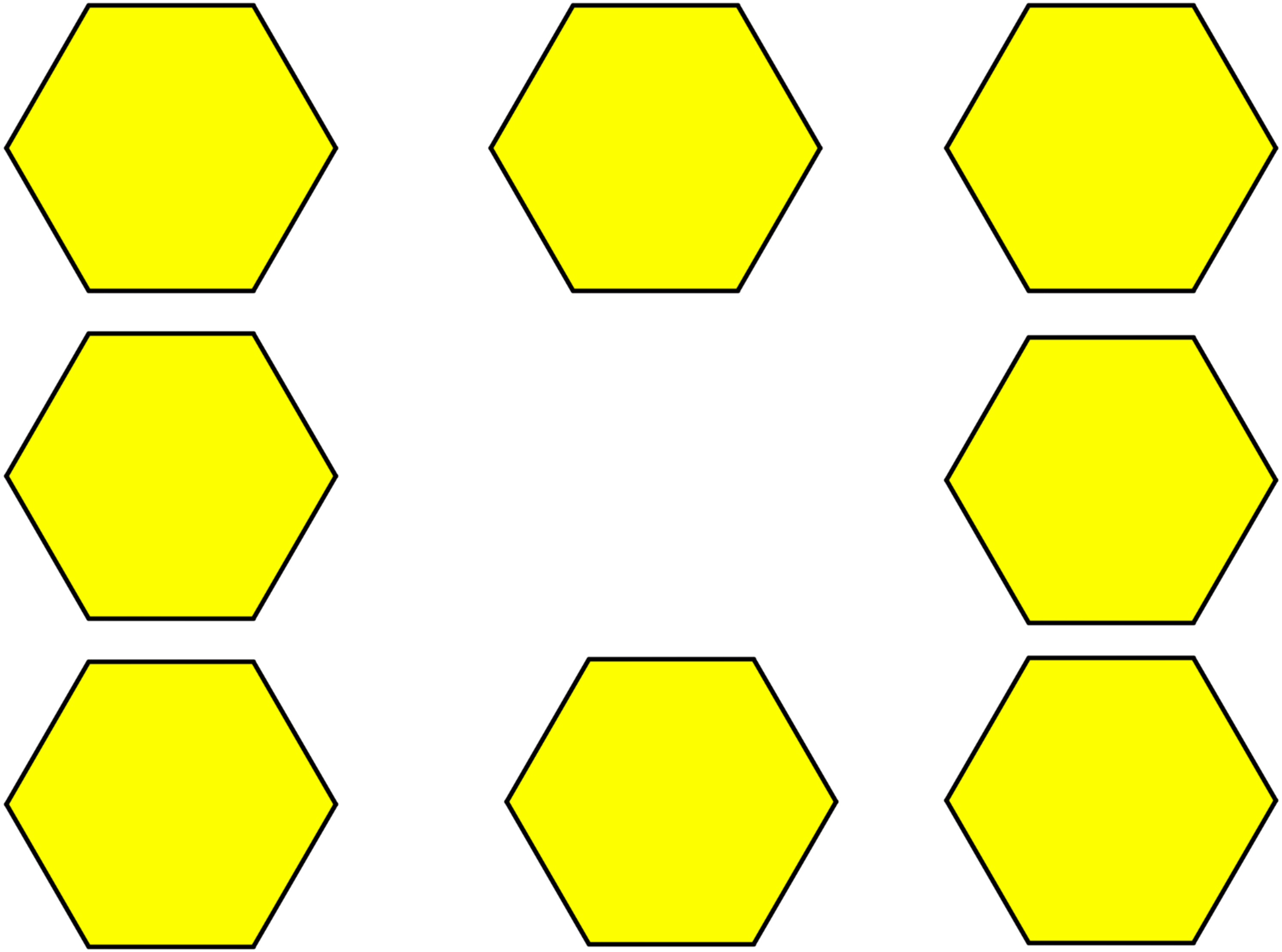
---

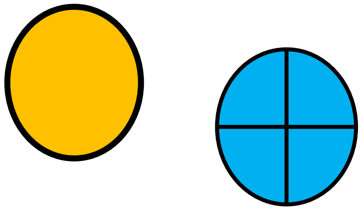
1. Take turns to roll two number cubes to create a fraction. The largest number you roll represents the denominator and the smaller number represents the numerator.

2. Use pattern blocks to build the fractional amount on your board (give the hexagon the value of ONE). You may use equivalent fractions but must explain your reasoning. For example, if you roll $\frac{1}{2}$ you can place a trapezoid or three triangles on your board because $\frac{1}{2}$ is equivalent to $\frac{3}{6}$.

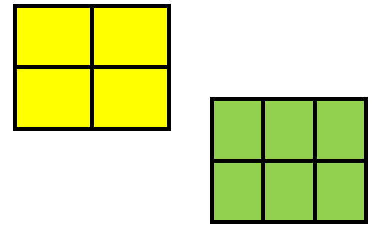
3. If you roll a fraction that you cannot use you must wait until your next turn. Keep taking turns until one player has covered all the hexagons on his or her board.

Build Eight Hexagons





Make One Whole



Materials: one fraction kit per partnership (circular or rectangular)

---

1. Work with a partner. Empty all the pieces from the fraction kit. Sort the pieces.

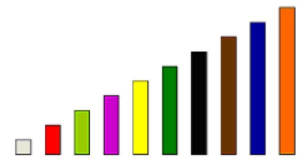
2. Assign the largest piece in the fraction kit the value of one whole. How many different ways can you find to make one whole using pieces of the same shape and size?

3. Sketch your work. Label the parts. Name each fraction.

4. Complete the statement: One whole is equivalent to ……….

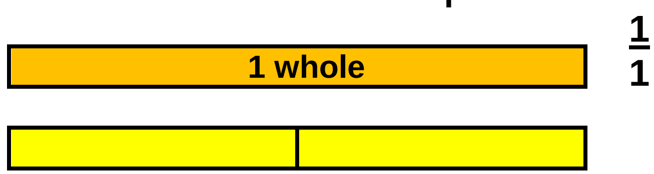
Make One Whole

Materials: cuisenaire rods



1. Sort and order a set of cuisenaire rods. Assign the orange rod the value of one whole. Name the other rods in relation to the whole.

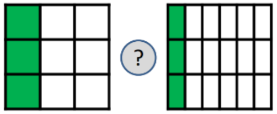
2. How many different ways can you represent one whole using rods of only one color? Sketch the rods. Label the parts. Name each fraction.



3. Assign the brown rod the value of one whole. How many different ways can you represent one whole using rods of only one color? Sketch the rods. Label the parts. Name each fraction.

Compare Fractions of a Whole

Materials: fraction cards showing two models

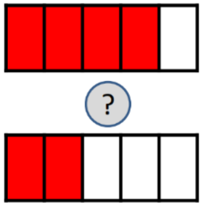


1. Choose a fraction card. Look closely at each model to determine how many total parts are in the whole (denominator) and how many equal parts are shaded (numerator).

2. Compare the fractions using the symbols <, >, or =. Explain your reasoning using pictures, words and numbers.

3. Repeat with other cards.

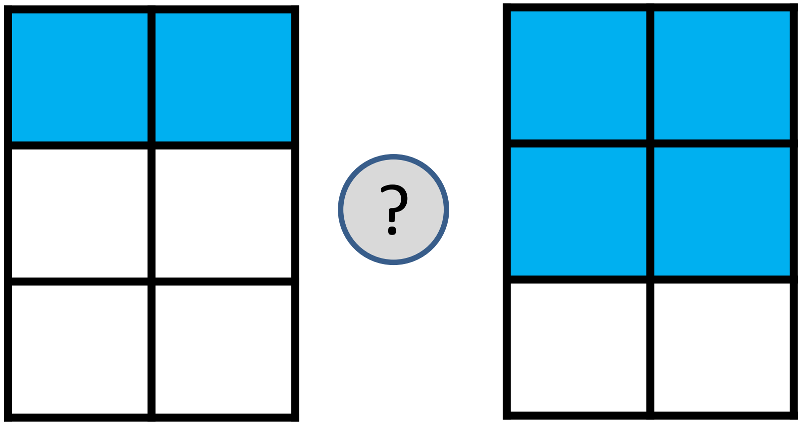
Example:



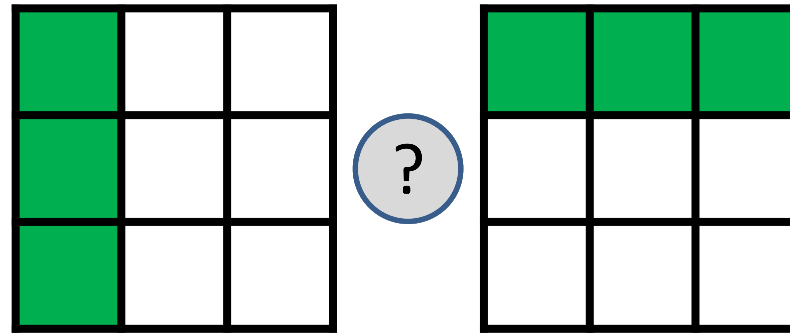
$\frac{4}{5} > \frac{2}{5}$ because 4 pieces that are fifths are more than 2 pieces that are fifths.

4. How can you compare two fractions with the same denominator that refer to the same whole? How can you compare two fractions with the same numerator that refer to the same whole? Explain.

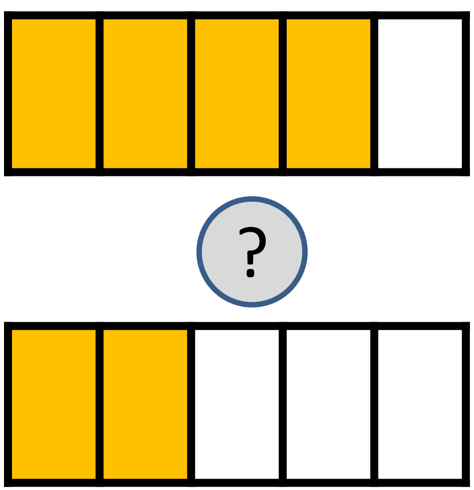
A.



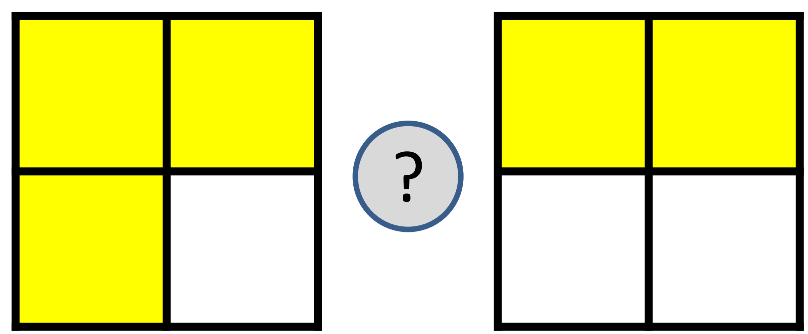
B.



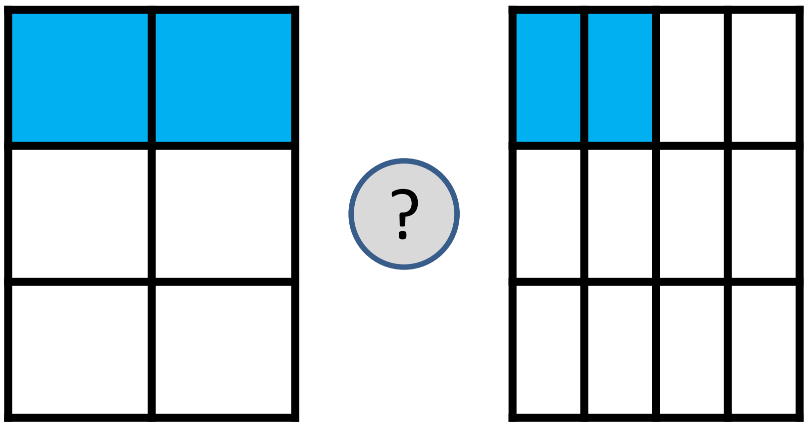
C.



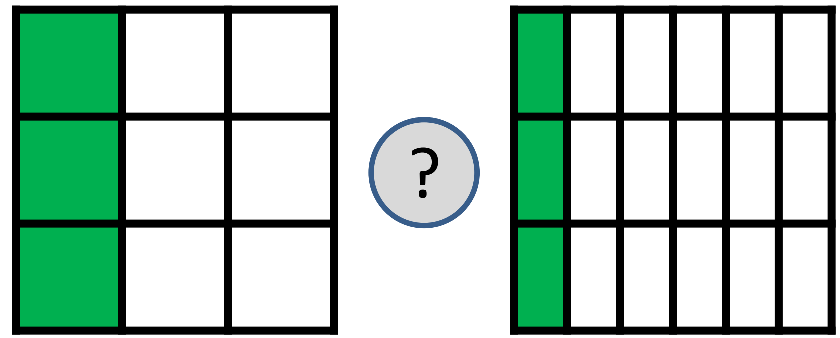
D.



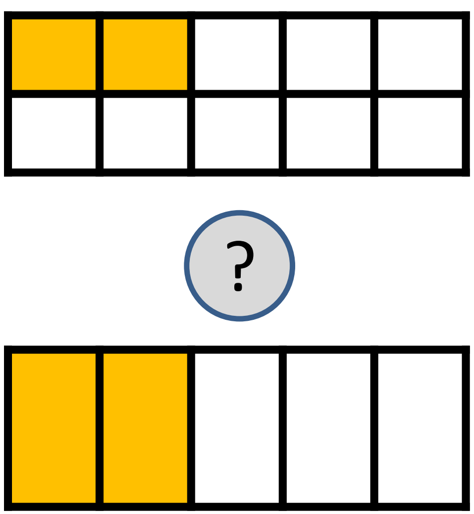
E.



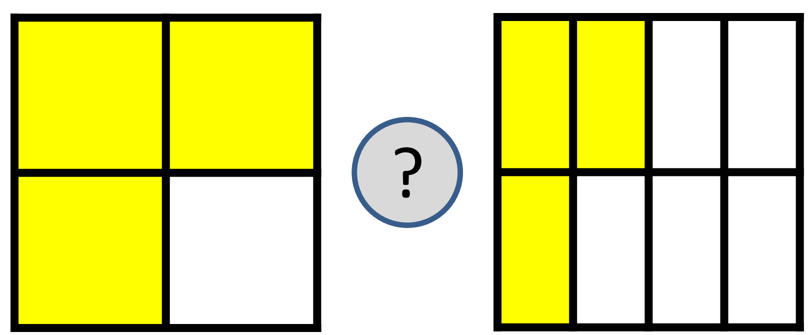
F.



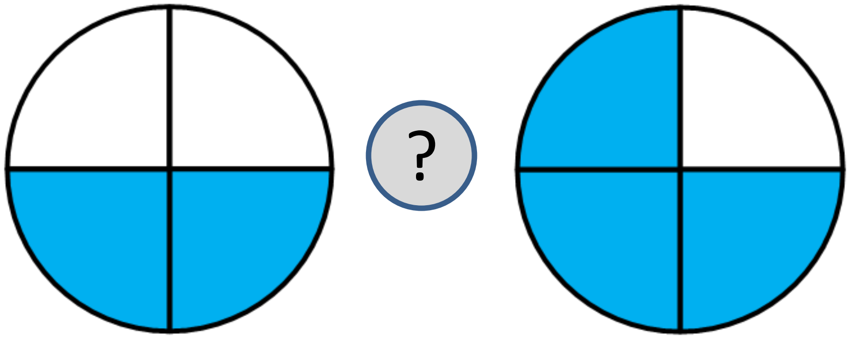
G.



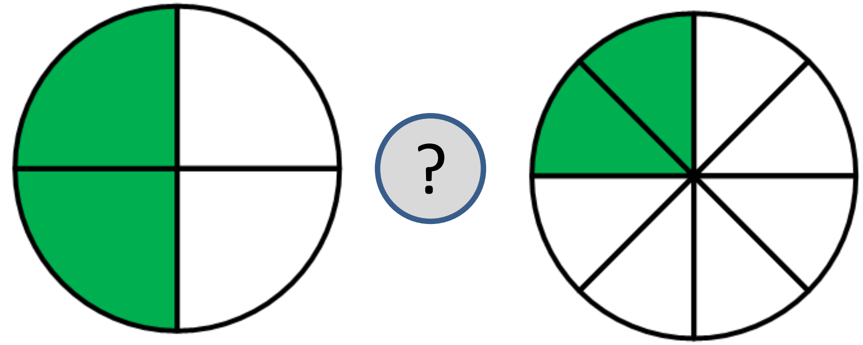
H.



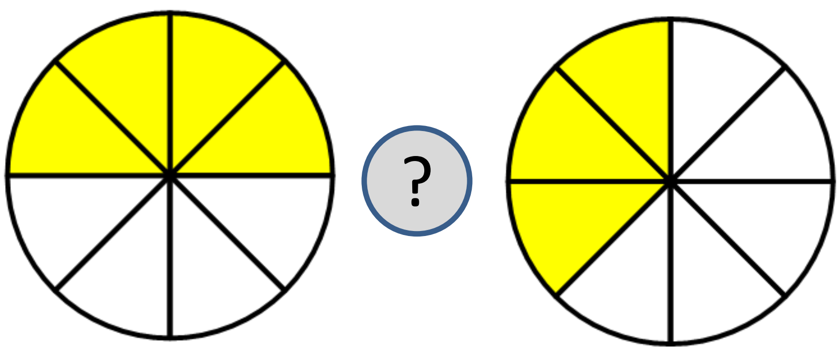
I.



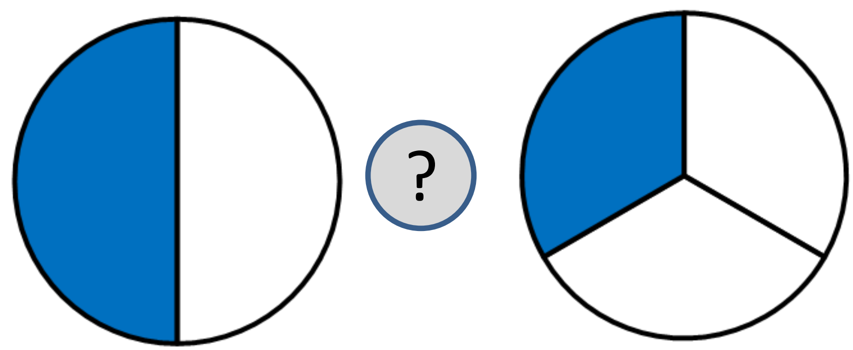
J.



K.

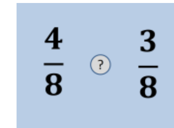


L.



Compare Fractions of a Whole

Materials: fraction cards showing two fractions

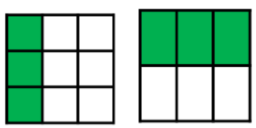


---

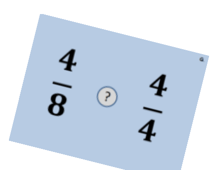
1. Choose a fraction card. Represent both fractions using an area model or number line.

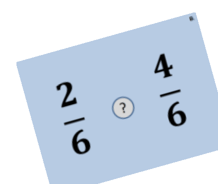
2. Compare the fractions using the symbols <, >, or =.

3. Repeat with other cards.

Example:  $\frac{3}{9} > \frac{3}{6}$ because ninths are smaller than sixths.

4. Share your work with a classmate. Explain your thinking.





A.

$\frac{3}{4}$? $\frac{1}{4}$

B.

$\frac{2}{6}$? $\frac{4}{6}$

C.

$\frac{4}{8}$? $\frac{3}{8}$

D.

$\frac{2}{2}$? $\frac{1}{2}$

E.

$\frac{1}{6}$? $\frac{1}{8}$

F.

$\frac{2}{4}$? $\frac{2}{6}$

G.

$\frac{4}{8}$? $\frac{4}{4}$

H.

$\frac{2}{3}$? $\frac{2}{4}$

I.

$\frac{1}{3}$? $\frac{2}{6}$

J.

$\frac{1}{2}$? $\frac{2}{4}$

K.

$\frac{4}{4}$? $\frac{1}{1}$

L.

$\frac{1}{1}$? $\frac{8}{8}$

Who Ate More?

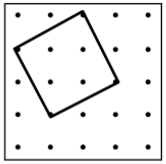
1. Ben and Todd bought one large and one small pizza. Ben ate ½ of the large pizza. Todd ate ½ of the small pizza. Did Ben eat less pizza, more pizza, or the same amount of pizza as Todd?

   Explain your thinking. Use a diagram to prove your answer.

2. At the movies Lisa and Sam bought one large and one small bag of popcorn. Lisa ate ¼ of the small bag of popcorn. Sam ate ¼ of the large bag of popcorn. Did Lisa eat less popcorn, more popcorn, or the same amount of popcorn as Sam?

   Explain your thinking. Use a diagram to prove your answer.

Geoboard Squares

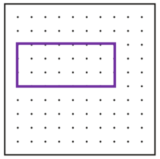


Materials: geoboards, rubber bands, geoboard paper

1. Use a rubber band to make a square on your geoboard. Check to see that your shape has four right angles and four sides of equal length.
2. Use a ruler to draw your square on geoboard paper.
3. Make a square that is larger or smaller than your first square. Draw your new square on geoboard paper.
4. Repeat until you have made as many different sized squares as you can.
5. Write about your work:

- How many different sized squares did you find?
- How did you check that each shape was really a square?
- How did you check that your squares were different sizes?

Comparing Quadrilaterals



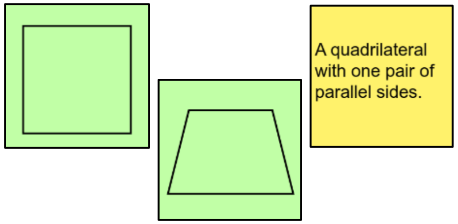
Materials: geoboards, rubber bands, geoboard paper

---

1. Use rubber bands to make three different quadrilaterals on your geoboard.
2. Draw the quadrilaterals you made on geoboard paper. Use a ruler to make sure you draw straight sides.
3. Name each quadrilateral and describe its properties.
4. Share your work with a partner. How are your quadrilaterals alike? How are they different? Use math vocabulary to explain your thinking.

Word Bank:	congruent sides	parallel sides	equal sides		
right angles	acute angles	obtuse angle	equal angles		
parallelogram	rhombus	rectangle	square	trapezoid	kite

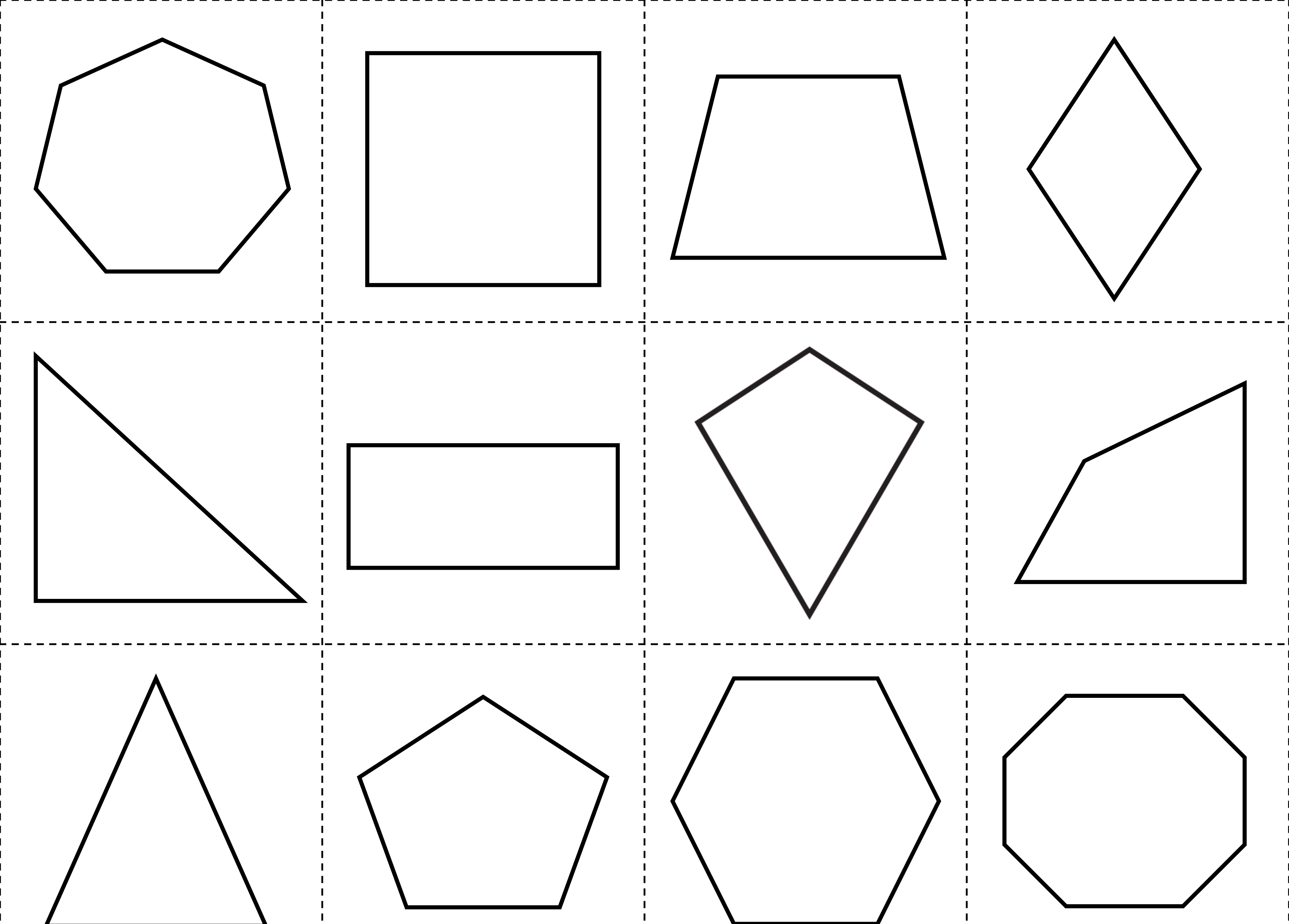
Shape Match



Materials: set of Shape Match cards

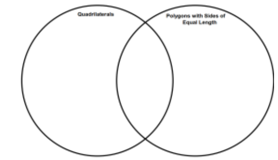
1. Work with a partner. Place a set of Shape Match cards faceup on the table.
2. Take turns to match a clue card with a picture card. Explain your reasoning.
3. Once you have matched all the clue cards with picture cards compare your work with another partnership. If you disagree with any matches the other partnership has made you must discuss and defend your answers until you all come to an agreement.

