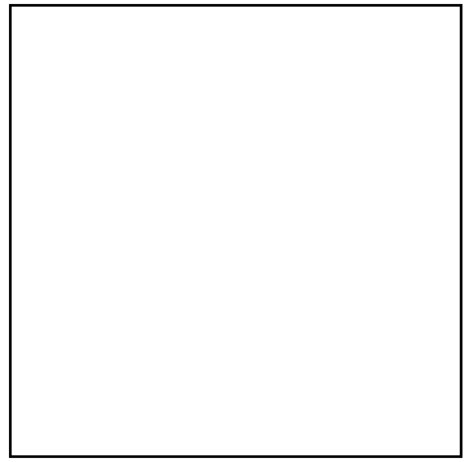
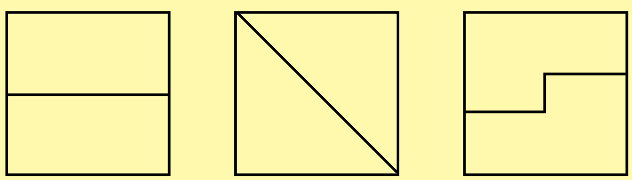
Name **Answer Key**

1

Here is a box. Cut this box in half in as many ways as you can.



ANSWER Sample:



COMMENTS & EXTENSIONS To cut the box with a vertical or a horizontal line is likely to be fairly common. Diagonals and non-straight lines may be less common. Encourage students to share answers.

How do you know that the line you drew cut the box in half? Show your thinking.

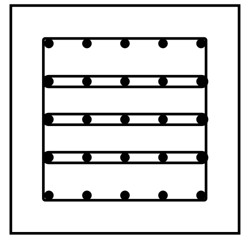
Lesson 1

Equal Parts of a Square

Name **Answer Key**

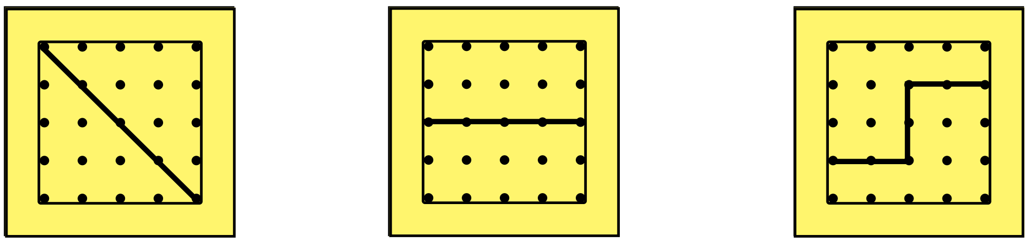
Try This

- Put one rubber band around all the outer pins to show a large square.
- Use other rubber bands to show equal parts.
- Record your solutions.
- Fill in the blanks.

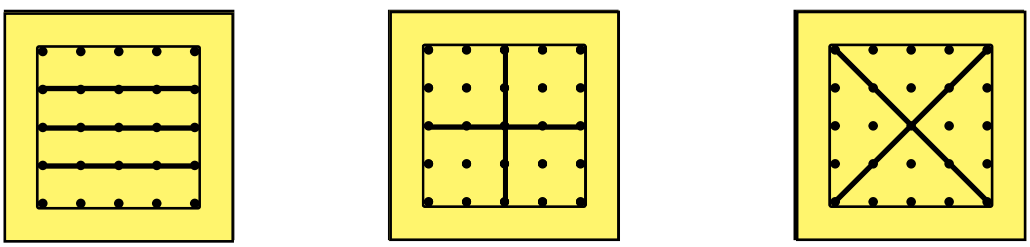


4 equal parts.
Each part is $\frac{1}{4}$.

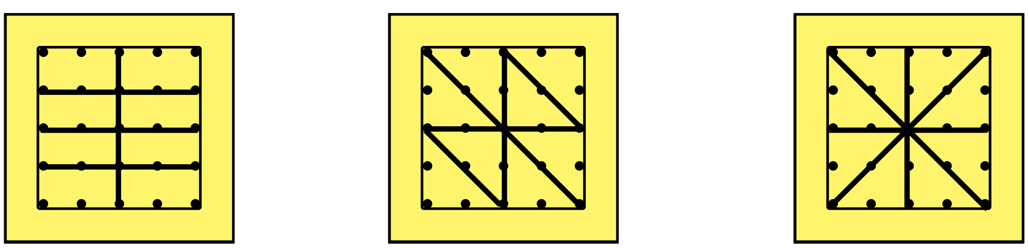
1. Show 2 equal parts. Find three different ways. Each part is $\frac{1}{2}$.