Challenge: Use the cards to play a memory game with your partner. Turn all the cards facedown, with the picture cards in one row and the clue cards in another row. Take turns to flip over two cards. If the cards match the player keeps them and has another turn. If they do not match, the player turns the cards back over and play passes to the next player. Continue playing until all pairs have been picked up, then count to see who has the most cards.



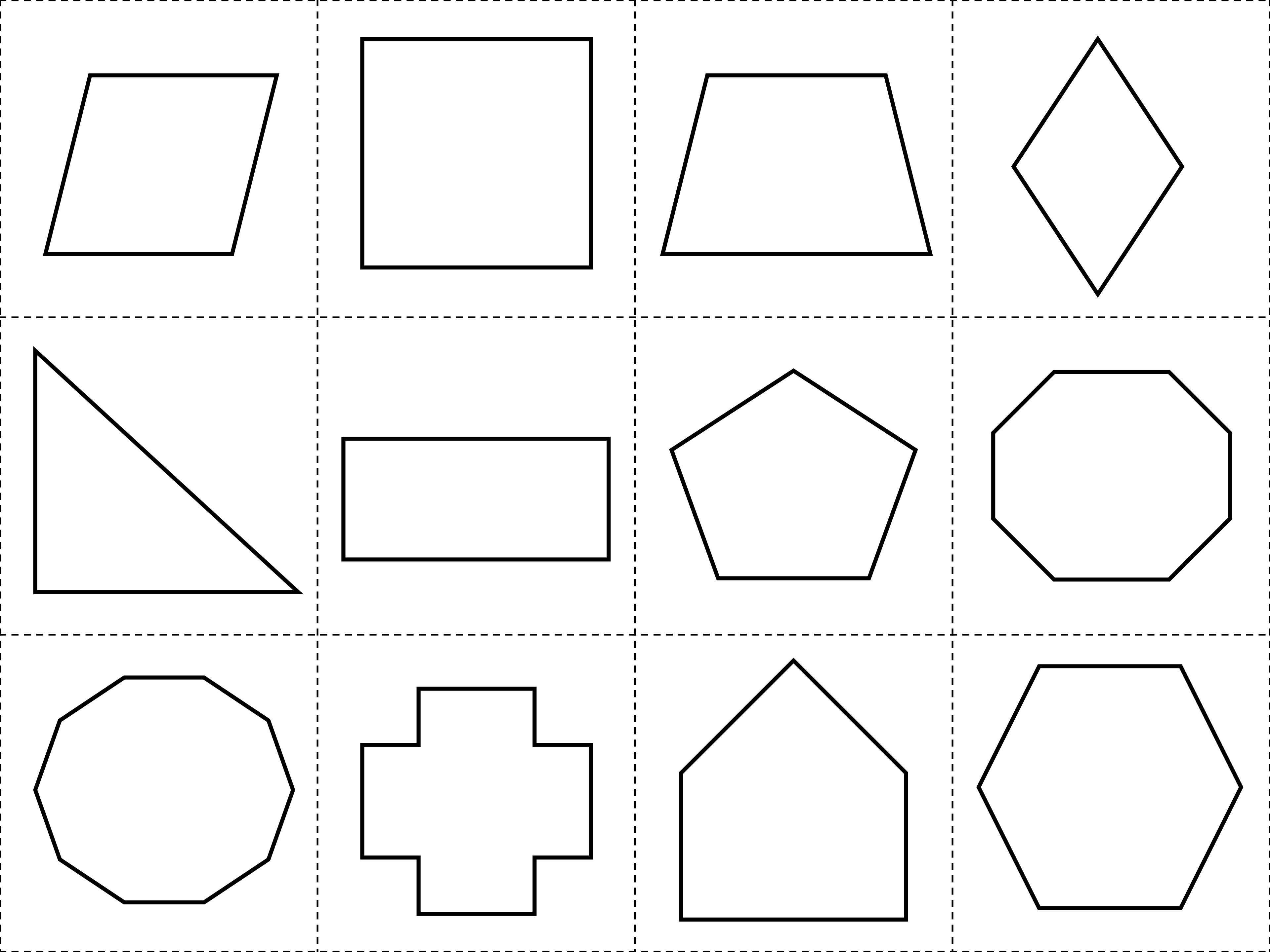
A polygon with 7 sides and 7 angles.	A quadrilateral with 4 equal sides and 4 right angles.	A quadrilateral with one pair of parallel sides.	A quadrilateral with 2 pairs of parallel sides and no right angles.
A polygon with 3 sides and 1 right angle.	A quadrilateral with 4 right angles. Opposite sides are parallel and of equal length.	A quadrilateral with no parallel sides that looks like a kite.	A polygon with 4 sides and 4 angles.
A polygon with 3 sides and 3 angles.	A polygon with 5 sides and 5 angles.	A polygon with 6 sides and 6 angles.	A polygon with 8 sides and 8 angles.

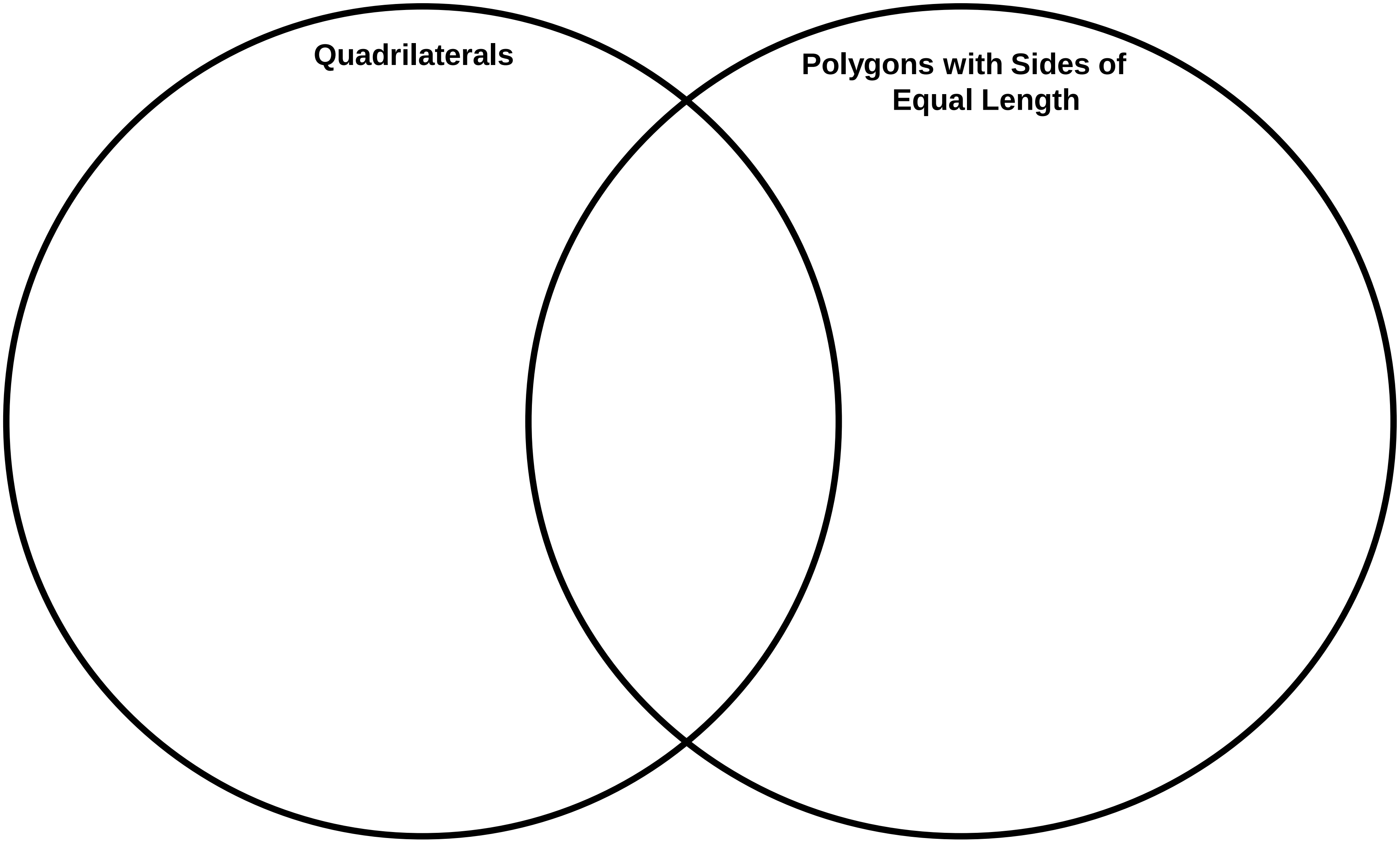
Classify Shapes Using a Venn Diagram

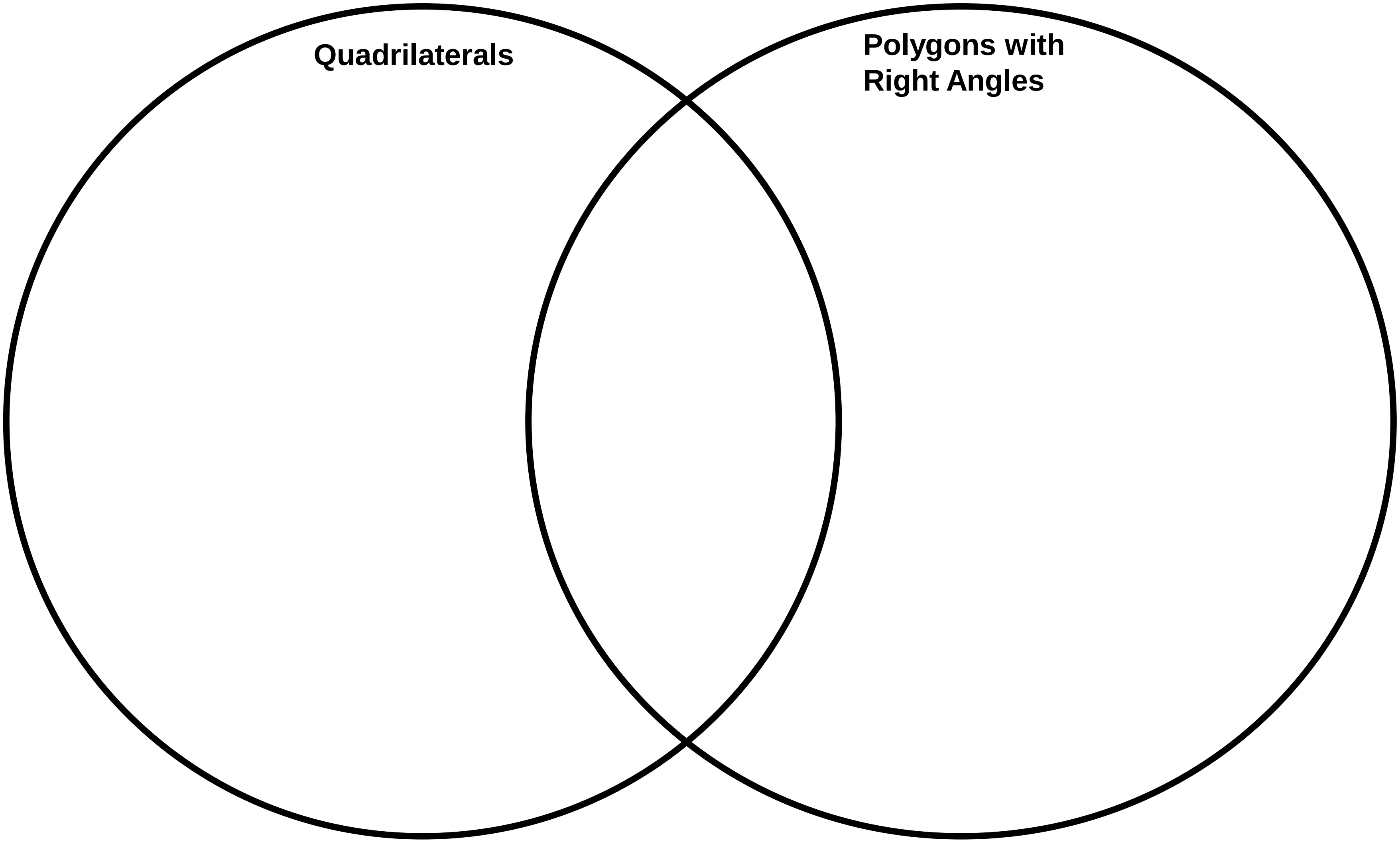


Materials: set of shape cards, rulers

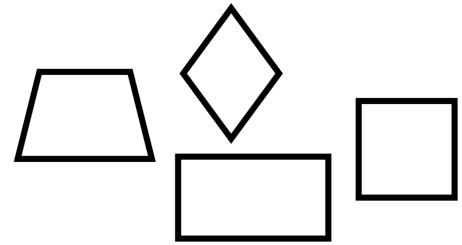
1. Work with a partner. Sort a set of shape cards using a Venn diagram with one circle labeled *Quadrilaterals* and the other circle labeled *Polygons with Sides of Equal Length*.
2. Record your sort. Draw and label the shapes in each section of your Venn diagram. Draw the shapes that do not belong in either category outside of the circle.
3. Next, sort the set of shape cards using a Venn diagram with one circle labeled *Quadrilaterals* and the other circle labeled *Polygons with Right Angles*.
4. Record your sort. Draw and label the shapes in each section of your Venn diagram. Draw the shapes that do not belong in either category outside of the circle.
5. Why do some shapes fit into both categories? Explain why the shapes you drew in the overlapping sections on your Venn diagram belong to both groups.




Quadrilaterals
Polygons with Sides of Equal Length


Quadrilaterals
Polygons with Right Angles

Quadrilateral Riddle



Materials: sticky notes, Quadrilateral Riddle recording sheets

---

1. Draw a quadrilateral in the box on the recording sheet. Write the name of the shape. Cover the drawing with a sticky note.
2. Write a four clue riddle to describe the quadrilateral you drew. Use math vocabulary from the Word Bank.
3. Try out your riddle on a friend. After your friend gives an answer lift the sticky note to show if his/her answer is correct.

Word Bank: congruent sides parallel sides equal sides

right angles acute angles obtuse angle equal angles

parallelogram rhombus rectangle square trapezoid kite

Quadrilateral Riddle

1. My quadrilateral ____________________
   ____
2. My quadrilateral ____________________
   ____
3. My quadrilateral ____________________
   ____
4. My quadrilateral ____________________
   ____

My quadrilateral is a …..

____

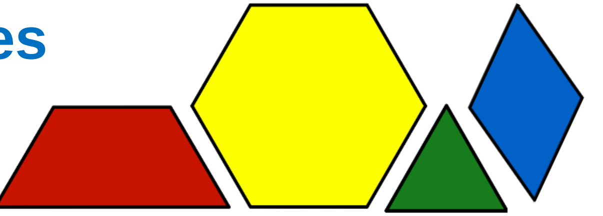
Quadrilateral Riddle

1. My quadrilateral ____________________
   ____
2. My quadrilateral ____________________
   ____
3. My quadrilateral ____________________
   ____
4. My quadrilateral ____________________
   ____

My quadrilateral is a …..

____

Partition Shapes



Materials: pattern blocks

1. Trace a yellow hexagon. Show three different ways to partition the hexagon into parts with equal area using other pattern blocks. Write the unit fraction that names the area of each part of the whole.

2. Trace a red trapezoid. Show how you can partition the trapezoid into three parts with equal area using other pattern blocks. Write the unit fraction that names the area of each part of the whole.

3. Trace a blue rhombus. Show how you can partition the trapezoid into two parts with equal area using other pattern blocks. Write the unit fraction that names the area of each part of the whole.

4. Share your work with a partner. Describe how you divided each shape into equal parts.

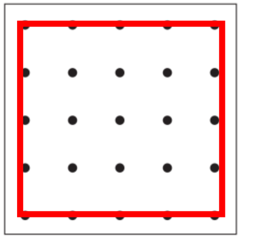
This ______ is divided into ___ equal parts. Each part is one ___ of the total area of the shape.

This ______ is divided into ___ equal parts. Each part is one ___ of the total area of the shape.

This ______ is divided into ___ equal parts. Each part is one ___ of the total area of the shape.

This ______ is divided into ___ equal parts. Each part is one ___ of the total area of the shape.

Partition a Square



Materials: geoboards, rubber bands

---

1. Make the largest square that you can on a geoboard by placing a rubber band around all the outside pins.

2. How many different ways can you partition the square into parts with equal areas that are congruent (the same size and shape)? Use a ruler to record your different solutions on geoboard paper. Label the area of each part as a unit fraction.

3. Find at least one way to partition the square into parts with equal areas that do not have the same shape. Record and label your solution. Explain how you know the areas of all the parts are equal.

4. Share your work with a friend. Compare the different ways you divided the square into parts with equal areas.

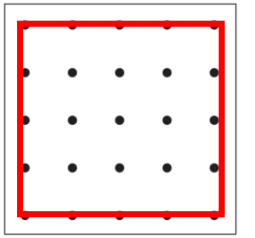
I partitioned this square into ___ parts with equal areas. The unit fraction that names each part of the divided whole is one ______.

This square has equal areas that have the same shape. I know the areas of all the parts are equal because ....

I found ___ different ways to partition the square into parts with equal areas that are congruent.

This square has equal areas that <u>do not</u> have the same shape.
I know the areas of all the parts are equal because ....

Partition a Square



Materials: geoboards, rubber bands

1. Make the largest square that you can on a geoboard by placing a rubber band around all the outside pins.

2. How many different ways can you partition the square into **four** parts with equal areas that are **congruent** (the same size and shape)? Use a ruler to record your different solutions on geoboard paper. Label the area of each part as a unit fraction.

3. Find at least one way to partition the square into **four** parts with equal areas that <u>do not</u> have the same shape. Record and label your solution. Explain how you know the areas of all the parts are equal.

4. Share your work with a friend. Compare the different ways you divided the square into **four** parts with equal areas.

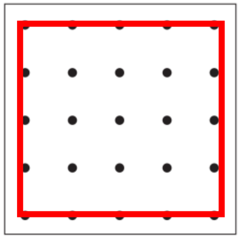
I divided this square into 4 parts with equal areas. The unit fraction that names each part of the divided whole is ___.

This square has equal areas that have the same shape. I know the areas of all the parts are equal because ....

I found ___ different ways to partition the square into 4 parts with equal areas that are congruent. The unit fraction that names each part of the divided whole is ___.

This square has equal areas that do not have the same shape. I know the areas of all the parts are equal because ....

Partition a Square



Materials: geoboards, rubber bands

1. Make the largest square that you can on a geoboard by placing a rubber band around all the outside pins.

2. How many different ways can you partition the square into **eight** parts with equal areas that are **congruent** (the same size and shape)? Use a ruler to record your different solutions on geoboard paper. Label the area of each part as a unit fraction.

3. Find at least one way to partition the square into **eight** parts with equal areas that do not have the same shape. Record and label your solution. Explain how you know the areas of all the parts are equal.

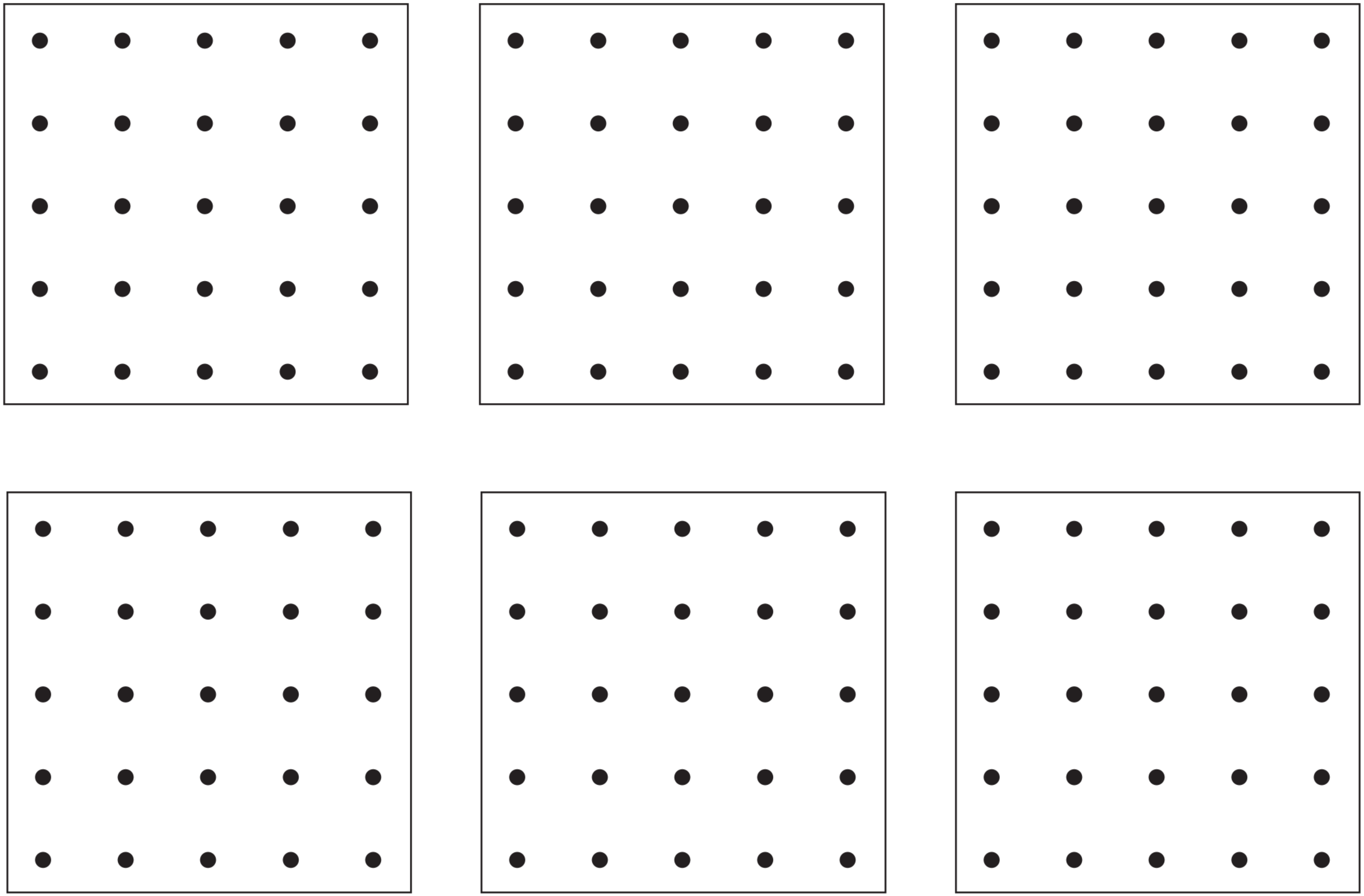
4. Share your work with a friend. Compare the different ways you divided the square into **eight** parts with equal areas.

I divided this square into 8 parts with equal areas. The unit fraction that names each part of the divided whole is ___.

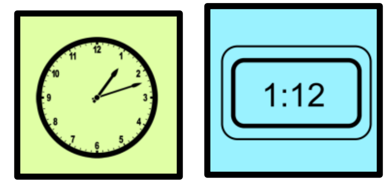
This square has equal areas that have the same shape. I know the areas of all the parts are equal because ....

I found ___ different ways to partition the square into 8 parts with equal areas that are congruent. The unit fraction that names each part of the divided whole is ___.

This square has equal areas that do not have the same shape. I know the areas of all the parts are equal because ....



Time Match



Materials: Time Match cards (12 analog and 12 digital per set)

Number of Players: 2

---

1. Work with a partner. Shuffle the cards and spread them out facedown on the table in two rows of twelve.

2. Take turns to flip over two cards and read the time on each clock. If the cards show the same time, pick them up and flip over two more cards. If the cards do not show the same time turn them facedown again. The next player then takes a turn.

3. The game ends when all the cards have been picked up. The winner is the player with the most cards.

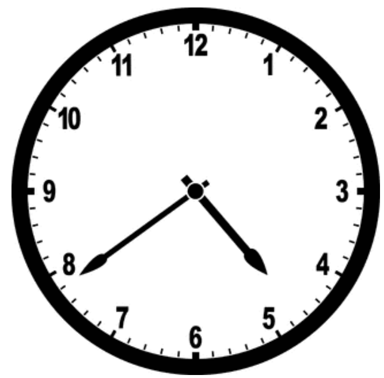

12 1 2 3 4 5 6 7 8 9 10 11

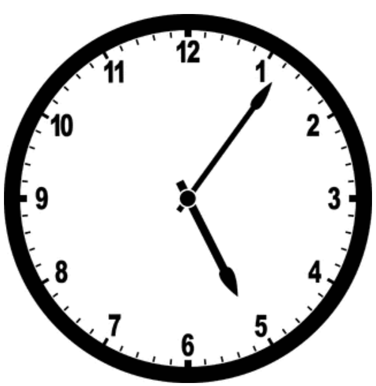
12 1 2 3 4 5 6 7 8 9 10 11

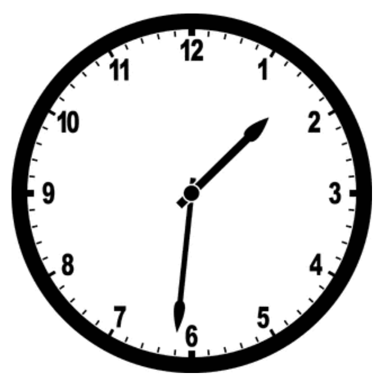
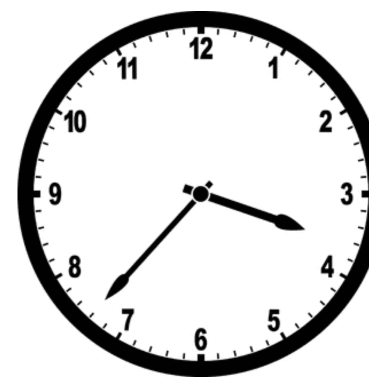
12 1 2 3 4 5 6 7 8 9 10 11

12 1 2 3 4 5 6 7 8 9 10 11

12 1 2 3 4 5 6 7 8 9 10 11

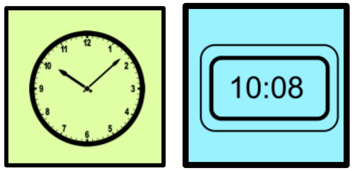
12 1 2 3 4 5 6 7 8 9 10 11

12 1 2 3 4 5 6 7 8 9 10 11

12 1 2 3 4 5 6 7 8 9 10 11

12 1 2 3 4 5 6 7 8 9 10 11

12 1 2 3 4 5 6 7 8 9 10 11

12 1 2 3 4 5 6 7 8 9 10 11

12 1 2 3 4 5 6 7 8 9 10 11

10:08	1:12	1:31	2:34
1:27	2:37	3:33	4:39
4:46	5:06	6:46	3:37

Time Match



Materials: blank template for Time Match cards, scissors

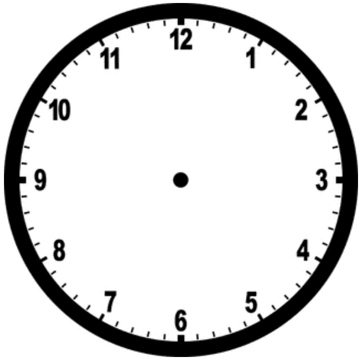
Number of Players: 2

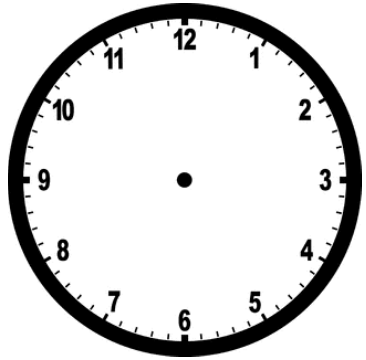
1. Work with a partner to create your own set of Time Match cards. Each partner should make 6 analog clocks with matching digital clocks. Cut out your cards and write your initials on the back of each one.

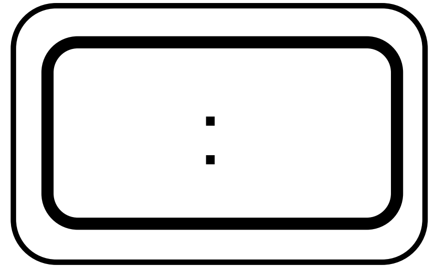
2. Combine and shuffle your cards. Spread them out facedown on the table in two rows of twelve.

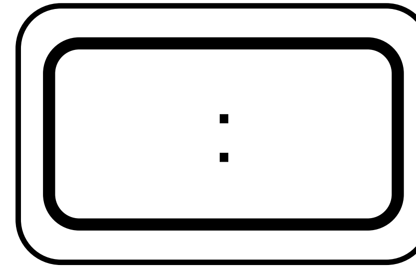
3. Take turns to flip over two cards and read the time on each clock. If the cards show the same time, pick them up and flip over two more cards. If the cards do not show the same time turn them facedown again. The next player then takes a turn.

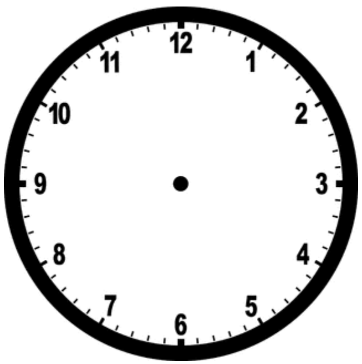
3. The game ends when all the cards have been picked up. The winner is the player with the most cards.

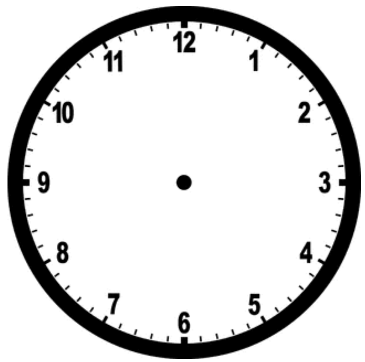

12
1
2
3
4
5
6
7
8
9
10
11

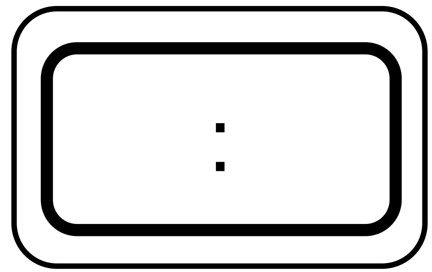

12
1
2
3
4
5
6
7
8
9
10
11

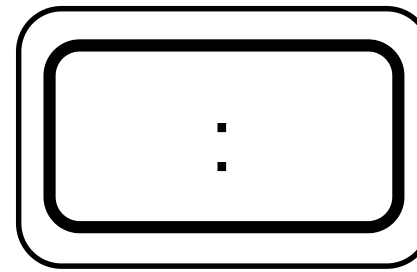


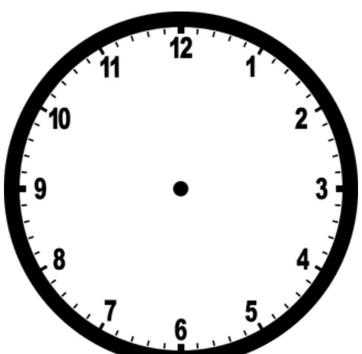


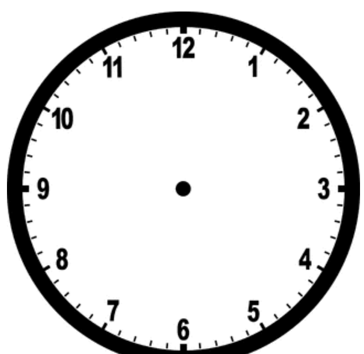

12
1
2
3
4
5
6
7
8
9
10
11

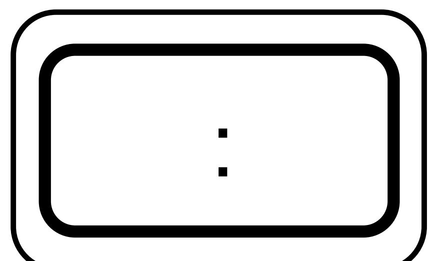

12
1
2
3
4
5
6
7
8
9
10
11

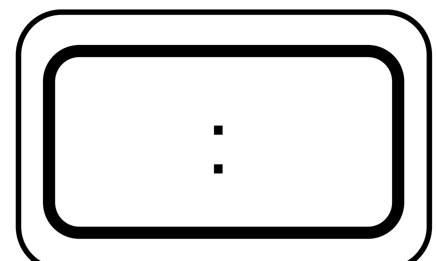




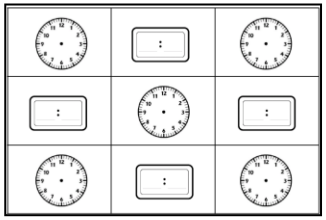

12
1
2
3
4
5
6
7
8
9
10
11


12
1
2
3
4
5
6
7
8
9
10
11





Time Barrier Game



Materials: Barrier Game grid per player, divider

Number of Players: 2

1. Work with a partner. Sit side by side with a divider standing between you.

2. Player 1: Show different times to the nearest minute on the clocks on your grid without letting your partner see your work.

3. Player 1: Give clear instructions to your partner on how to complete his or her clocks to match your grid. For example, you might say, “Show five twenty-seven on the clock in the center of your grid.”

4. Remove the divider and look at your two completed grids to see how closely they match. Discuss any differences.

5. Swap roles and play again.

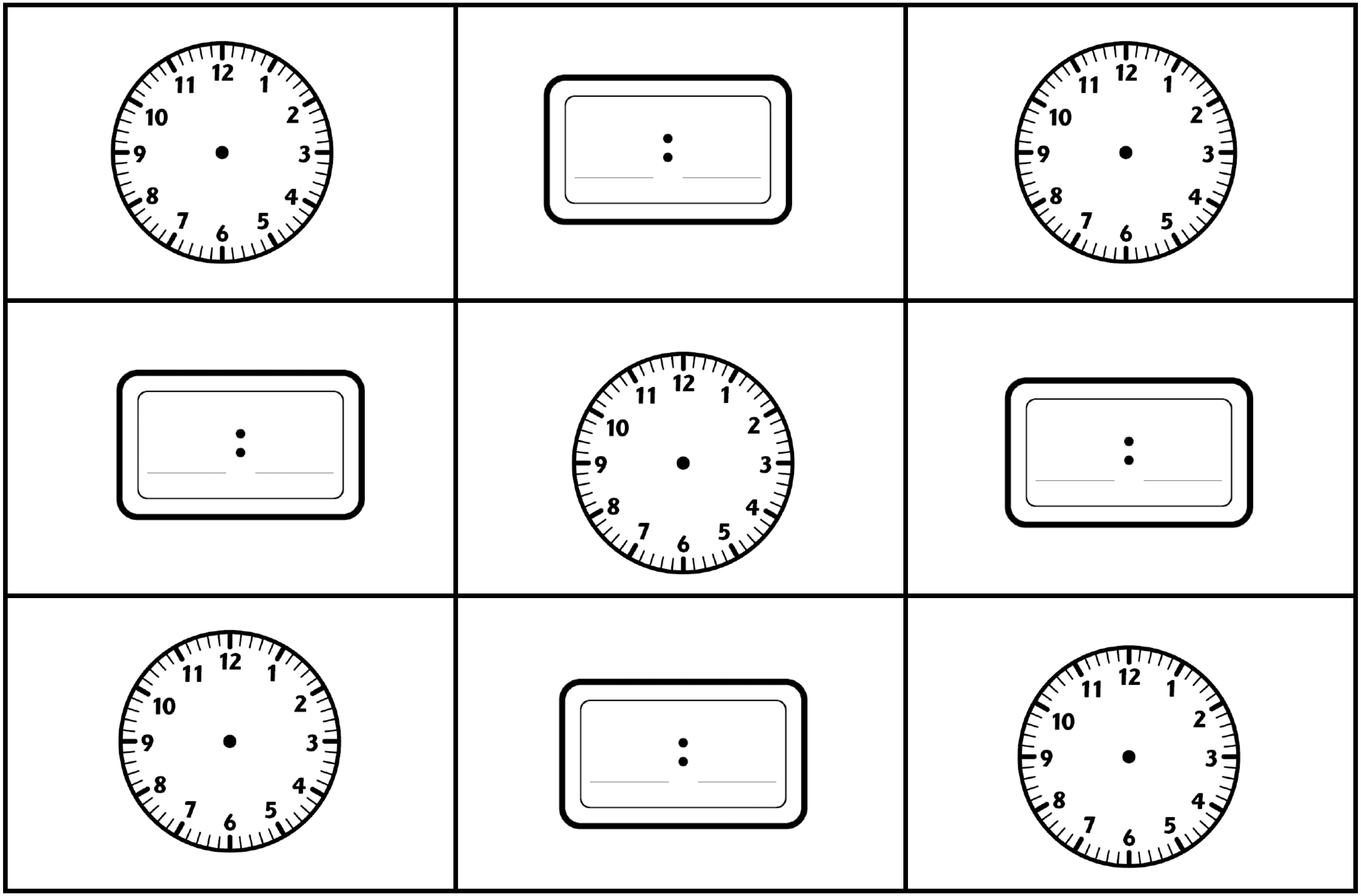
Show ____________ on the clock in the center of your grid.

Show ____________ on the clock above/below ____________.

Show ____________ on the clock to the right of ____________.

Show ____________ on the clock to the left of ____________.

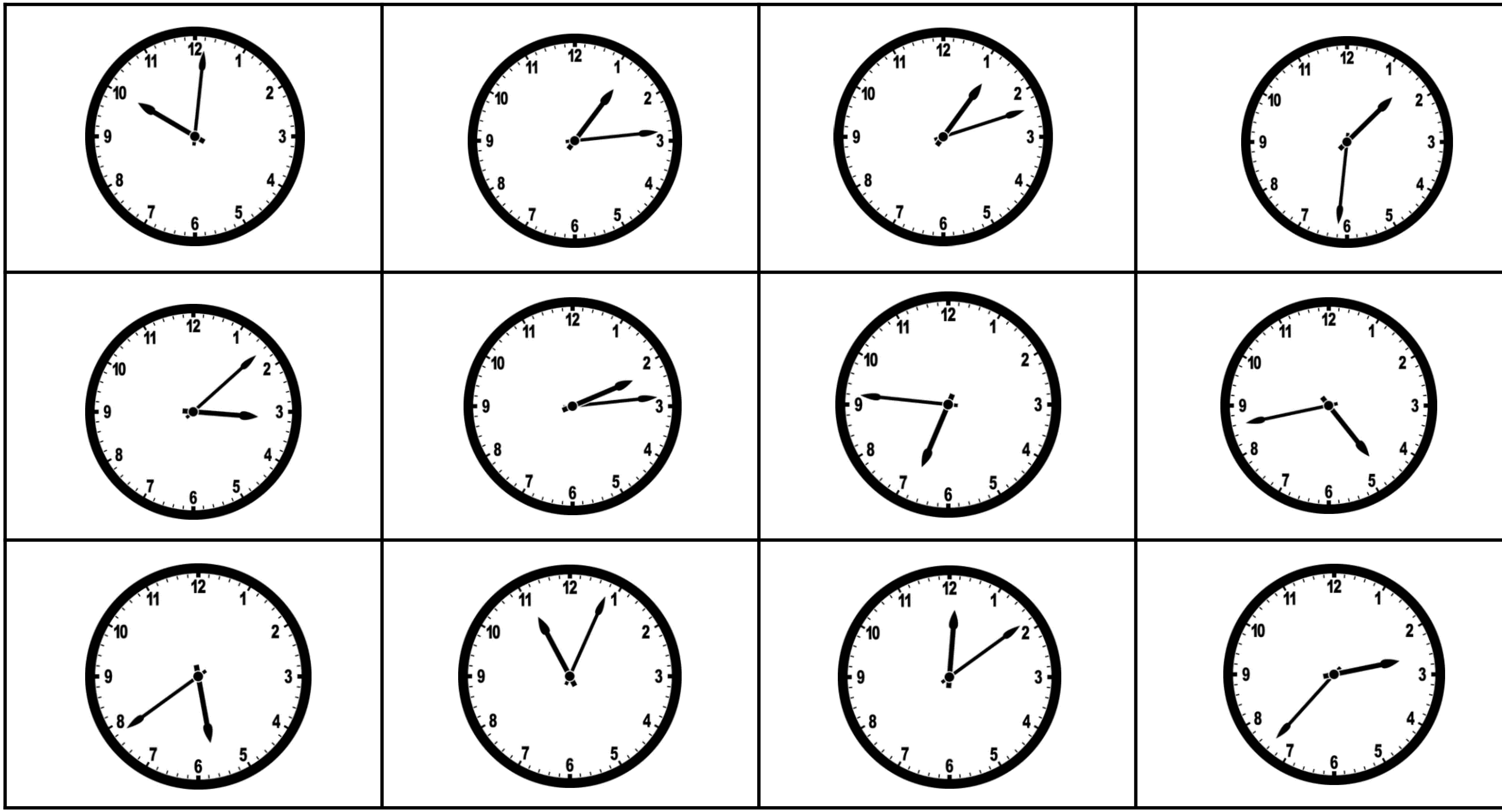
Time Barrier Game



Time Bump!

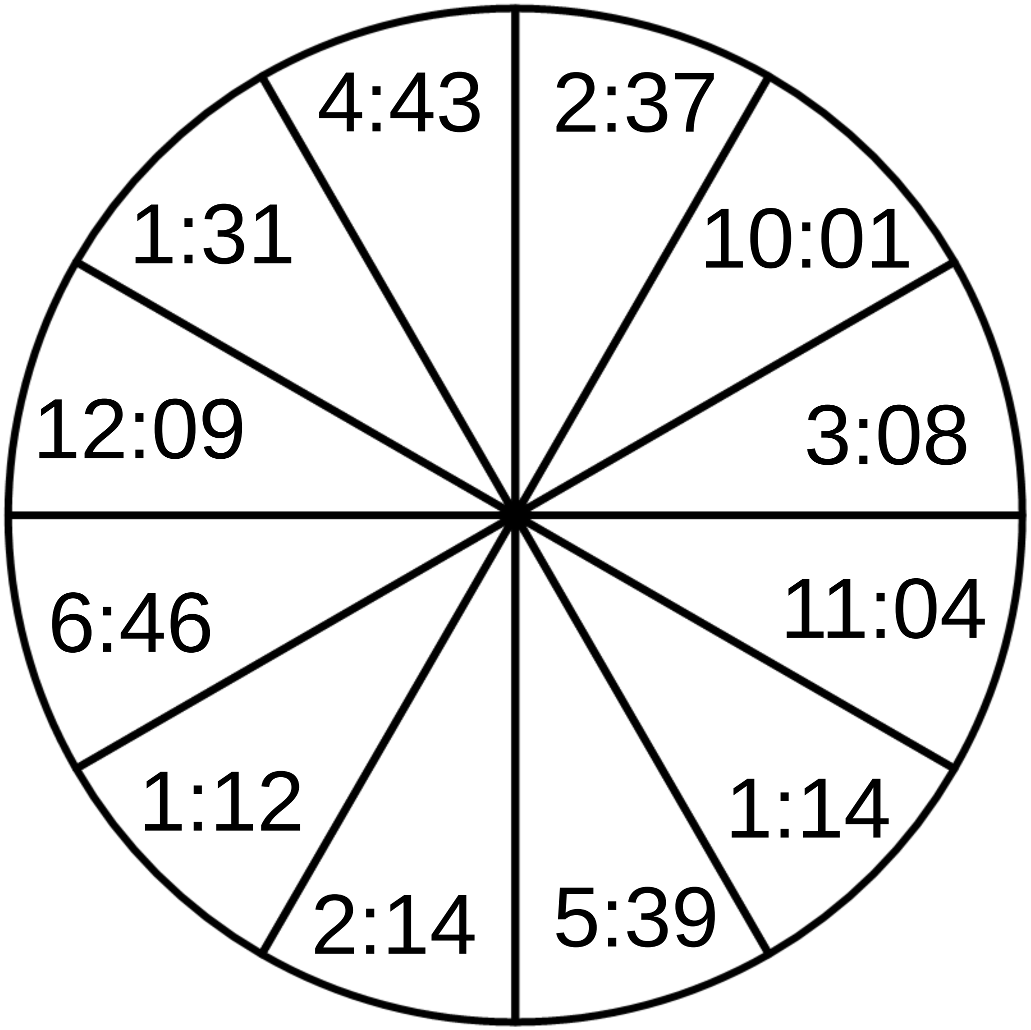
Players: 2 **Materials:** 20 snap cubes (10 each of 2 different colors), Time Bump! spinner, paperclip

Each player takes 10 snap cubes of one color. Take turns to spin the spinner, read the time the paperclip lands on, and place a snap cube on the matching clock on the board. If your partner's cube is on the clock BUMP it off. If your cube is on the clock link the two cubes together to FREEZE the spot. Continue playing until one player has all 10 cubes on the board.



ver. 4

Time Bump!



Word Problems: Time Intervals

Materials: Word Problems: Time Intervals cards

---

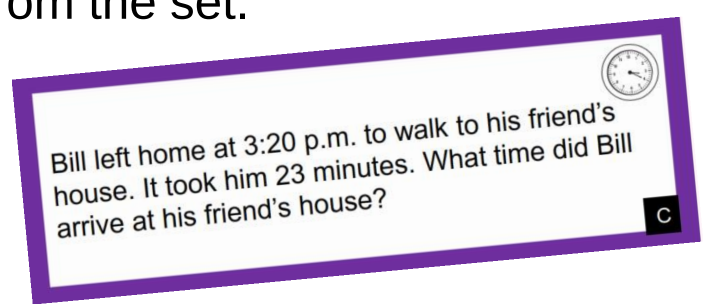
1. Work with a partner. Choose five word problems that you will both solve.
2. Solve the word problems independently. For each problem:

   a) write an equation with a symbol for the unknown number

   b) draw a number line to model the problem

   c) answer the question in a complete sentence

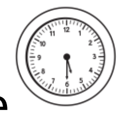
3. After completing five problems share your work with a partner. Explain how you solved each problem using accurate mathematical vocabulary.
4. Repeat with another five problems from the set.



Word Problems: Time Intervals

I left school at 3:15 p.m. and arrived home 25 minutes later. What time did I arrive home?

A

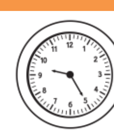


Layla is making cupcakes. They need to bake for 45 minutes. She put them in the oven at 5:30 p.m. At what time should she take them out?

B

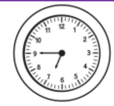
Bill left home at 3:20 p.m. to walk to his friend’s house. It took him 23 minutes. What time did Bill arrive at his friend’s house?

C



At 9:25 a.m. a teacher set a timer for 30 minutes quiet reading time. What time will it be when the timer rings?

D

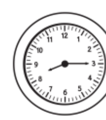


Mrs. Jones left home at 6:45 a.m. and arrived at school at 7:23 a.m. How long did it take her to get to school?

E

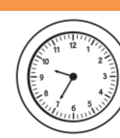
John went to bed at 9:40 p.m. and got up at 7:00 a.m. How long did he sleep for?

F



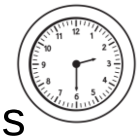
Peter completed a bike ride 3 hours and 26 minutes after he started. He started the bike ride at 8:15 a.m. At what time did he finish?

G



On Saturday morning Peter began cutting the grass at 9:35 a.m. He finished at 10:43 a.m. How long did it take Peter to cut the grass?

H

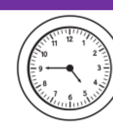


After Ben had been at the park for 45 minutes he noticed that the time was 2:30 p.m. At what time did Ben arrive at the park?

I

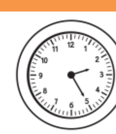
Tess went to art class at 11:15 a.m. She painted for 25 minutes. She spent 30 minutes drawing with crayons. Then she ate lunch. At what time did Tess eat lunch?

J



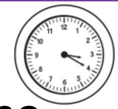
When Lisa got home from school she did violin practice for 30 minutes. Then she read for 25 minutes. She finished reading at 4:45 p.m. At what time did Lisa get home from school?

K



Jack got on the train at 2:25 p.m. The train trip took 25 minutes. Next, Jack walked for 10 minutes to get home. At what time did Jack arrive home?

L

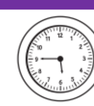


Nick gets out of school at 3:20 p.m. He has a 15 minute walk home. When he gets home he relaxes for 30 minutes, then spends 45 minutes doing homework. At what time does Nick finish his homework?

M

At art class Beth spent 45 minutes painting and 25 minutes drawing. She finished her art class at 6.30 p.m. At what time did Beth begin her art class?

N



As soon as Jacob got home from school he worked on his math project for 50 minutes. Then he studied for a test for 30 minutes. He finished at 5:45 p.m. At what time did Jacob get home from school?

O

Katie played her flute for 45 minutes, then ate a snack for 15 minutes. Next, she did homework for 30 minutes and finished at 6:00 p.m. At what time did Katie begin playing her flute?

P

Estimating Weight

Materials: balance scales, set of gram weights, set of small objects

1. Work with a partner. Select five small classroom objects to weigh on the balance scales.

2. Create a table with the headings: Object, Estimated Weight (g), and Actual Weight (g).

Object	Estimated Weight (g)	Actual Weight (g)

3. Estimate the weight of each objects in grams. Record each estimate on your table.

4. Weigh each object. Put the object on one side of a balance scale. Put gram weights on the other side. Make it balance. Record the actual weight on your table.

5. Record three statements about your data.

The heaviest/lightest object we weighed was the ……..

My closest estimate was …………

The ________ weighed ___ grams less/more than my estimate.

I estimated that the weight of the ________ was ___ grams. The actual weight was ___ grams.

The difference in weight between the ________ and the ________ was ___ grams.

The heaviest/lightest object was the ________. It weighed ___ grams.

Weigh it Twice

Materials: balance scales, set of gram weights, paper clips, set of small objects

1. Work with a partner. Select five small classroom objects to weigh on the balance scales.

2. Measure each object twice, first using paper clips and then using grams (g).

3. Record your data in a three column table with the headings: Object, Non-Standard Unit (paper clips) and Standard Unit (g).

Object	Non-Standard Unit (paper clips)	Standard Unit (g)

4. Record three comparative statements about your data.

It took 18 more paper clips to weigh the stapler than the box of pencils.

The scissors weighed 5 grams less than the stapler.

It took twice as many paper clips to weigh the eraser than the pencil.

The eraser and the sharpener had an equal weight of 12 g.

The difference in weight between the tissue box and the sharpener was 16g.

The ________ weighed ___more/less paper clips than the ________.

The ________ weighed ___ grams more/less than the ________.

The difference in weight between the ________ and the ________ was ___ grams.

The ________ and the ________ had an equal weight of ___ grams.

Marble Grab

Materials: container of marbles, balance scales, gram weights

1. Take a fistful of marbles from the container using your left hand only. Place the marbles on the balance scales.

2. Estimate the mass of the marbles you grabbed. Record your estimate.

3. Use gram weights to measure the mass of the marbles. Record.

4. Repeat steps 1-3 using your right hand only.

5. Share your work with a partner.

	Estimate (in grams)	Weight (in grams)
Left Hand		
Right Hand		

I grabbed ___ marbles with my left/right hand. They weighed ___ grams.

I grabbed ___ more/less marbles with my _____ hand than my _____ hand.

I estimated that the marbles I grabbed with my left hand weighed ___ grams. The actual measure was ___ grams.

The difference between my estimate and the actual measure was ___ grams.

Measure One Liter

Materials: measuring jug or 1 liter cylinder, bowl of water, funnel, containers of various shapes and sizes, large plastic tub to place containers in when pouring water, paper towels

---

1. Work with a partner, or small group. Choose a container and take turns to fill it with water using a funnel until you estimate that you have reached one liter.

2. Carefully pour the water from the container into a measuring jug (or 1 liter cylinder) to determine the actual capacity using metric units.

3. Add to, or remove water until you have exactly one liter.

4. Repeat with a container of a different size or shape.

5. Record your data in a table with the headings shown below.

Container	**Actual Capacity**	**Amount of water added or removed to make exactly one liter (1L)**

More or Less than a Liter?

Materials: measuring jug or 1 liter cylinder, bowl of water, funnel, containers of various shapes and sizes, large plastic tub to place containers in when pouring water, paper towels

1. Work with a partner. Sort your containers into three groups: those you predict hold less than one liter, those that hold about one liter, and those that hold more than one liter.

2. Record your predictions on a three column table with the headings:

Container	Estimated Capacity (more than, less than, or about one liter)	Actual Capacity

3. Check your predictions by measuring the capacity of each container using a measuring jug or one liter cylinder. Complete your table.

4. Write three statements about your data.

I predict that the containers that hold more than one liter are ....

I predict that the containers that hold less than one liter are ....

I predicted that the _____ container held more than/less than/about one liter. Its actual capacity was ________.

The container with the least/greatest capacity is the ________.

Capacity Lineup

Materials: measuring jug or 1 liter cylinder, bowl of water, funnel, containers of various shapes and sizes, large plastic tub to place containers in when pouring water, paper towels

1. Work with a partner. Select four containers. Estimate the order of the containers from least to greatest capacity.

2. Record your predictions by drawing the containers in the order you placed them.

3. Check your predictions by filling each container with water and then emptying the water into a measuring jug or one liter cylinder.

4. Record your findings. Were you surprised by the results? Why?

I predict that the container with the greatest capacity is ....

I predict that the container with the least capacity is ......

I predicted ....

I discovered ....

Something that surprised me was ....

Word Problems: Liquid Volume and Mass

Materials: Word Problems: Liquid Volume and Mass cards

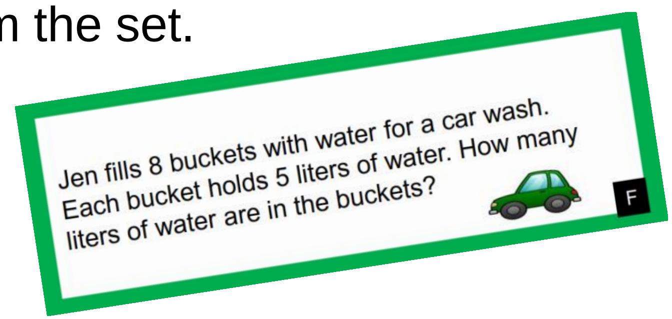
1. Work with a partner. Choose five word problems that you will both solve.
2. Solve the word problems independently. For each problem:

   a) write an equation with a symbol for the unknown number

   b) draw a quick picture, or diagram, to model the problem

   c) answer the question in a complete sentence

3. After completing five problems share your work with a partner. Explain how you solved each problem using accurate mathematical vocabulary.
4. Repeat with another five problems from the set.

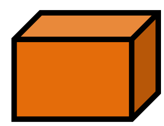


Word Problems: Liquid Volume and Mass

A pen has a mass of 15 grams. What is the mass of 5 identical pens?

A

A large box has a mass of 125 kilograms. A small box has a mass of 114 kilograms. What is the total mass of both boxes?



B

Sarah’s fish tank holds 32 liters of water. Sarah uses a 4 liter container to fill the tank. How many times will Sarah need to fill the 4 liter container in order to fill the fish tank?

C

Ben has three cups, each filled with 325ml of lemonade. What is the total liquid volume of lemonade in the three cups?

D

At a party Lisa makes fruit smoothies for her friends. Each smoothie uses 8 grams of fresh strawberries. If Lisa makes 9 smoothies, how many grams of strawberries will she need?

E

Jen fills 8 buckets with water for a car wash. Each bucket holds 5 liters of water. How many liters of water are in the buckets?

F

A crate holds 140 kilograms of potatoes and 132 kilograms of carrots. What is the total mass of the potatoes and carrots?

G

Sam pours 750 milliliters of water into 3 glasses. He pours the same amount into each glass. How much water does Sam pour into each glass?

H

A restaurant sold 36 liters of orange juice over 4 days. If it sold the same amount of juice each day, how many liters of orange juice did it sell in one day?

I

A farmer packed 76 kilograms of apples and 42 kilograms of potatoes into crates for the market. How many more kilograms of apples did he pack than potatoes?

J

The total mass of three boxes is 72 kilograms. Box A weighs 25 kilograms. Box B weighs 29 kilograms. What is the weight of Box C?

K

A bag of grapes has a mass of 350 grams. A bag of cherries has a mass of 275 grams. What is the total weight of the two bags of fruit?

L

Lisa’s cat weighs 5 kilograms. Her dog weighs 34 kilograms. How much more does her dog weigh than her cat?

M

A grocer has a sack of pumpkins. He adds a 9 kilogram pumpkin to the sack and then it weighs 73 kilograms. How much did the sack of pumpkins weigh to begin with?

N

Each morning a farmer fills a water trough with 36 liters of water. During the day the pigs drink all the water. If each pig drinks about 4 liters of water, how many pigs does the farmer have?

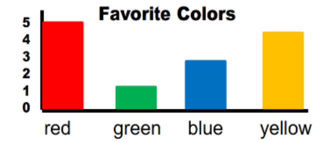
O

A farmer loads two sacks of onions onto a truck. The two sacks have a total mass of 83 kilograms. One sack weighs 49 kilograms. What is the weight of the other sack?

P

Represent and Interpret Data

Materials: survey cards



1. Decide on a survey question with four possible responses. You can use one of the survey cards or come up with a question of your own.

2. Gather data by surveying each student in our class. Record your data on a tally chart.

3. Display your data on a bar graph. Be sure to include a title and scale. Label your axis.

4. Write 5 questions that can be answered by analyzing your data. Here are some ideas to get you started:
   - How many more …..?
   - How many less …..?
   - What is the difference between …..?

5. Answer each question in a complete sentence.

What is your favorite pet?

dog	cat	goldfish	hamster

What is your favorite subject?

math	science	art	writing

What is your favorite sport?

football	baseball	basketball	hockey

What is your favorite season?

summer	winter	autumn	spring

What color are your eyes?

blue	green	brown	hazel

What is your favorite place to visit?

museum	park	library	zoo

How many letters are in your first name?

3	4-5	5-6	More than 6

How many cousins do you have?

0	1-2	3-4	More than 4

Graphing M&M's

Color	Number of M&M's
Green	
Orange	
Yellow	
Red	
Blue	
Brown	

Materials: fun size packet of m&m's per partnership

1. Work with a partner. Open your packet of M&M's and sort them by color.
2. Count how many you have of each color. Record your count in a table.
3. Display your data on a bar graph. Be sure to include a title and scale. Label your categories.
4. Next, display your data on a picture graph. Be sure to include a title and label your categories. Draw a key that tells the reader what each picture represents.
5. Analyze and interpret your data. Write 6 sentences describing your data.
6. Share the M&M's equally with your partner.

There were ___ less _______ than _______ M&M's in the bag.

There were ___ more _______ than _______ M&M's in the bag.

The color we had the most/least of was _____.

There was a total of ___ M&M's in the bag.

Key: ______ = ___

Gummy Bear Graph

Materials: bowl of gummy bears, graph paper, ladle 

---

1. Work in a group of 3 or 4 students. Each person in your group must take one scoop of gummy bears from the bowl using a ladle.

2. Count how many gummy bears each person scooped. Record the count in a table.

Group Member's Name	Number of Gummy Bears Scooped

3. Display your data on a bar graph. Be sure to give your graph a title and number the scale. Label your categories. Draw the bars using your data.

4. Analyze and interpret your data. Write 3 sentences describing your data.

_____ scooped the most gummy bears. _____ scooped the least gummy bears.

To find the total number of gummy bears scooped by our group I .....

______ scooped ___ more gummy bears than ______.

______ scooped ___ less gummy bears than ______.

Paper Ball Throw

Materials: bucket or trash can, 10 small balls of paper, graph paper

1. Work with a partner. Collect 10 small balls of paper. Stand four large steps away from the bucket.

2. Take turns to try and throw one ball of paper at a time into the bucket. Throw five balls with your left hand and five balls with your right hand.

3. Use a tally chart to keep track of how many times the balls of paper land in the bucket. After you have both had ten throws return all the balls of paper to the bucket.

Name	Right Hand	Left Hand

4. Display your data on a bar graph. Be sure to give your graph a title and number the scale. Label your categories. Draw the bars using your own and your partner's data.

5. Analyze and interpret your data. Write 3 sentences describing your data.

I threw ___ paper balls into the bucket with my right hand and ___ with my left hand.

I threw ___ more/less paper balls into the bucket than my partner.

I threw ___ more paper balls into the bucket with my _____ hand than my _____ hand.

My partner and I threw ___ paper balls into the bucket in all.

Jake’s Survey

Materials: graph paper

1. Jake surveyed 26 students. His data showed that:

   - more students liked apples than oranges
   - more students liked oranges than pears

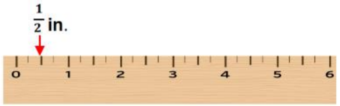
2. Create a tally chart to represent Jake’s data. Explain how you decided on the count for each type of fruit.

3. Create a bar graph to represent Jake’s data. Be sure to give the graph a title and number the scale. Label the categories. Draw the bars.

4. Share your work with a partner. How are your graphs alike? How are they different?

Measure to the Nearest Half-Inch

Materials: copies of ruler template, scissors



---

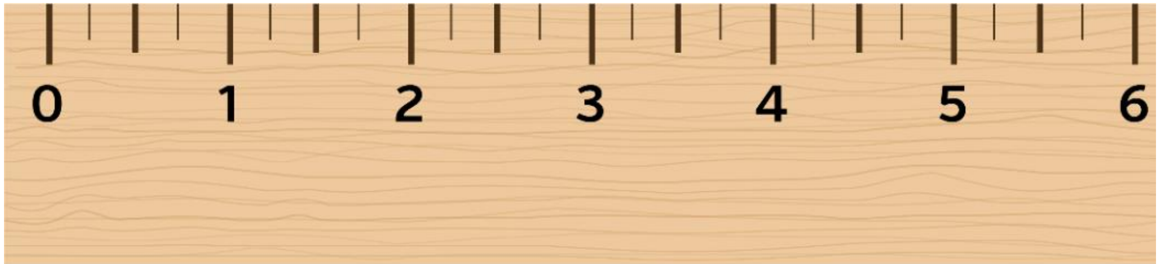
1. Cut out and label your ruler to show all half-inch measures.

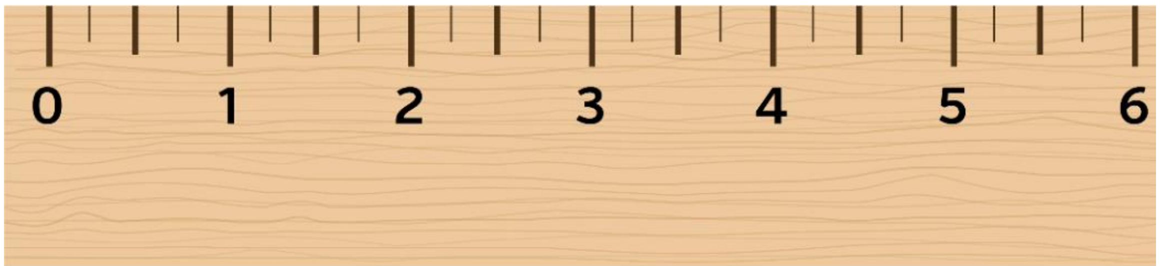
2. Use your ruler to measure ten objects in the classroom to the nearest half-inch.

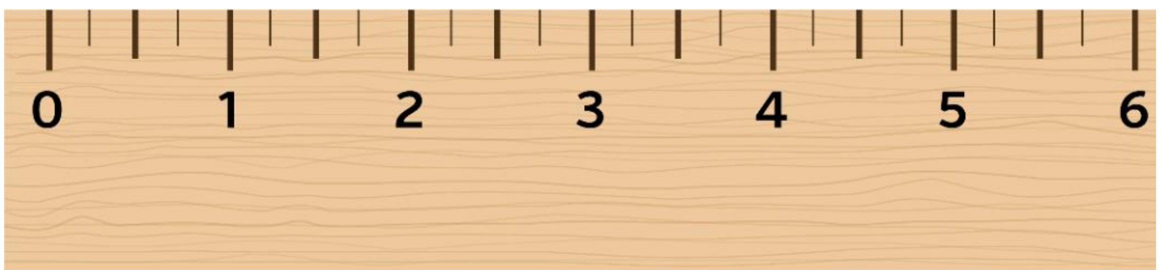
3. Sketch and label each object you measure.

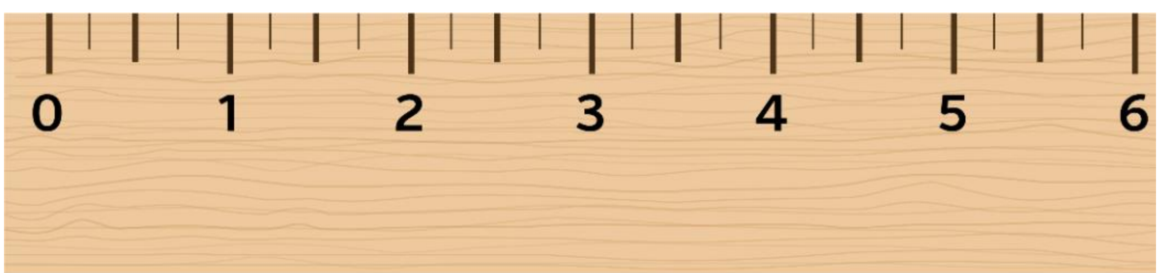
4. Write 5 sentences describing your data. Here are some ideas to get you started:

   - The longest/shortest object I measured was ………..
   - The difference in length between the _____ and the ______ was …..
   - The _______ measured ___ inches more/less than the _______.


0
1
2
3
4
5
6

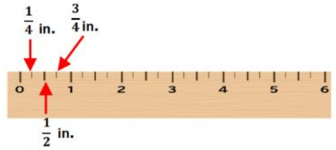

0
1
2
3
4
5
6


0
1
2
3
4
5
6


0
1
2
3
4
5
6

Measure to the Nearest Quarter-Inch

Materials: copies of ruler template, scissors



---

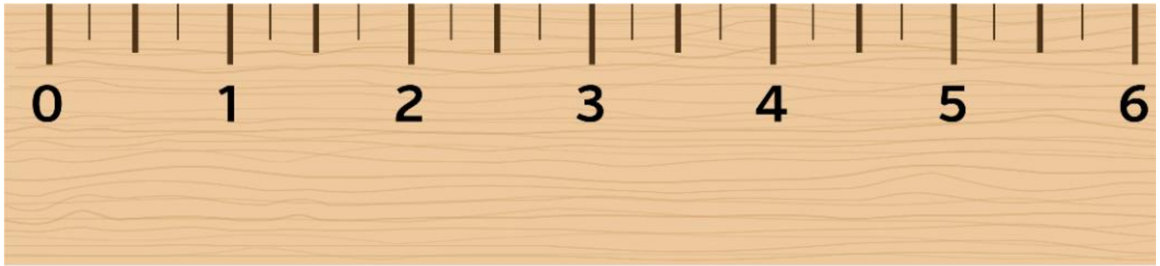
1. Cut out and label your ruler to show all quarter-inch measures.

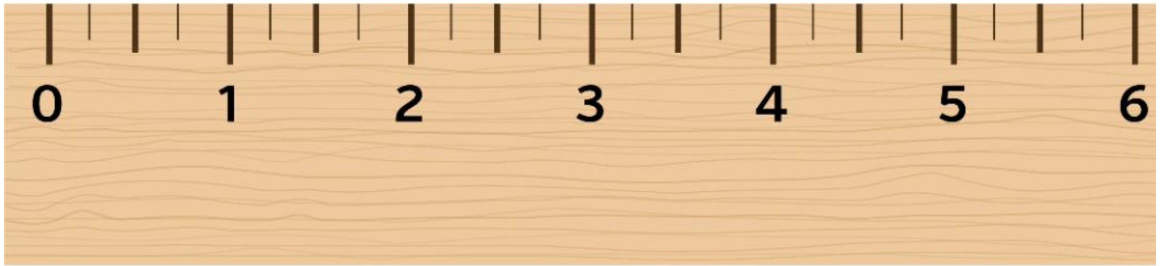
2. Use your ruler to measure ten objects in the classroom to the nearest quarter-inch.

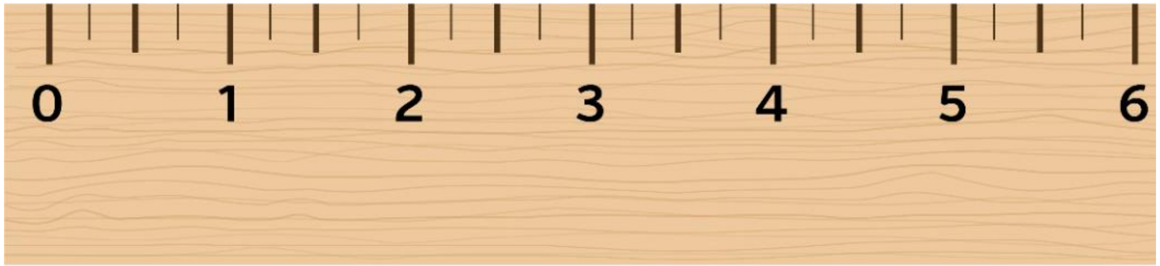
3. Sketch and label each object you measure.

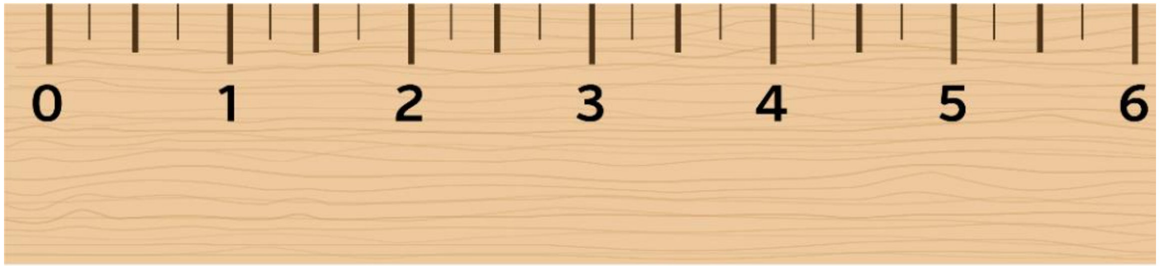
4. Write 5 sentences describing your data. Here are some ideas to get you started:

   - The longest/shortest object I measured was ………..
   - The difference in length between the _____ and the ______ was …..
   - The _______ measured ___ inches more/less than the _______.

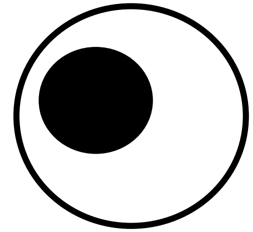

0 1 2 3 4 5 6


0 1 2 3 4 5 6


0 1 2 3 4 5 6


0 1 2 3 4 5 6

Squid Eyes!



Materials: rulers

1. The giant squid has the largest known eye in the animal kingdom, with a width of up to $15\frac{3}{4}$ inches. Use a ruler to draw a line $15\frac{3}{4}$ inches in width to get a sense of the size of a giant squid's eye.

2. Work with a partner. Carefully measure and record the width of your partner's eye to the nearest quarter-inch.

3. Work together to measure other body parts to the nearest quarter-inch. Who has the longest thumb, big toe, hand, foot, ear?

4. Record your findings. Write four comparative statements about your data.

My ______ measured ___ inches. It was ___ inches longer than my partner's ______.

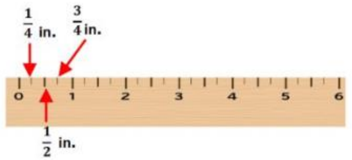
The difference in length between my ______ and my partner's ______ is ___ inches. To find the difference I .....

My ______ measured ___ inches. It was ___ inches shorter than my partner's ______.

The width of my eye is ___ inches. A giant squid eye measuring $15\frac{3}{4}$ inches is ___ inches wider than my eye.

Measuring Strips Line Plot

Materials: set of paper strips, rulers



1. Measure strips A – Q to the nearest quarter inch. Record your data in a table.

Strip	Measurement
A	
B	
C	
D	

2. Create a line plot to display your data. Draw a horizontal line with a scale marked in whole, half, and quarter units.

3. Give your line plot a title. Label the horizontal line.

4. Plot your data be recording an X above the corresponding value on the line that represents each strip measured. If a measurement is repeated place one X above the other.

5. Write 3 sentences describing the data in your line plot.

A.

B.

C.

D.

E.

F.

G.

H.

Measuring Strips Line Plot: Copy strips on cardstock and cut out for use in Center.

I.

J.

K.

L.

M.

N.

O.

P.

Q.

Measuring Strips Line Plot: Copy strips on cardstock and cut out for use in Center.

The longest strip was Strip ___. It was ___ inches. The shortest strip was Strip ___. It was ___ inches.

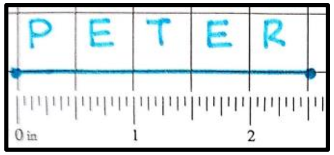
Strips ___ and ___ had an equal length of ___ inches.

Strip ___ was ___ inches longer/shorter than Strip ___. I know this because .....

The difference in length between Strip ___ and Strip ___ was ___ inches. I know this because ....

Measuring Names Line Plot

Materials: rulers, half-inch grid paper



1. Write the letters of your first name on half-inch grid paper. Use only one square for each letter.

2. Use your ruler to measure the length of your name to the nearest half-inch. Measure from the start of the first square to the end of the last square of your name.

3. Repeat steps 1-2 using the first names of 10 classmates.

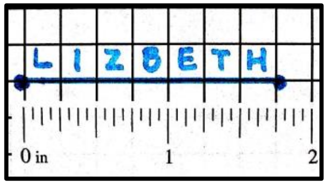
4. Create a line plot to display your data. Mark the horizontal scale in appropriate units. Give your line plot a title.

5. Plot your data by recording an X above the corresponding value on the line that represents the length of each name.

6. Write three statements describing the data in your line plot.

ver. 2

Measuring Names Line Plot



Materials: rulers, quarter-inch grid paper

---

1. Write the letters of your first name on quarter-inch grid paper. Use only one square for each letter.

2. Use your ruler to measure the length of your name to the nearest quarter- inch. Measure from the start of the first square to the end of the last square of your name.

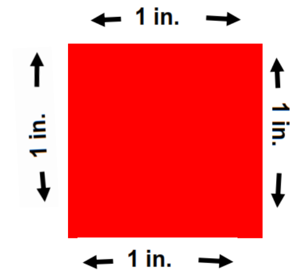
3. Repeat steps 1-2 using the first names of 10 classmates.

4. Create a line plot to display your data. Mark the horizontal scale in appropriate units. Give your line plot a title.

5. Plot your data by recording an X above the corresponding value on the line that represents the length of each name.

6. Write three statements describing the data in your line plot.

Square Units



Materials: rulers, chart paper, scissors

1. Work with a partner. Use a ruler to draw and label a square that measures one inch on each side – a square inch.

2. Next, use a ruler to draw and label a square that measures 12 inches on each side – a square foot.

3. Cut out your squares. Test different classroom objects to see how many of them can fit inside each square. Record your findings on a chart.

1 square inch	1 square foot
1 color tile	16 sticky notes

4. How would you describe to an absent student what you learned about a square inch and square foot today? Explain.

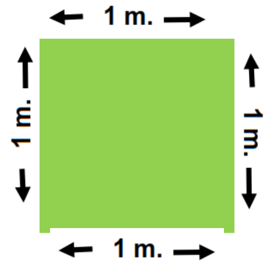
To make a square inch we ...... To make a square foot we ......

It took ___ ________ to fill a square inch.

Something new I learned today is that ....

It took ___ ________ to fill a square foot.

Square Meters



Materials: metersticks, chalk

---

1. Work with a partner. Use a meterstick and chalk to draw a square on the ground that measures one meter on each side – a square meter.

2. Predict how many students can fit inside your square. Record your prediction.

3. Test your prediction. How many students fit inside the square? Record.

4. Next, draw a square that measures two meters on each side. What is the area of this square?

5. Predict how many students can fit inside the square. Record.

6. Test your prediction. How many students fit inside the square? Record.

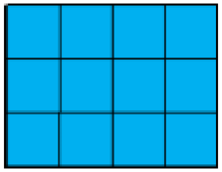
To make one square meter we ......

I predicted that it would take___ students to fill a square meter. The actual measure was ___ students.

To make two square meters we ......

I predicted that it would take___ students to fill 2 square meters. The actual measure was ___ students.

Find the Area



Materials: different sized rectangles, color tiles (in.^{2})

---

1. Select three different rectangles. Predict the number of one-inch color tiles (unit squares) that you will need to cover each rectangle.

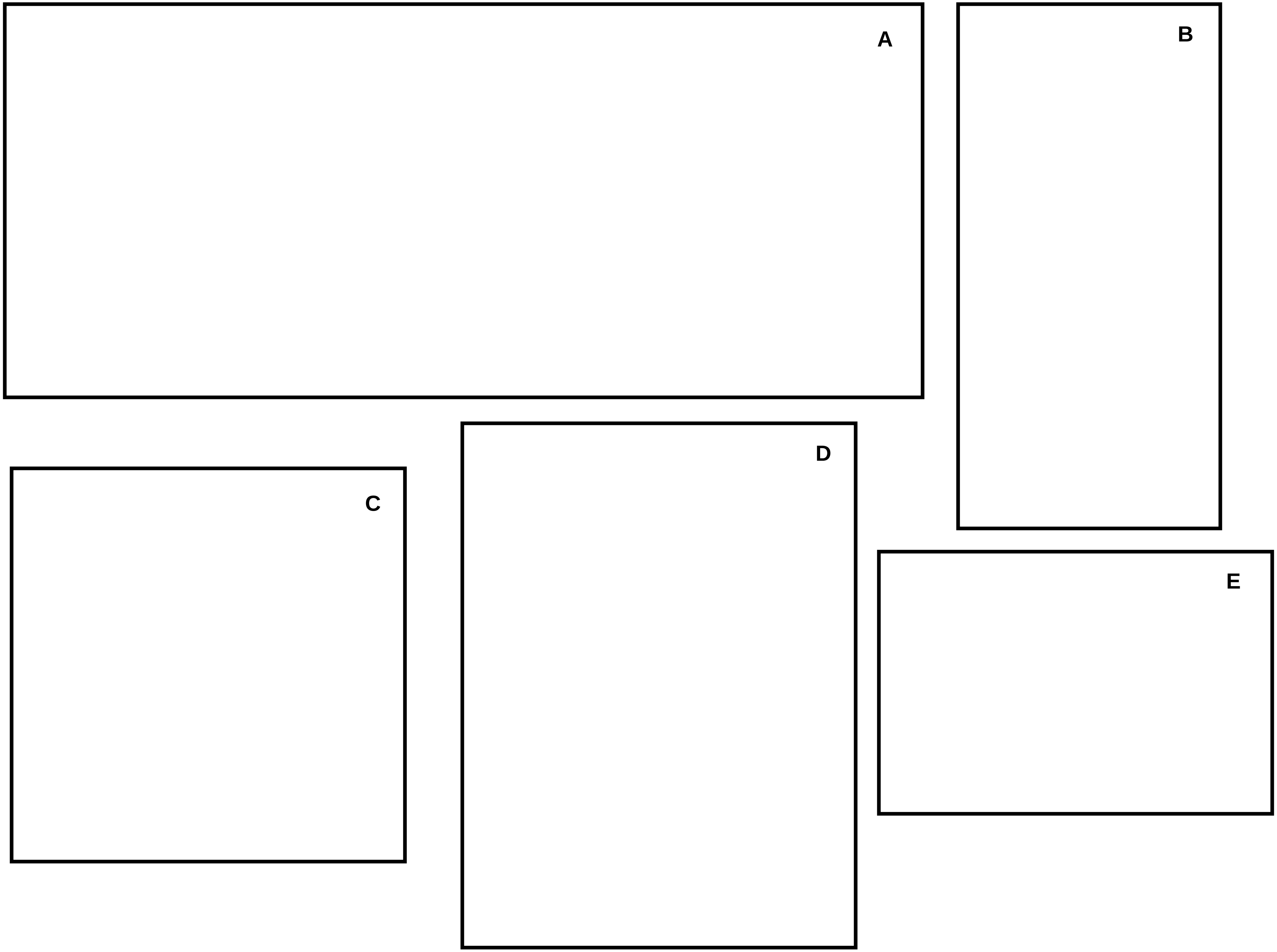
2. Measure the area or space inside each rectangle by tiling them with one-inch color tiles. Count the number of color tiles used to cover each rectangle.

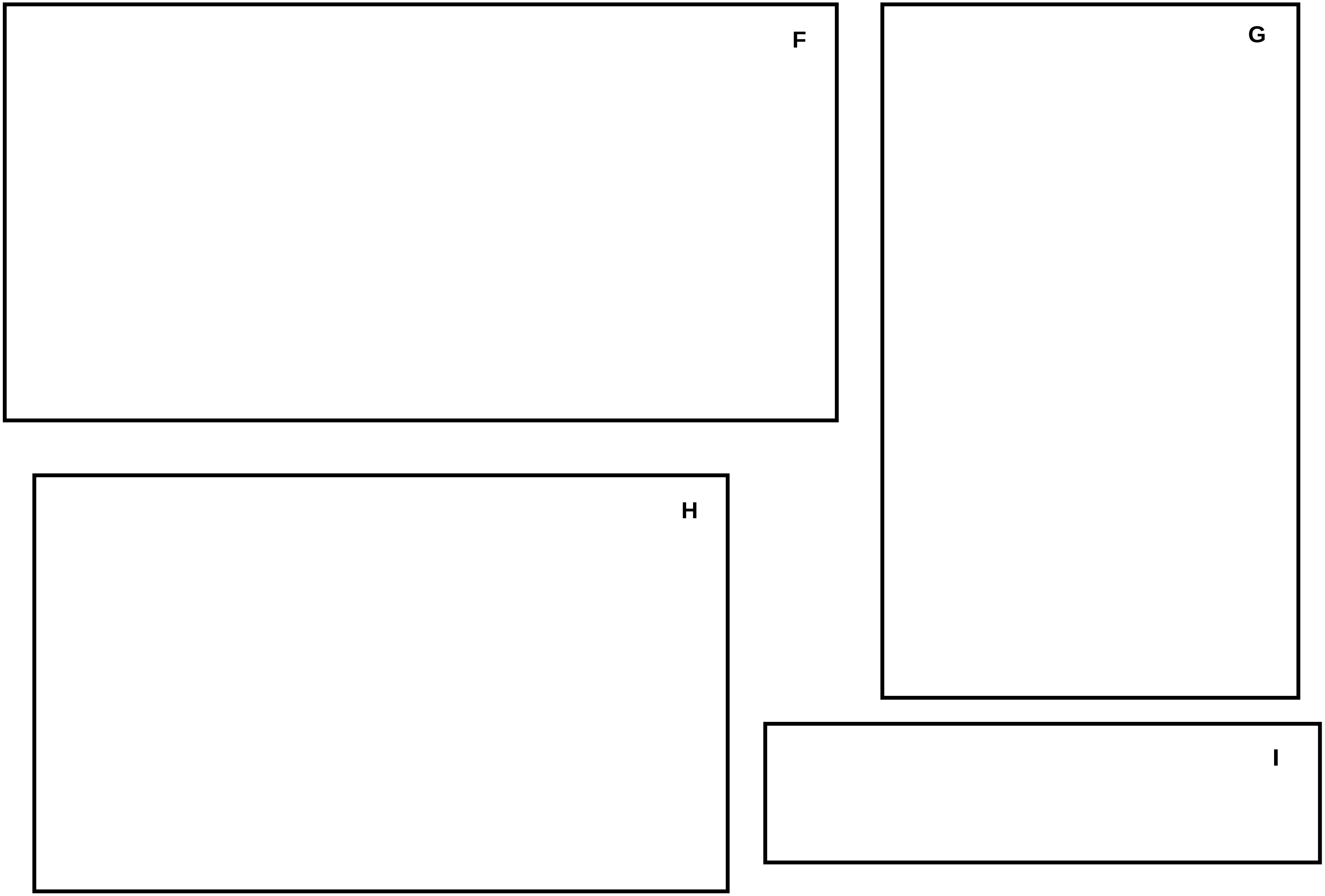
3. Draw the rectangles in order from least to greatest area. Record the area of each rectangle in square inches.

4. Complete the following:

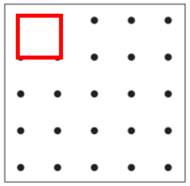
   To find the area of each rectangle I ……
   The largest area is _____. The smallest area is ____.
   The difference between the largest and smallest area is ____. I know this because ……

Copy onto cardstock, cut out and store in a baggie for center activity




F
G
H
I

Area on the Geoboard



Materials: geoboards, rubber bands, geoboard paper, rulers

---

1. Make the smallest square possible on your geoboard that can be made by connecting one rubber band and four pegs. This square has an area of one square unit and can be used as a measure for finding the area of geoboard shapes.

2. How many different shapes can you make on your geoboard with an area of **four** square units?

3. Draw each shape you make on geoboard paper. Record the area.

4. Make and draw at least two shapes with an area of **four** square units that include half squares. Write an equation to show how you calculated the area of these shapes.

5. Look closely at the different shapes you made with an area of **four** square units. Do they all have the same perimeter? Explain.

Cover Your Notebook

Materials: square centimeter grid paper

1. Look carefully at your math notebook. Estimate the area of the front cover in square centimeters.

2. Using centimeter grid paper find the area of the front cover of your math notebook. Use pictures, numbers or words to explain how you got your answer.

3. Approximately how many square centimeters of paper would you need to cover both the front and back covers of your math notebook? Explain your thinking using mathematical reasoning.

I estimate the front cover is ___ square centimeters.

The area of the front cover is ___ square centimeters. I found this out by .....

The difference between my estimate and the actual measure was ___ square centimeters.

I think it would take ___ square centimeters of paper to cover both the front and back covers because .....

Measuring Objects in Square Centimeters

Materials: square centimeter grid paper, assorted classroom objects

---

1. Work with a partner. Collect 5 rectangular objects from the classroom such as a notebook, different sized sheets of paper or chapter books.

2. Draw a table:

Object	Area Estimate (in square cm.)	Actual Area (in square cm.)	Difference (in square cm.)

3. Draw each rectangular object in the first column of your table.

4. Estimate how many square centimeters it will take to cover each object. Record your estimates in the table.

5. Find the area of each object using centimeter grid paper. Record.

6. Find the difference between each estimate and the actual measure.

Rectangles with Color Tiles

Materials: square inch color tiles

1. Count out 12 square inch color tiles. How many different rectangles can you construct with an area of 12 square inches?

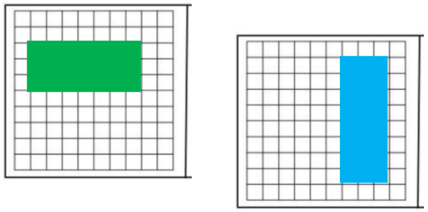
2. Draw a table with the headings: Rectangle, Number of Rows, Number of Columns, and Area. Draw each rectangle. Record your data.

Rectangle	Number of Rows	Number of Columns	Area

3. How can you be sure that you have made all possible rectangles with an area of 12 square inches? Explain your thinking.

4. Choose one of the following numbers: 16, 18, or 20. Investigate how many different rectangles you can construct with this number of square inch color tiles. Record your data in a table.

Area Compare



Materials: Area Compare card sheet for each player, scissors

1. Cut out the 12 cards. Draw and shade a different sized rectangle on each card. Write your initials on the back of each card.

2. Work with a partner. Combine your cards and place them facedown in a pile. Flip over one card each and find the area of the rectangle.

3. Compare your rectangles. The player with the larger area takes both cards. If both cards have an equal area players turn over a second card and compare them.

4. Continue playing until there are no cards left in the pile. The player with the most cards wins the round.

Variations: 1. The player with the smaller area takes both cards.
2. Compare perimeter instead of area.

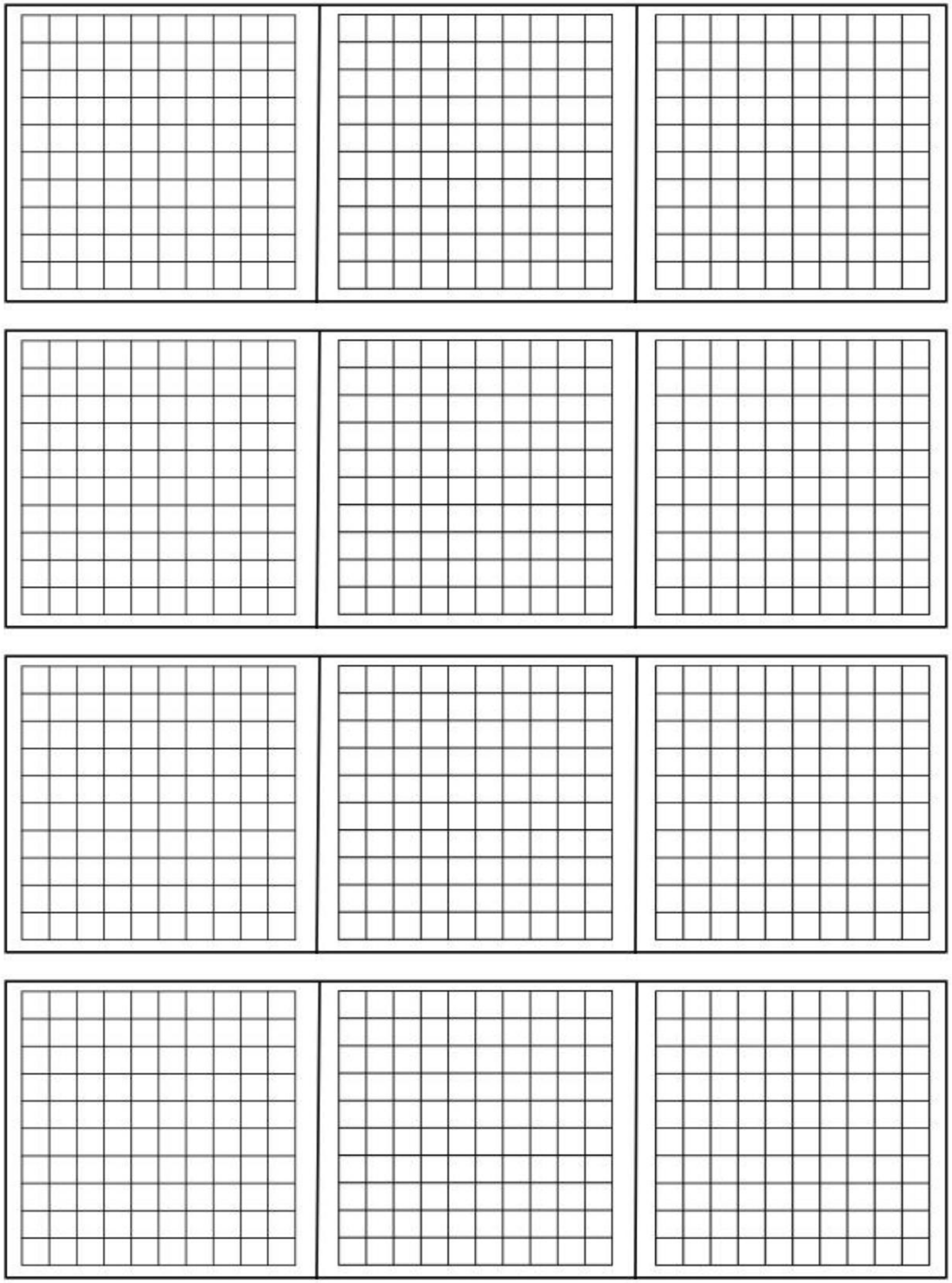
This rectangle has an area of ___ square units. I know this because .....

___ square units is greater than/less than ___ square units.

This rectangle has an area of ___ square units. I know this because .....

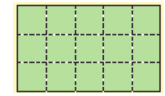
___ square units is greater than/less than ___ square units.

Area Compare Cards:
Cut out the 12 cards.
Draw and shade a
different sized
rectangle on each card.



Find the Area of a Rectangle

Materials: one-inch graph paper, one-inch color tiles, rulers



1. Draw 6 different sized rectangles with whole number side lengths on one-inch graph paper. Label the rectangles A – F.

2. Measure the area or space inside each rectangle by tiling it with one-inch color tiles. Count and record the number of tiles it takes to cover each rectangle.

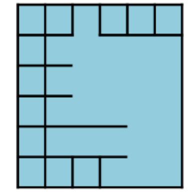
3. Measure the length and width of each rectangle. Record your data in a table, as shown below.

Rectangle	**Length (cm)**	**Width (cm)**	**Area (cm^2)**
A			
B			
C			

4. Look closely at your data. What is the relationship between the side lengths of each rectangle and its area? Write a rule, in your own words, for finding the area of a rectangle.

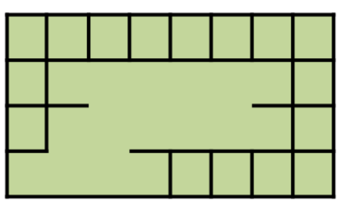
5. Explain why tiling a rectangle gives the same measurement of area as multiplying the side lengths.

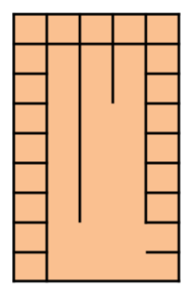
Complete the Rectangle



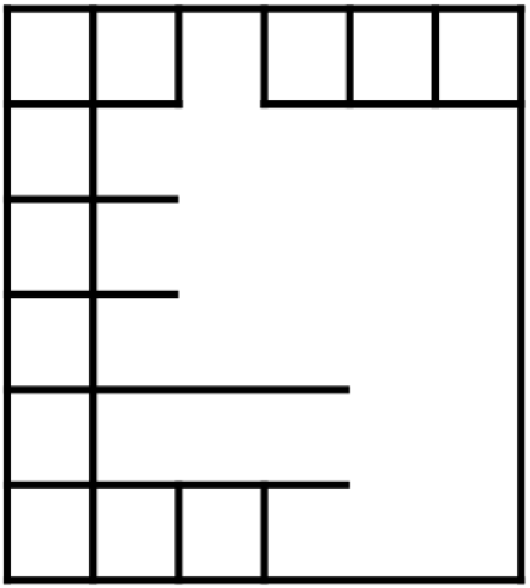
Materials: cm grid paper, rulers, Complete the Rectangle cards

1. Choose a card. Each ☐ represents a 1cm square. Sketch the rectangle on centimeter grid paper. Complete the rows and columns.
2. Label the side lengths of the rectangle.
3. Write a multiplication equation to find the area of the rectangle.
4. Repeat with other rectangles from the pack.
5. Check your work by comparing answers with a partner. Discuss how you knew where to draw the rows and columns in each rectangle.

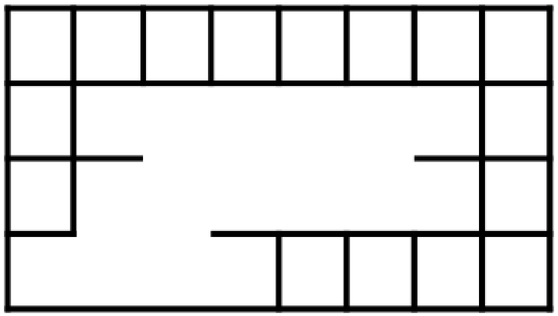




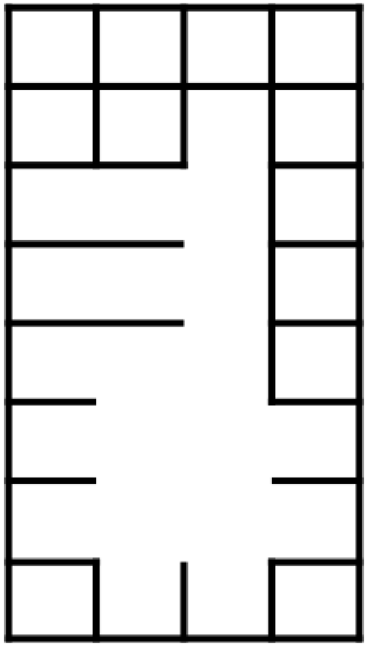
A.



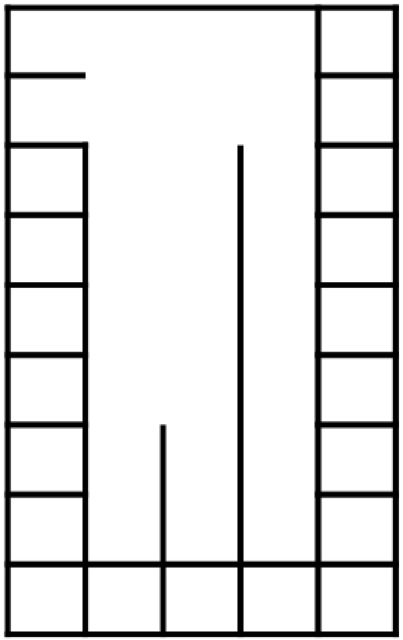
B.



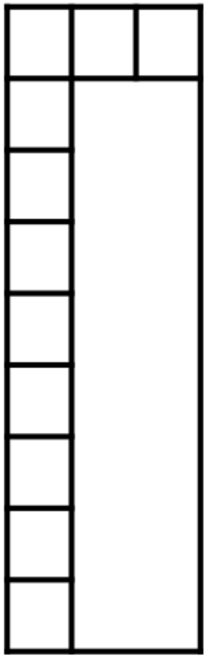
C.



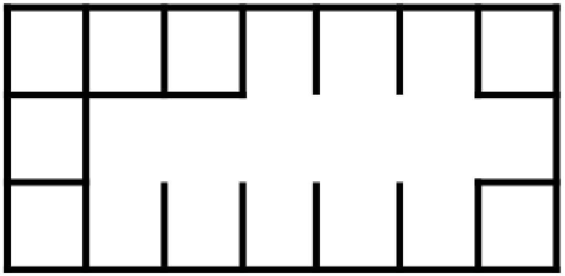
D.



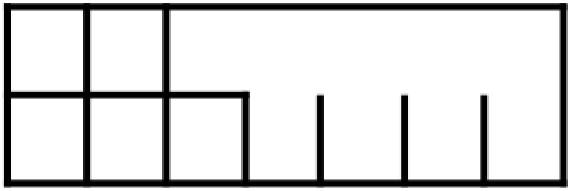
E.



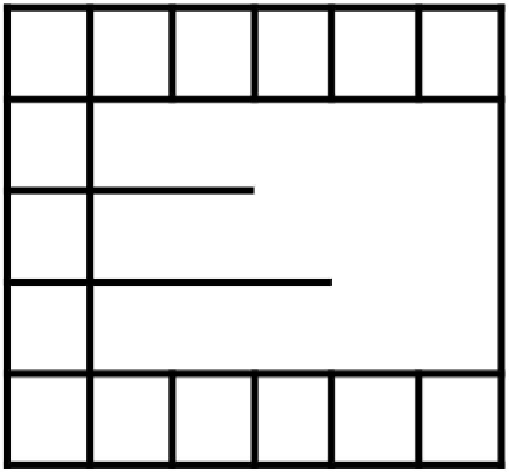
F.



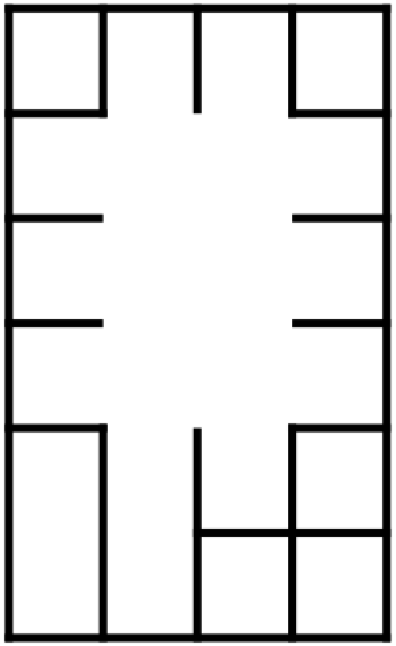
G.



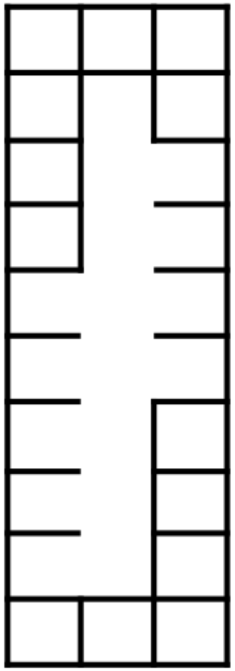
H.



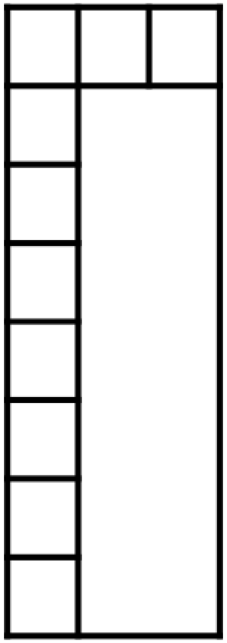
I.



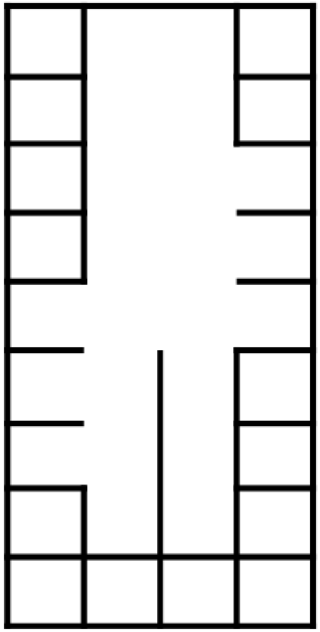
J.



K.



L.



Word Problems: Area

Materials: Word Problems: Area cards

---

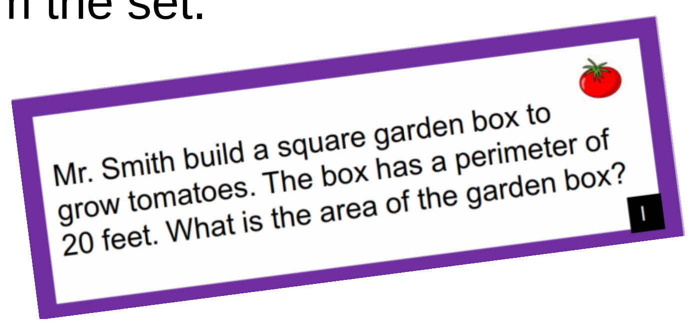
1. Work with a partner. Choose five word problems that you will both solve.
2. Solve the word problems independently. For each problem:

   a) write an equation with a symbol for the unknown number

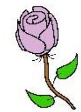
   b) draw a quick picture, or diagram, to model the problem

   c) answer the question in a complete sentence

3. After completing five problems share your work with a partner. Explain how you solved each problem using accurate mathematical vocabulary.
4. Repeat with another five problems from the set.



A gardener digs a flower bed that is 6 meters long and 5 meters wide. What is the area of the flower bed?



A

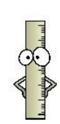
Mr. Smith wants to tile the kitchen floor. If the floor is 3 meters long and 4 meters wide, how many one meter square tiles will he need?

B

Tom built a backyard pen for his puppy. The length of the pen was 5 meters and the width was 3 meters. What is the area of the pen?

C

Lisa's square bedroom has a length of 9 feet. How much carpet will Lisa need to cover the floor of her bedroom?



D

A rectangle has an area of 24 square centimeters. If one side is 6 cm long, how long is the side next to it?

E

A small city park has a rectangular lawn that is 20 meters long and 9 meters wide. What is the area of the lawn?

F

A rectangular window measures 4 meters by 6 meters. What is the area of the window?

G

The rectangular top of a table is three times as long as it is wide. The width of the table is 1 meter. What is the area?

H

Mr. Smith build a square garden box to grow tomatoes. The box has a perimeter of 20 feet. What is the area of the garden box?

I

The area of a door is 6 square meters. The height of the door is 3 meters. What is the width of the door?

J

The label on a tin of paint states that it contains enough paint to cover 10 square meters. I need to paint a square wall with a perimeter of 12 meters. Will I have enough paint?

K

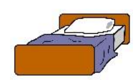
A rectangular chart has a perimeter of 90 cm. The length of the chart is 35 cm. What is the area of the chart?

L

A rectangular swimming pool has an area of 80 square meters. The width of the pool is 8 meters. What is the length?

M

Ben's bedroom is 8 feet long and 7 feet wide. Peter's bedroom is 9 feet long and 6 feet wide. Whose bedroom has the greater area? How much greater?



N

A rectangular vegetable garden has an area of 63 square feet. The length of the garden is 9 feet. What is the width of the vegetable garden?

O

The cover of a book has an area of 42 square inches. The width of the book is 6 inches. What is the length of the book?

P

Build Rectangles of Two Colors

Materials: color tiles

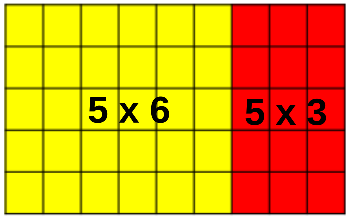
1. Make a rectangle with 2 rows of 5 tiles. Next, make an adjoining rectangle with 2 rows of 3 tiles using tiles of a different color.

2. Draw an area model to show the figure. Write a multiplication equation for each rectangle.

3. Find the total area of the large rectangle by adding the areas of the two smaller rectangles.

4. Build other rectangles by joining two smaller rectangles made from tiles of two colors. Sketch each rectangle and find the total area.

Example:

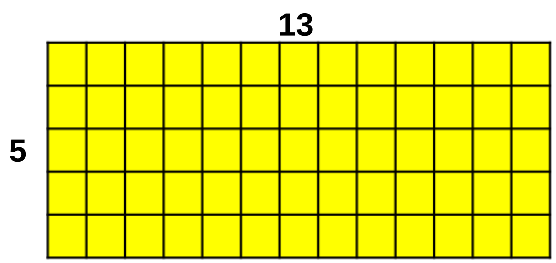


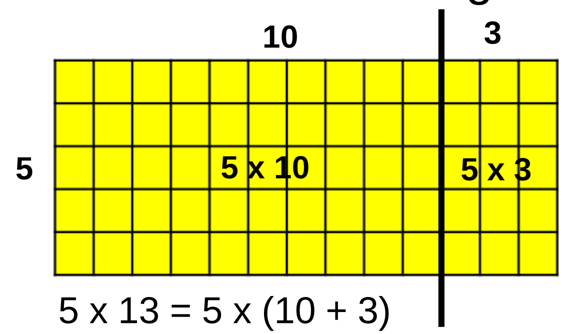
Rectangle 1: 5 x 6 = 30
Rectangle 2: 5 x 3 = 15
30 + 15 = 45 square units

Jack's Rectangles

Materials: pack of rectangles composed of unit squares

Jack needed to find the area of a rectangle that was 5 square units by 13 square units. He decided to use the distributive property to break the rectangle into smaller rectangles, and add the area of each smaller rectangle to find the total area.



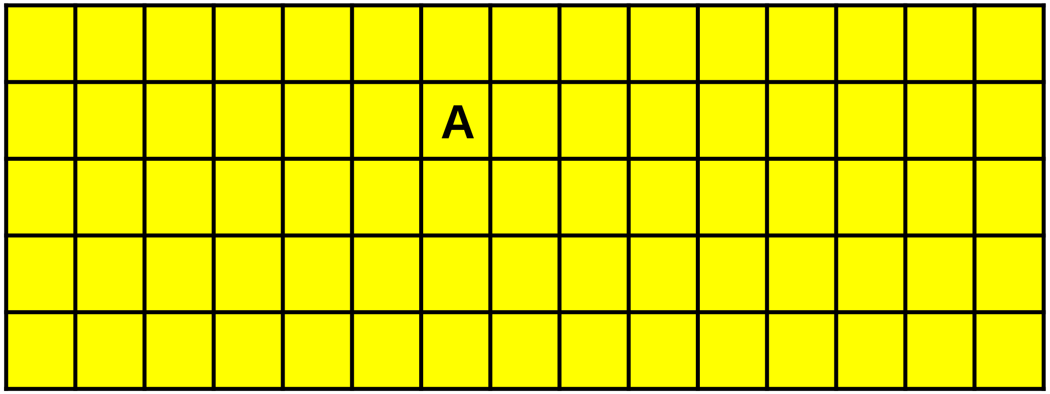


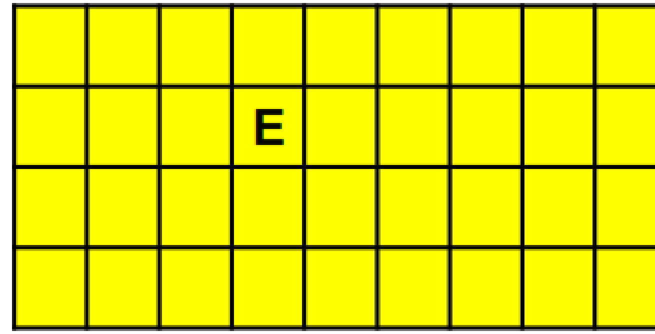
5 x 13 = 5 x (10 + 3)
Rectangle 1: 5 x 10 = 50
Rectangle 2: 5 x 3 = 15
50 + 15 = 65 square units

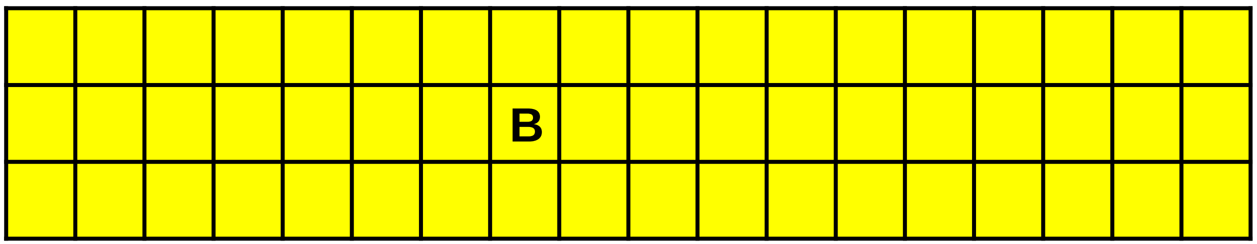
1. Use the distributive property to find the area of the rectangles in the pack. Show your multiplication and addition equations.

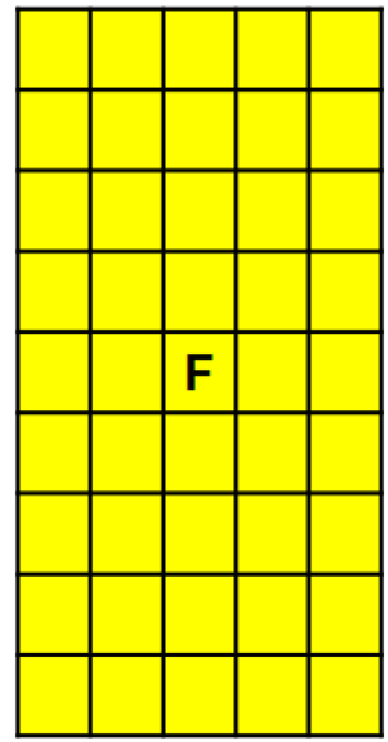
2. Share your work with a classmate. Did you break apart the rectangles in the same way? Explain.

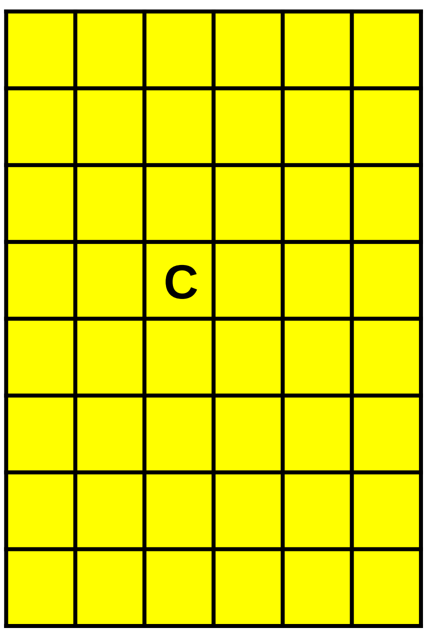
Rectangle Pack: Copy on cardstock and cut out rectangles for use in center.

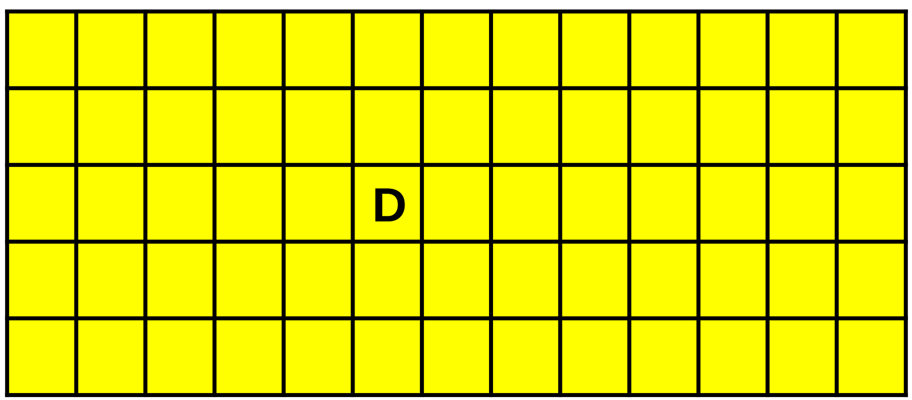


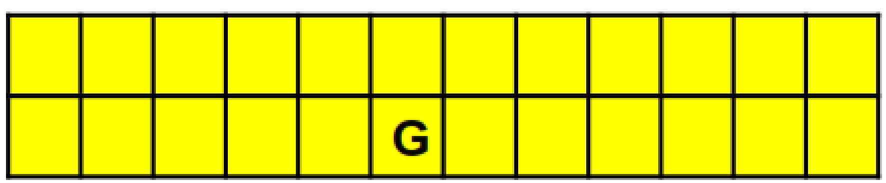


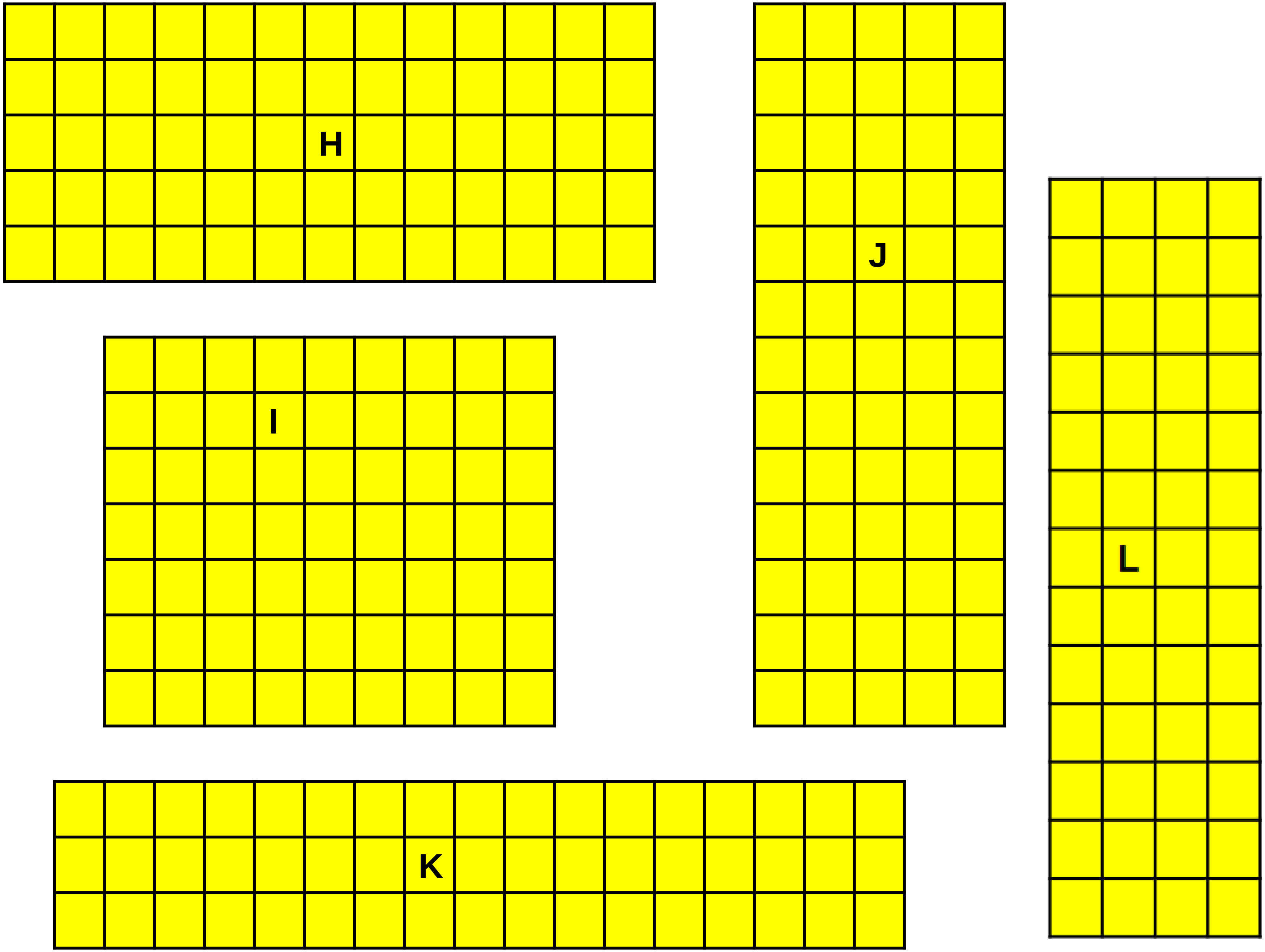










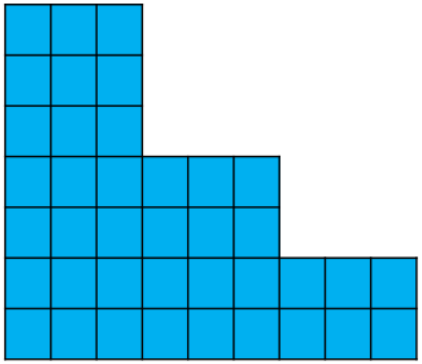

H
I
J
K
L

Three Rectangles

Materials: grid paper or recording sheet

---

1. Leah and Sam found five different ways to decompose the figure below into exactly three rectangles. The three rectangles covered the entire figure but did not overlap.



2. Work with a partner. Show five different ways that Leah and Sam might have decomposed the figure into three rectangles. For each solution you must:

   - draw the figure and shade the three rectangles different colors
   - write a multiplication equation to find the area of each rectangle
   - write an addition equation to find the total area of the figure

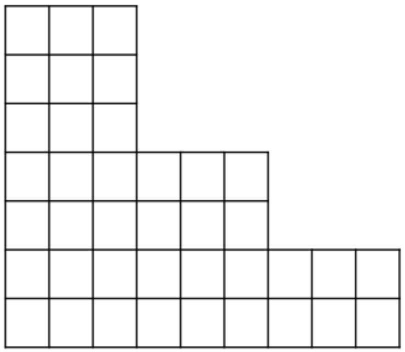
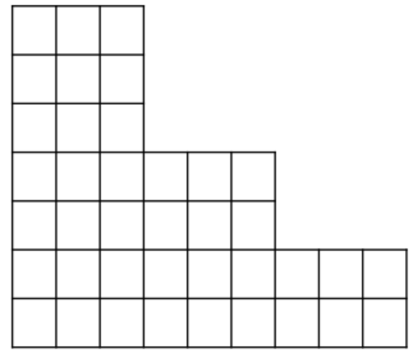
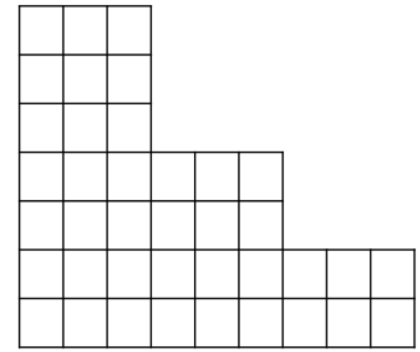
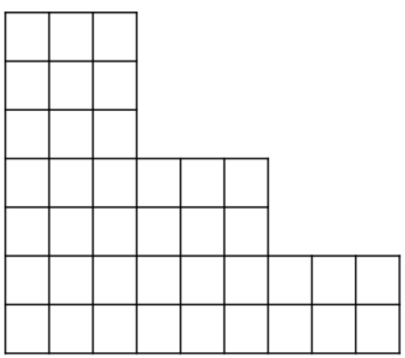
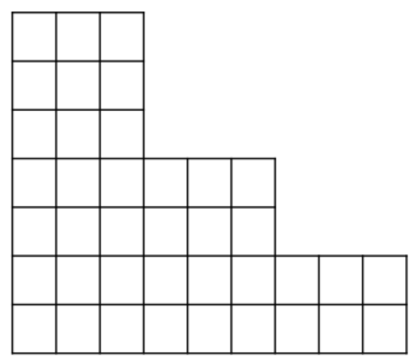
3. Share your work with another partnership. Did you decompose the figure in the same ways?

We found ___ different ways to decompose the figure into three rectangles.

In solution ___ the first rectangle measured __ by __ , the second rectangle measured ___ by ___ , and the third rectangle measured ___ by ___.

The equations I wrote to find the area of the figure for solution ___ were ....

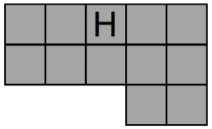
The total area of the figure is ___ square units. I know this because .....

ver. 1

Find Areas of Rectilinear Figures

Materials: pack of rectilinear figures, grid paper

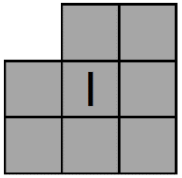


1. Choose a rectilinear figure from the pack. Sketch the figure. Show how you can decompose the figure into smaller rectangles using a horizontal or vertical line.

2. Write a multiplication equation to find the area of each of the smaller rectangles in square units.

3. Add the products to find the total area of the figure.

4. Repeat with other rectilinear figures from the pack.



5. Share your work with a classmate. Find one example where you broke apart a figure in a different way than your classmate. Explain why you found the same total area.

6. Draw your own rectilinear figures on grid paper. Find the area of each figure. Show all work.

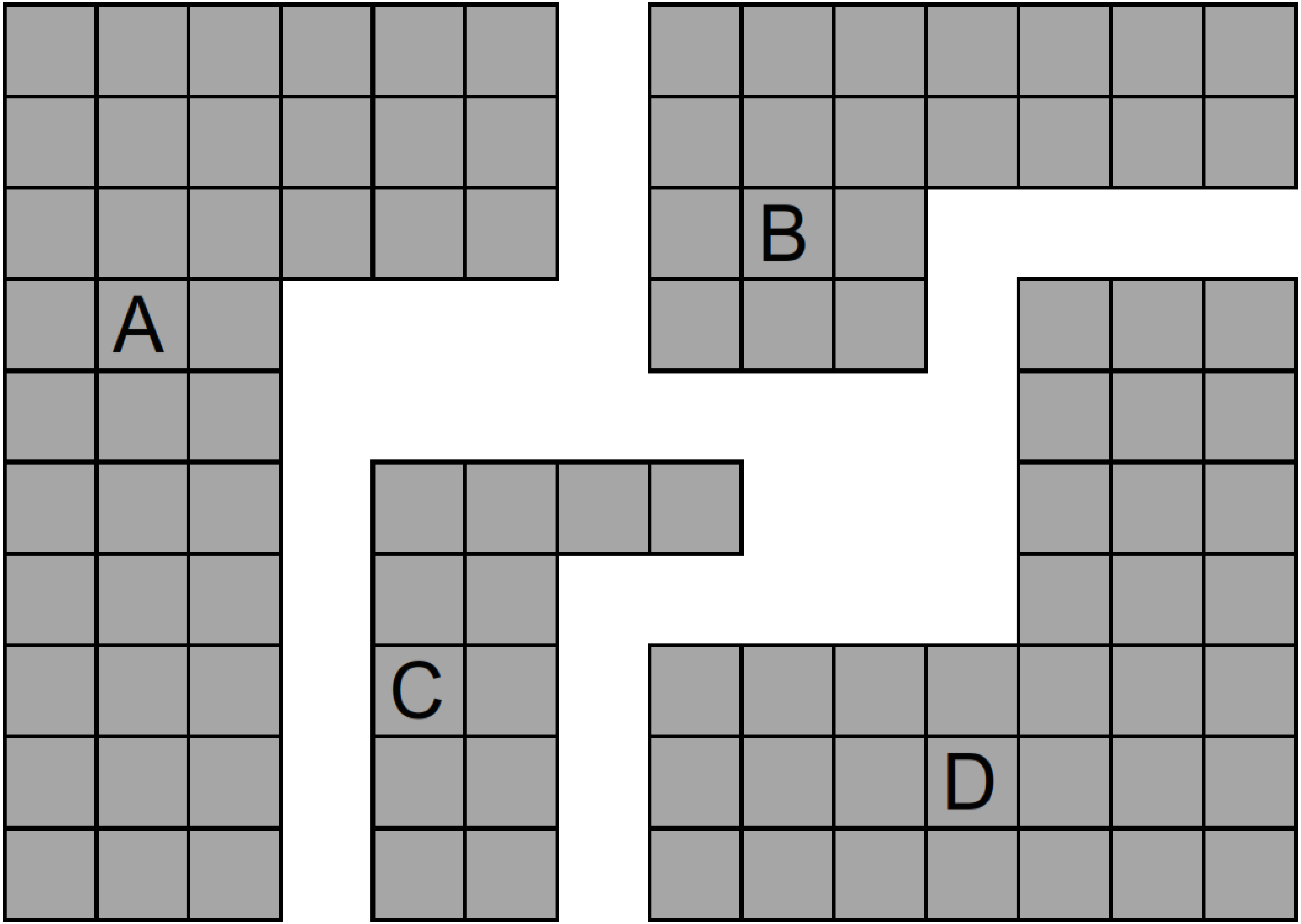
I decomposed figure ___ using a vertical/horizontal line. One rectangle measured __ by __ . The other rectangle measured __ by __.

To find the total area of figure ___ I .....

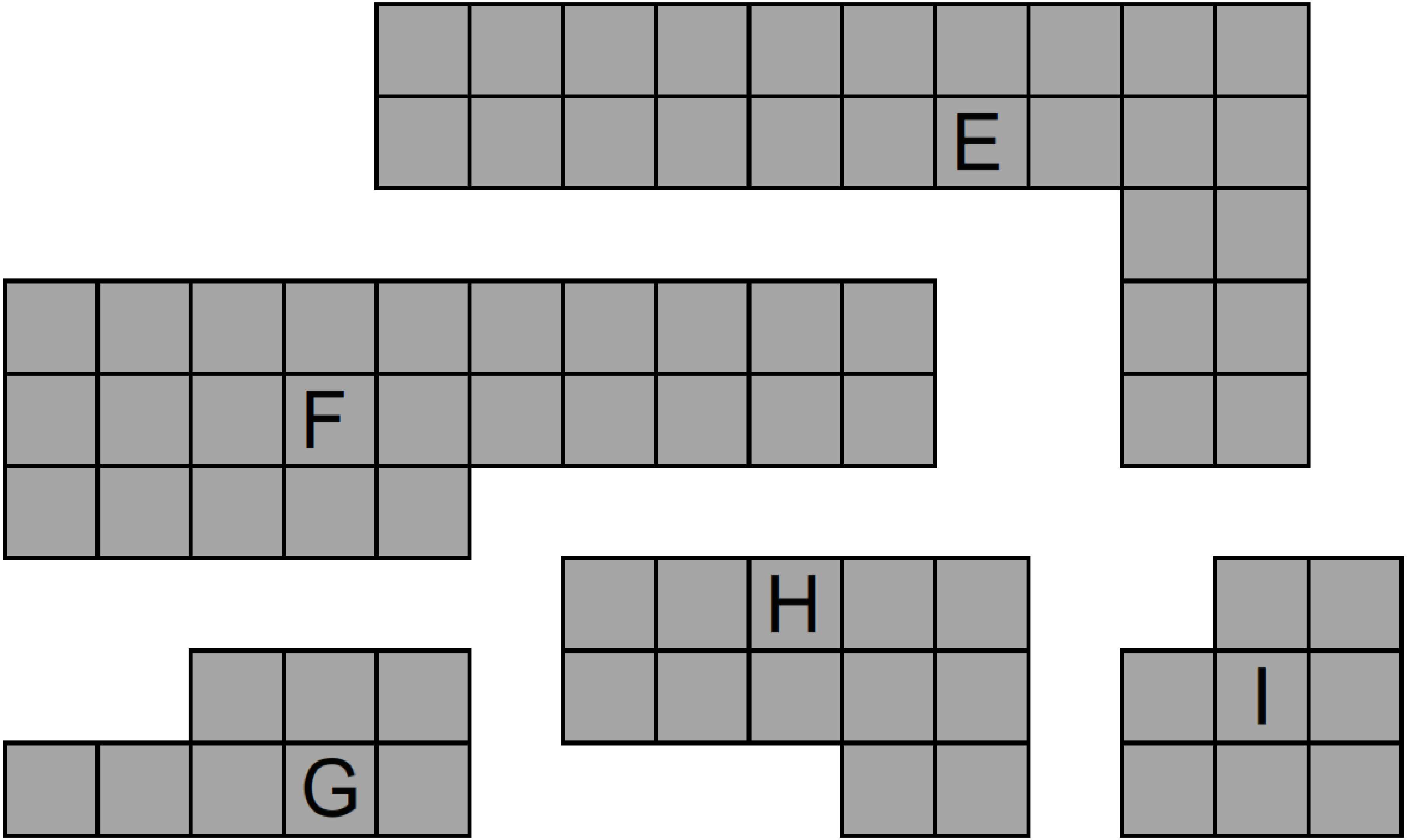
Another way I could have broken apart figure ___ would have been .....

Figure ___ had the largest area. It measured ___ square units. Figure ___ had the smallest area. It measured ___ square units.

Rectilinear Figures Pack: Copy onto cardstock and cut out for use in center.

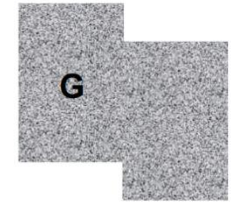


Rectilinear Figures Pack: Copy onto cardstock and cut out for use in center.



ver. 2

Find Areas of Rectilinear Figures



Materials: pack of rectilinear figures, rulers

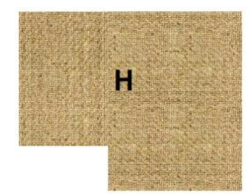
---

1. Choose a rectilinear figure from the pack. Sketch the figure. Show how you can decompose the figure into smaller rectangles using a horizontal or vertical line.

2. Measure the length and width of each rectangle to the nearest inch.

3. Multiply the side lengths to find the area of each of the smaller rectangles.

4. Add the products to find the total area of the figure.



5. Repeat with other rectilinear figures from the pack.

6. Share your work with a classmate. Find one example where you broke apart a figure in a different way than your classmate. Explain why you found the same total area.

7. Draw your own rectilinear figures. Find the area of each figure. Show all work.

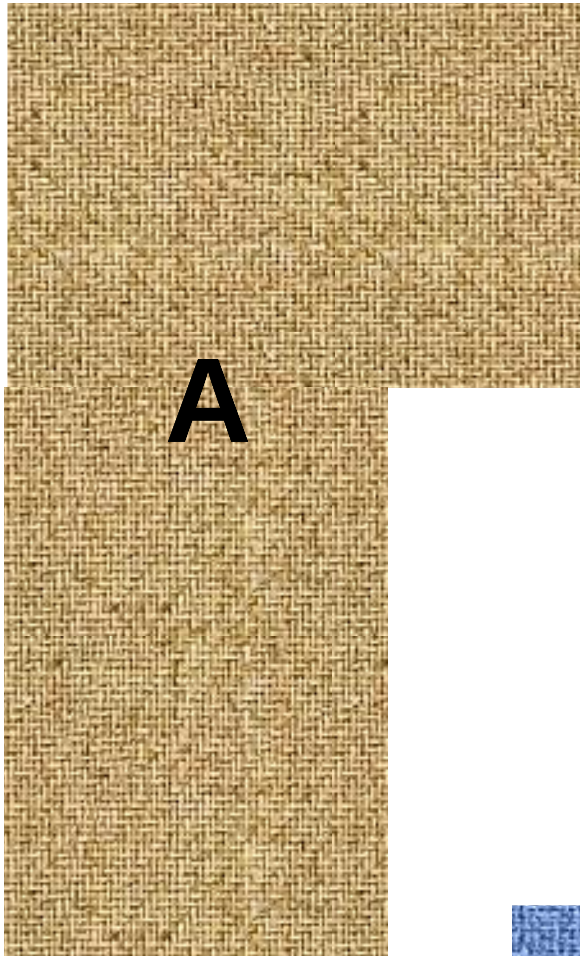
To find the area of figure ___ first I ..... Then I ..... Finally I .....

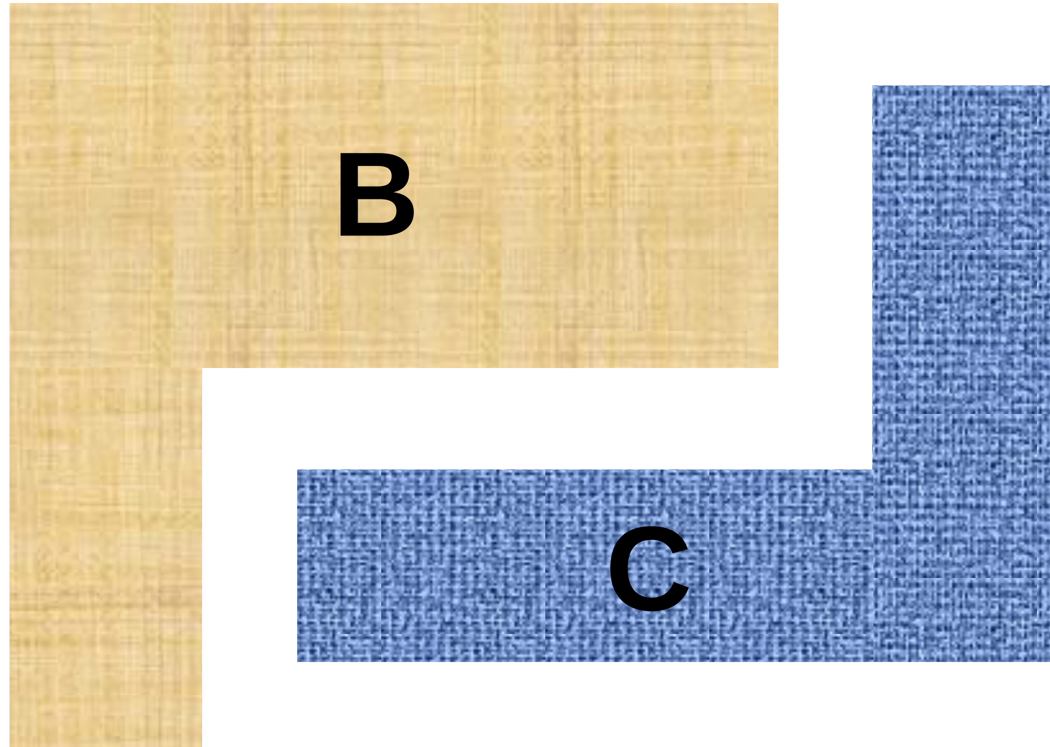
Although we decomposed figure ___ in different ways we got the same total area because .....

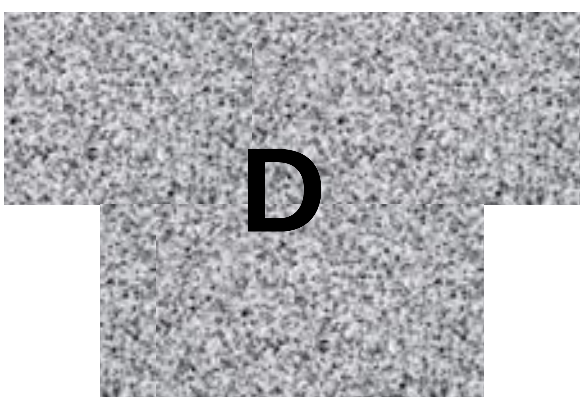
Another way I could have broken apart figure ___ would have been .....

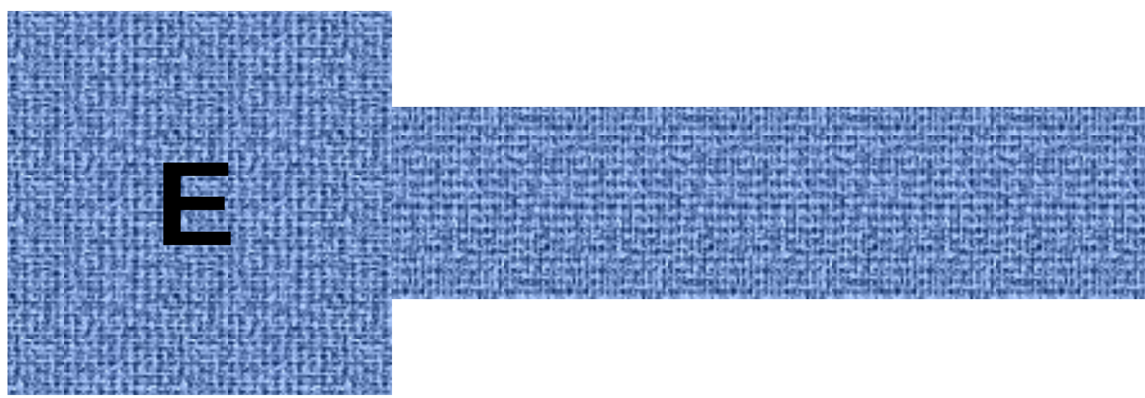
The area of figure ___ was ___ square _____ less than figure ___. I know this because .....

Rectilinear Figures Pack: Copy onto cardstock and cut out for use in center.

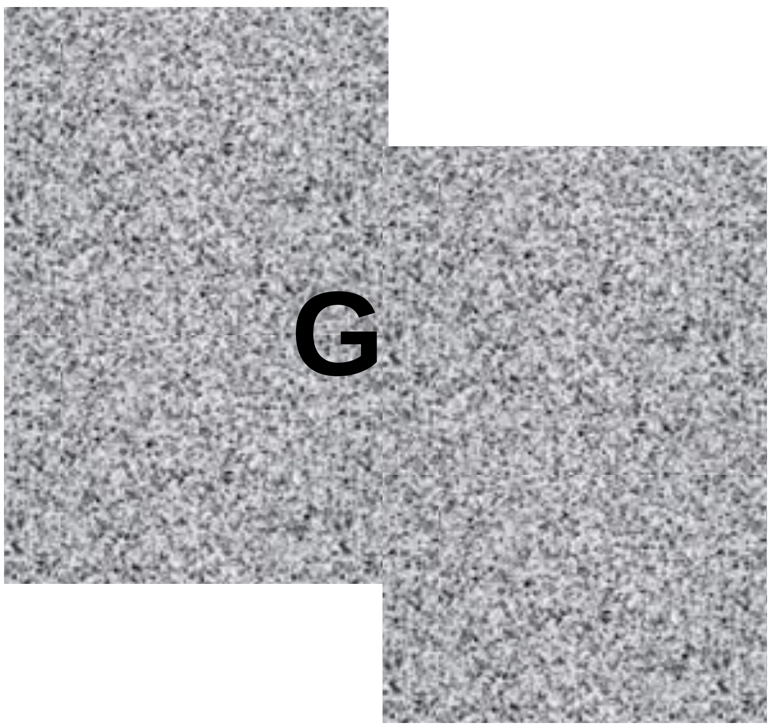


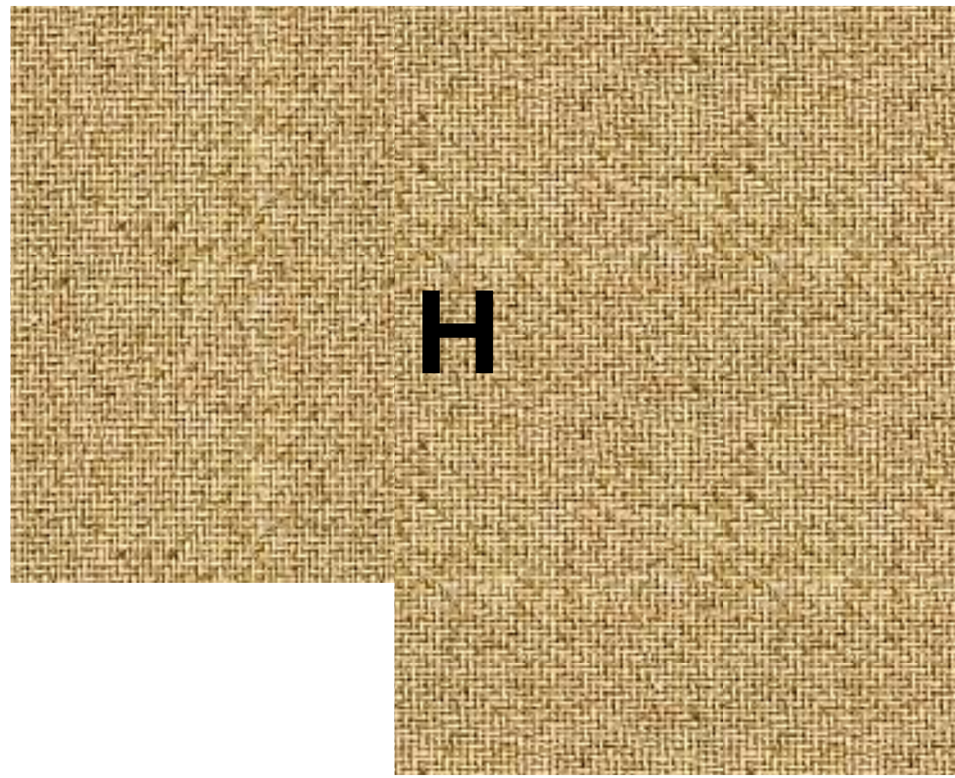






Rectilinear Figures Pack: Copy onto cardstock and cut out for use in center.





Design a Flower Bed

Materials: rulers, grid paper (optional)

1. You have been asked to design a flower bed for a garden. The flower bed must:

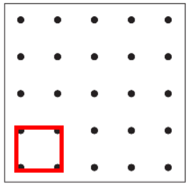
   - consist of two adjoining rectangles of different sizes
   - have a total area of 30 square feet

2. Draw two possible designs for the flower bed. Be sure to include all measurements.

3. Use equations to show that each design has a total area of 30 square feet.

4. Share your work with a classmate. How are your designs similar? How are they different?

Squares on a Geoboard



Materials: geoboards, rubber bands, geoboard paper, rulers

1. Connect one rubber band and four boundary pegs to construct a square with side lengths of 1 unit. Use a ruler to record the square on geoboard paper.

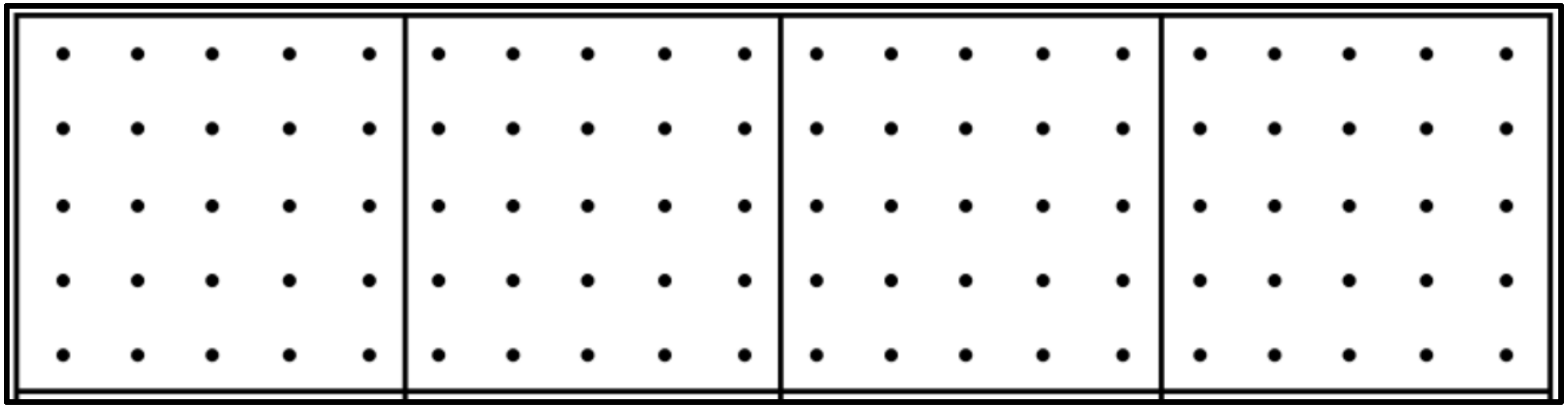
2. Construct and record squares with side lengths of 2, 3, and 4 units.

3. Create a table to show the side length, area, and perimeter of each square you construct.

Side Length	1	2	3	4		
Area	1					
Perimeter	4					

4. Examine your data closely. Describe any patterns that you notice.

5. What would the area and perimeter of a square with side lengths of 5 units be? What about 6 units? Justify your predictions.

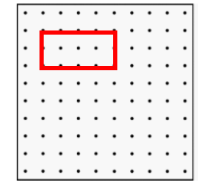


Side Length	1	2	3	4		
Area	1					
Perimeter	4					

Patterns I noticed:

My prediction:

Perimeter on the Geoboard



Materials: geoboards, rubber bands, geoboard paper, rulers

---

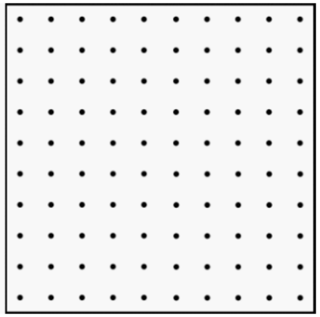
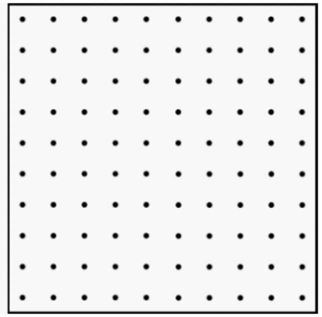
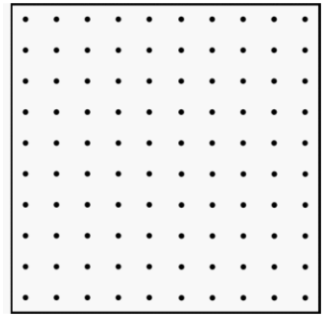
1. How many different rectangles can you construct on your geoboard with a perimeter of 12 units? Use a ruler to record each rectangle you make on geoboard paper.

2. Order your rectangles from least to greatest area. Record the perimeter, length, width and area of each rectangle in a table.

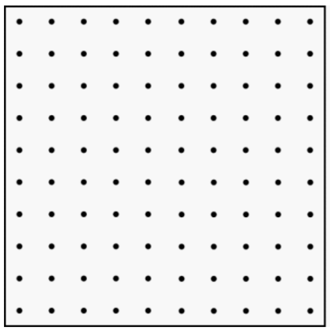
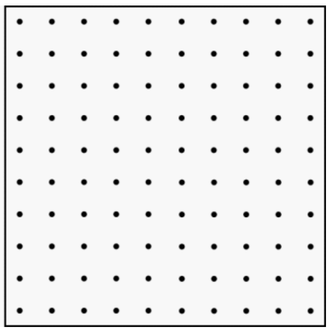
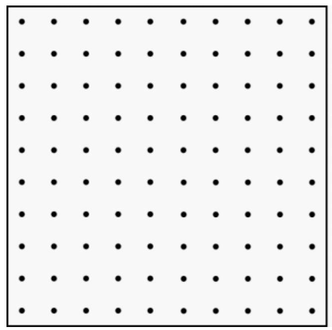
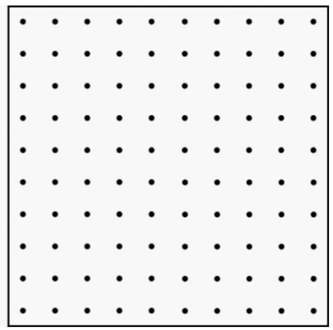
Rectangle	Length	Width	Perimeter	Area
A			12	
B			12	
C				

3. Repeat steps 1-2 with a given perimeter of 16 units. Record your data in a table. How can you be sure that you have found all possible rectangles with a perimeter of 16 units? Explain.

4. Based on your data can you make a generalization stating how to get the greatest area for a given perimeter?

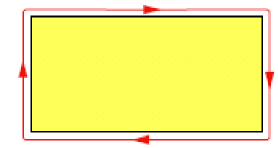
Rectangle	Length	Width	Perimeter	Area
A			12	
B			12	
C				

Rectangle	Length	Width	Perimeter	Area
A			16	
B			16	
C				

Measuring Perimeter

Materials: pack of assorted polygons, rulers



1. Choose 5 polygons. Trace around the polygons.
2. Use a ruler to measure the perimeter of each polygon. Write the measurement above each side.
3. Write an equation to show how you calculated the perimeter of each polygon.
4. Order the shapes from shortest to longest perimeter.
5. Calculate the difference in length between the longest and shortest perimeter. Show your work.
6. Share your work with a partner.

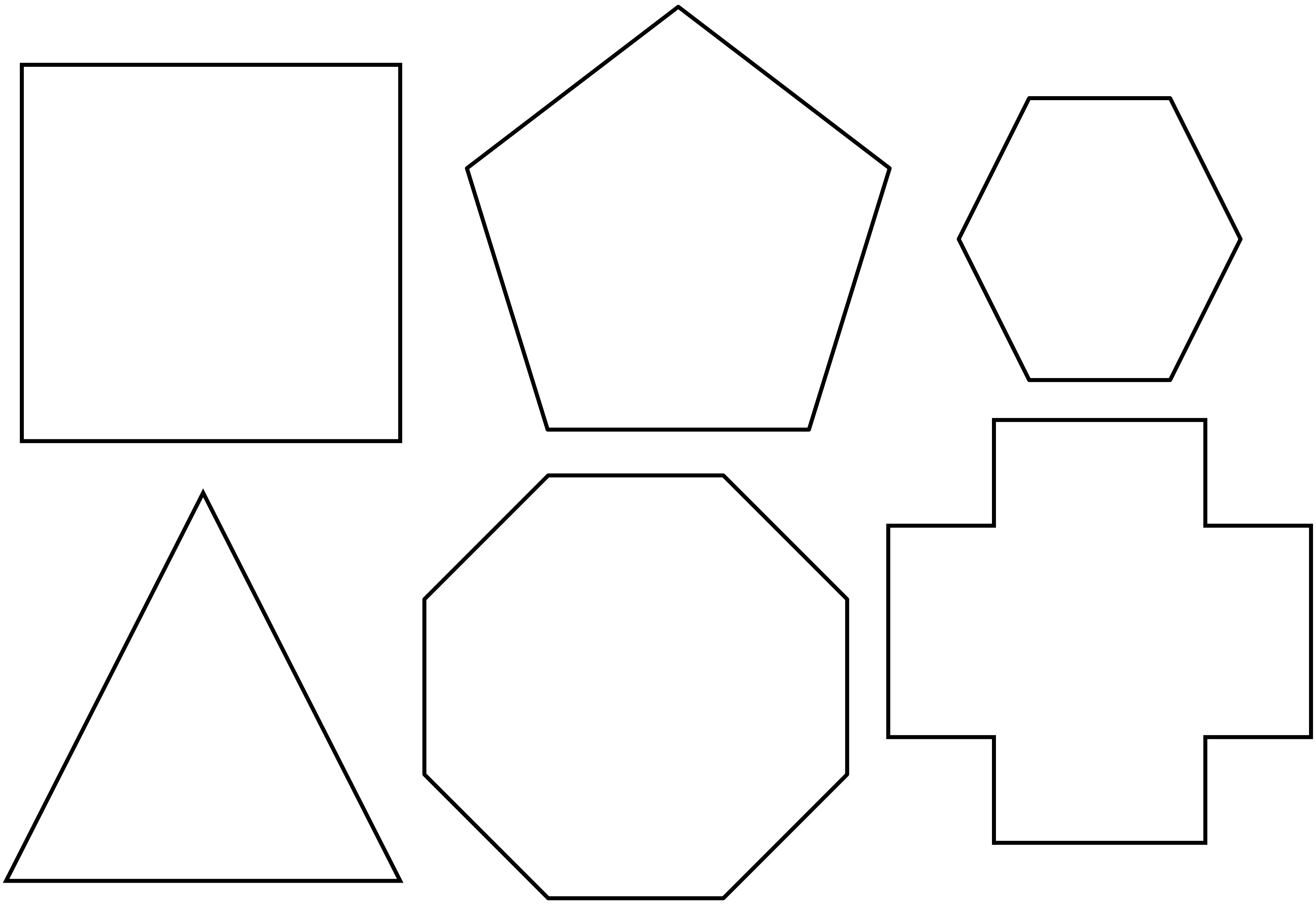
The ______ had __ equal sides. To find the perimeter I .....

I measured each side of the ______ to the nearest _____. Then I .....

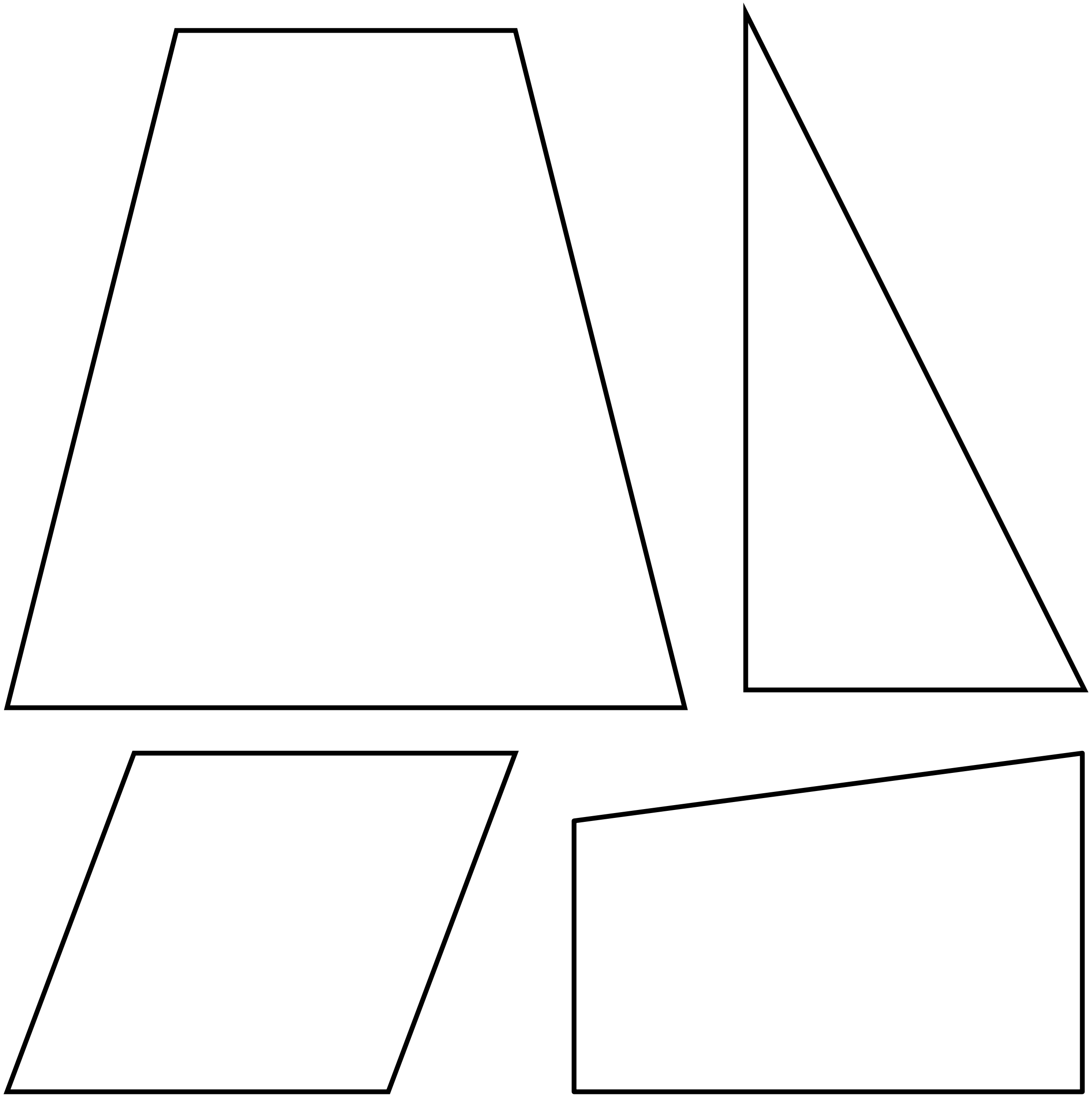
The shortest perimeter I measured was _____. The longest perimeter I measured was _____.

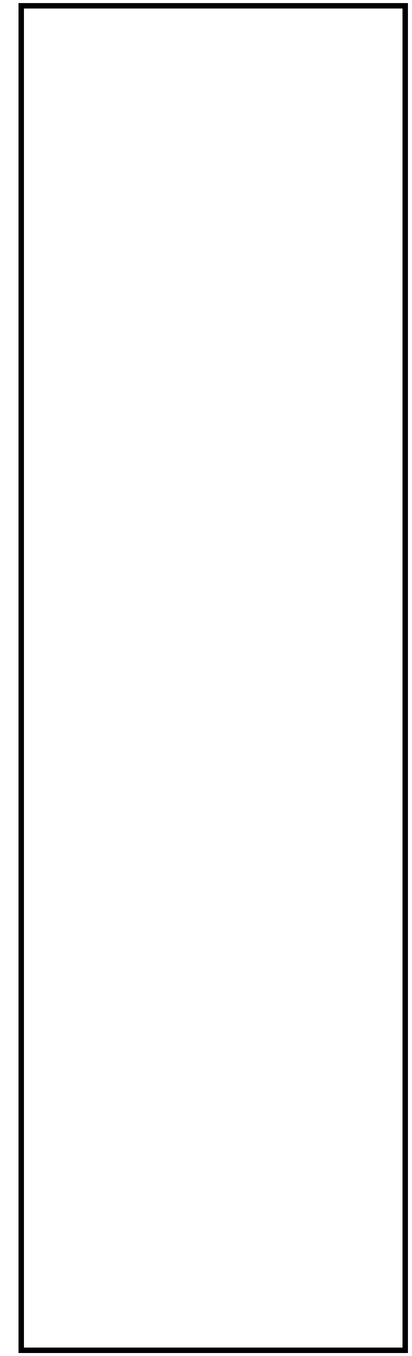
The difference in length between the shortest and longest perimeter I measured was ____. I know this because .....

Polygon pack: Copy onto cardstock and cut out for use in Measuring Perimeter center.

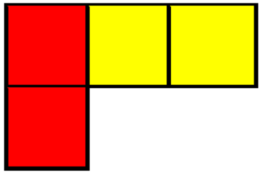


Polygon pack: Copy onto cardstock and cut out for use in Measuring Perimeter center.





Perimeter with Color Tiles



Materials: color tiles

---

1. Work with a partner. Use between 3 and 6 color tiles to make a shape. Each tile in the shape must touch at least one other tile along a complete side.

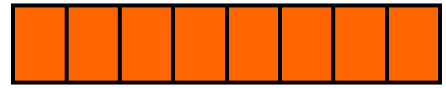
2. Draw your shape. Calculate and record the perimeter of your shape.

3. Use color tiles to make as many different shapes as you can that have the same length perimeter as your first shape. Record each shape.

4. How many different shapes did you make with the same perimeter? Do all the shapes have the same area? Explain.

The Perimeter Stays the Same

Materials: square inch color tiles



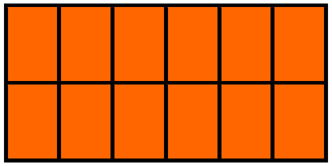
1. Construct four different rectangles with color tiles. Each rectangle must have a perimeter of 18 inches.

2. Draw each rectangle. Write the measurement above each side.

3. Write an equation to show how you would calculate the perimeter of each rectangle.

4. Do all rectangles with a perimeter of 18 inches have an equal area? Explain your thinking.

The Area Stays the Same



Materials: square inch color tiles, square inch graph paper

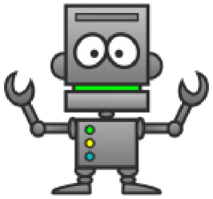
1. Construct three different rectangles with square color tiles. Each rectangle must have an area of 12 square inches.

2. Draw each rectangle. Label the length and width.

3. Write an equation to show how you would calculate the area of each rectangle.

4. Do all rectangles with an area of 12 square inches have the same length perimeter? Explain your thinking.

Rectangular Robot



Materials: cm grid paper, rulers

1. Use centimeter grid paper and a ruler to draw a robot that meets the following criteria:

   - the head must be a rectangle with a perimeter of 28cm
   - the body must be a square with a perimeter of 48cm
   - the neck must be a square with a perimeter of 8cm
   - each arm must be a rectangle with a perimeter of 20cm
   - each leg must be a rectangle with a perimeter of 18cm

2. Include shapes of your own choosing for the following: eyes, hands, feet, mouth, and buttons on the body. Color your robot.

3. Explain how your robot meets the criteria. Show all work.

4. Calculate the total perimeter of your robot. Show your work.

5. Calculate the area of each body part and the total area of your robot. Show your work.

Design a Rabbit Enclosure

Materials: rulers, grid paper (optional)

1. Sarah has 18 feet of fence to build a rectangular shaped enclosure on the grass for her pet rabbit. Record all the possible designs Sarah could make for the rabbit enclosure.

2. How many different rectangular shaped enclosures can Sarah make? Which design would provide the largest grass area for the rabbit? Show your work.

3. What is the difference between the smallest and largest possible grass areas Sarah can make?

Word Problems: Perimeter

Materials: Word Problems: Perimeter cards

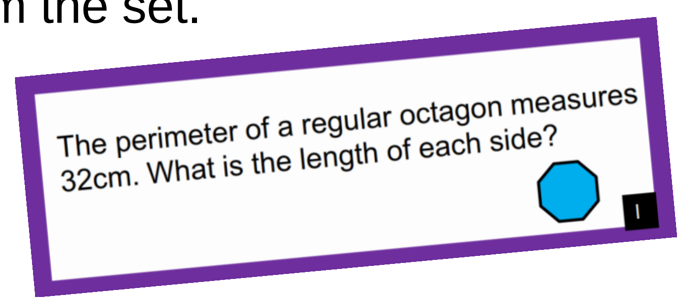
1. Work with a partner. Choose five word problems that you will both solve.
2. Solve the word problems independently. For each problem:

   a) write an equation with a symbol for the unknown number

   b) draw a quick picture, or diagram, to model the problem

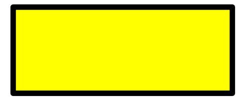
   c) answer the question in a complete sentence

3. After completing five problems share your work with a partner. Explain how you solved each problem using accurate mathematical vocabulary.
4. Repeat with another five problems from the set.

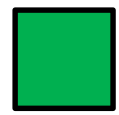


Word Problems: Perimeter

The length of a rectangle is 10cm and the width is 6cm. What is the perimeter of the rectangle?



A



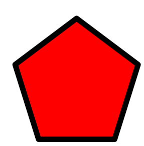
One side of a square measures 15cm. What is the perimeter of the square?

B

Sarah draws a rectangle with a perimeter of 20cm. The width is 4cm. What is the length?

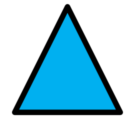
C

The perimeter of a regular pentagon measures 40cm. What is the length of each side?



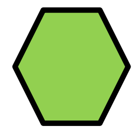
D

The sides of an equilateral triangle measure 12cm. What is the perimeter of the triangle?



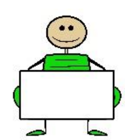
E

The perimeter of a regular hexagon measures 24cm. What is the length of each side?



F

Ben has a sheet of paper with a length of 15 inches and a width of 9 inches. What is the perimeter of the paper?

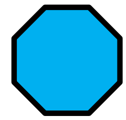


G

A rectangular block of chocolate has a length of 12cm and a width of 9cm. What is the perimeter of the chocolate?

H

The perimeter of a regular octagon measures 32cm. What is the length of each side?

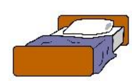


I

One side of a rectangular television screen measures 40 inches. If the television screen has a perimeter of 120 inches, what are the lengths of the other sides?

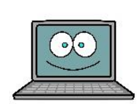
J

Stephen has a rectangular bedroom with a perimeter of 34 feet. The length of the bedroom is 9 feet. What is the width of Stephen's bedroom?



K

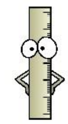
The perimeter of a rectangular laptop screen measures 100cm. The width of the screen is 29cm. What is the length of the screen?



L

Jack is putting a fence around a square garden. Each side of the garden is 4 meters long. If the fencing costs five dollars for each meter, how much will Ben need to spend?

M



The width of a square is 12cm. Ben measured the perimeter of the square and said it was 24cm. Is Ben correct? Explain.

N

A rectangular notebook has a perimeter of 66 centimeters. One side of the notebook measures 18cm. What do the other sides measure?

O

A rectangular vegetable garden has a perimeter of 30 meters. If one side measures 9 meters, what do the other sides measure?

P

Single User License

K-5 MATH TEACHING RESOURCES LLC, ("K5MTR") agrees to grant, and the user ("you," "user," "your") agrees to accept, a nonexclusive license to use the downloadable math resources, math games, hands-on math activities, and math workbooks available by and through K5MTR (collectively, "eBook"), under the terms and conditions of this eBook License Agreement ("Agreement"). Your use of the eBook constitutes your agreement to the terms and conditions set forth in this Agreement. This Agreement, or any part thereof, cannot be changed, waived, or discharged other than by a statement in writing signed by you and K5MTR. Please read the entire Agreement carefully. BY DOWNLOADING OR OTHERWISE USING ANY OF THE EBOOKS, USER AGREES TO BE BOUND BY THIS AGREEMENT.

1. eBook Usage. The K5MTR eBook may be used by one user. The user of the eBook shall be subject to all of the terms of this Agreement, whether or not a license was purchased by the user or the user was the original downloader.

2. Printing. You may only print pages of the eBook, in connection with the lawful use of such pages on connection with a classroom, home schooling, or other teaching environment, for which you are responsible for providing mathematics related instruction. Other than the above, you may not print pages and/or distribute eBook content to others.

3. Copyright, Use and Resale Prohibitions. K5MTR retains all rights not expressly granted to you in this Agreement. The content, and related documentation in the eBook are protected by copyright laws and international copyright treaties, as well as other intellectual property laws and treaties. Nothing in this Agreement constitutes a waiver of K5MTR's rights. K5MTR will not be responsible for performance problems due to circumstances beyond its reasonable control. Other than as stated in this Agreement, you may not copy, print, modify, remove, delete, augment, add to, publish, transmit, sell, resell, license, create derivative works from, or in any way exploit any of the eBook's content, in whole or in part, in print or electronic form, and you may not aid or permit others to do so. You may not use the eBook or the content therein for commercial purposes. The unauthorized use or distribution of copyrighted or other proprietary content is illegal and could subject the purchaser to substantial damages. Purchaser will be liable for any damage resulting from any violation of this Agreement.

4. No Transfer. This license is not transferable by the eBook purchaser unless such transfer is approved in advance by K5MTR. Provided, however, that the purchaser of a "standard option" manual subscription may give his or her copy of the eBook to a coworker to use, in which case the coworker will be subject to the terms and conditions of this Agreement.

5. Marks of Ownership. You must not remove or alter any mark of ownership, copyright, trademark or other property right which is embodied in the eBook including its documentation and the physical or digital material in which the eBook is stored when supplied to you.

6. Limitation of Liability and Disclaimer of Warranty. The eBook, any content provided therein, or any counsel or advice provided by any member of K5MTR's staff or any principal of K5MTR, are in no way substitutes for assistance from trained, licensed, certified, and qualified education professionals. If the assistance of a trained educator is required, the services of a competent professional person should be sought.
THE EBOOK IS PROVIDED "AS IS" AND K5MTR DOES NOT MAKE ANY WARRANTY OR REPRESENTATION, EITHER EXPRESS OR IMPLIED, TO THE EBOOK, INCLUDING ITS QUALITY, ACCURACY, PERFORMANCE, MERCHANTABILITY, OR FITNESS FOR A PARTICULAR PURPOSE. YOU ASSUME THE ENTIRE RISK AS TO THE RESULTS AND PERFORMANCE OF THE EBOOK. K5MTR DOES NOT WARRANT, GUARANTEE, OR MAKE ANY REPRESENTATIONS REGARDING THE USE OF, OR THE RESULTS OBTAINED WITH THE EBOOK (INCLUDING BUT NOT LIMITED TO INCREASING, ENHANCING, OR OTHERWISE IMPROVING THE MATH AND ARITHMETIC CAPABILITIES, TEST SCORES, OR PERFORMANCE OF ANY PERSON), IN TERMS OF ACCURACY, CORRECTNESS OR RELIABILITY, OR COMPLIANCE WITH ANY EDUCATIONAL OR ACADEMIC RULES, REGULATIONS, OR LAW IN ANY JURISDICTION. In no event will K5MTR be liable for indirect, special, incidental, or consequential damages arising out of delays, errors, omissions, inaccuracies, or the use or inability to use the eBook, or for interruption of the eBook, from whatever cause. This will apply even if K5MTR has been advised that the possibility of such damage exists. Specifically, K5MTR is not responsible for any costs, including those incurred as a result of lost profits or revenue, poor academic performance, loss of data, the cost of recovering such programs or data, the cost of any substitute program, claims by third parties, or similar costs. In no case will K5MTR's liability exceed the amount of license fees paid.

7. Hold Harmless / Indemnification. You agree to defend, indemnify and hold K5MTR and any third party provider harmless from and against all third party claims and damages (including reasonable attorneys' fees) regarding your use of the eBook, unless the claims or damages are due to K5MTR's or any third party provider's gross negligence or willful misconduct or arise out of an allegation for which K5MTR is obligated to indemnify you.

8. Compliance with Law. Any use of the eBook must be lawful and you expressly agree to avoid any use that is potentially or actually unlawful that could constitute a criminal offense, give rise to civil liability or otherwise violate any applicable local, state, national or international law, regulation or judicial ruling.

9. Governing Law. If there is any dispute arising out of the eBook, by using the eBook, you expressly agree that any such dispute shall be governed by the laws of the State of New York, U.S.A. and the federal laws of the United States of America, without regard to its conflict of law provisions and excluding that body of law known as conflicts of law and the United Nations Convention on Contracts for the Sale of Goods. You expressly agree to submit to the exclusive jurisdiction of the exclusive jurisdiction of and venue in the federal and state courts located in New York County, New York, U.S.A. Use of the EBook is unauthorized in any jurisdiction that does not give effect to all provisions of this Section 9.

10. Severability. If any provision of this Agreement or the application thereof to any person or circumstance shall be invalid or unenforceable to any extent, the remainder of this Agreement and the application of such provisions to other persons or circumstances shall not be affected thereby and shall be enforced to the greatest extent permitted by law.

11. Entire Agreement. It is hereby acknowledged that this Agreement constitutes the entire agreement between the parties pertaining to the subject matter hereof, and supersedes in their entirety any and all written or oral agreements previously existing between the parties with respect to such subject matter.