2. Show 4 equal parts. Find three different ways. Each part is $\frac{1}{4}$.

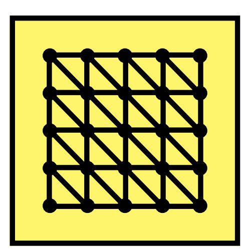


3. Show 8 equal parts. Find three different ways. Each part is $\frac{1}{8}$.



Challenge

Show 32 equal parts on a geoboard. Each part is $\frac{1}{32}$.

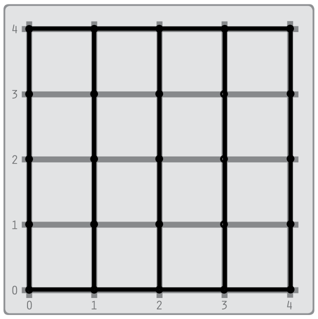


Equal Parts of a Square

Name **Answer Key**

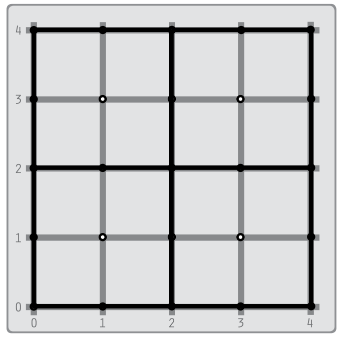
Use a geoboard and rubber bands to build the model. Write the number of equal-sized parts.

1.



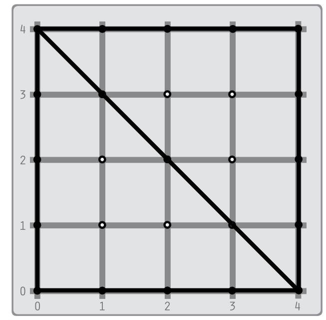
4 equal-sized parts

2.



4 equal-sized parts

3.

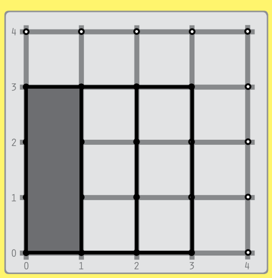


2 equal-sized parts

Use a geoboard and rubber bands to build the square and divide it into equal-sized parts. Draw the model. Shade one part. Write the unit fraction for the part you shaded.

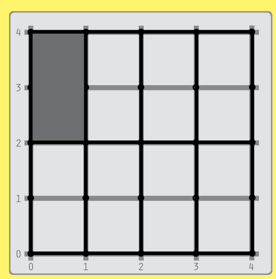
Sample answers given.

4. Make 3 parts.



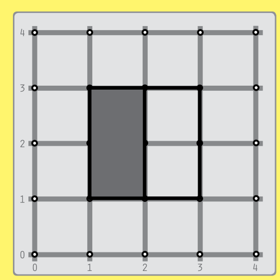
Each part is $\frac{1}{3}$.

5. Make 8 parts.



Each part is $\frac{1}{8}$.

6. Make 2 parts.

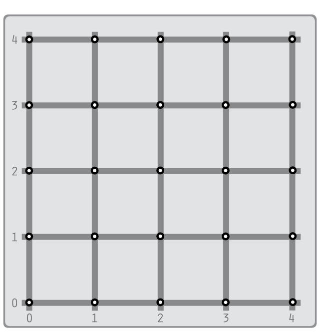


Each part is $\frac{1}{2}$.

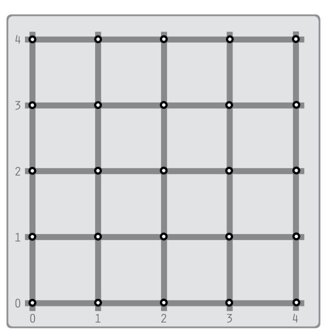
Draw a square on the geoboard picture. Divide the square into equal-sized parts and write the unit fraction for each part.

Check students' work.

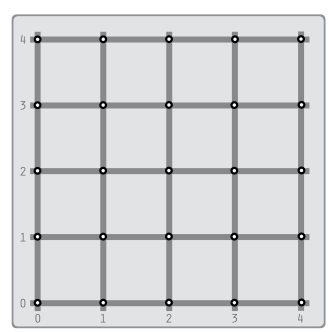
7. _______ parts



8. _______ parts



9. _______ parts



Name **Answer Key**

2

A game of professional basketball has four parts known as quarters.

How many parts are in a regulation game of

a. baseball?

b. football?

c. hockey?

d. soccer?

ANSWER **a.** 9 innings; **b.** 4 quarters; **c.** 3 periods; **d.** 2 halves

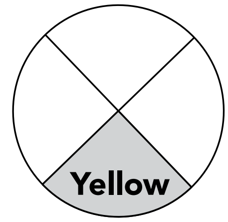
COMMENTS & EXTENSIONS Some students may have to look up the answers to these. Ask them to estimate how long a regulation game will take.

Take any two of the sports—for example, football and hockey. List three ways in which they are alike. List three ways in which they differ.

Name **Answer Key**

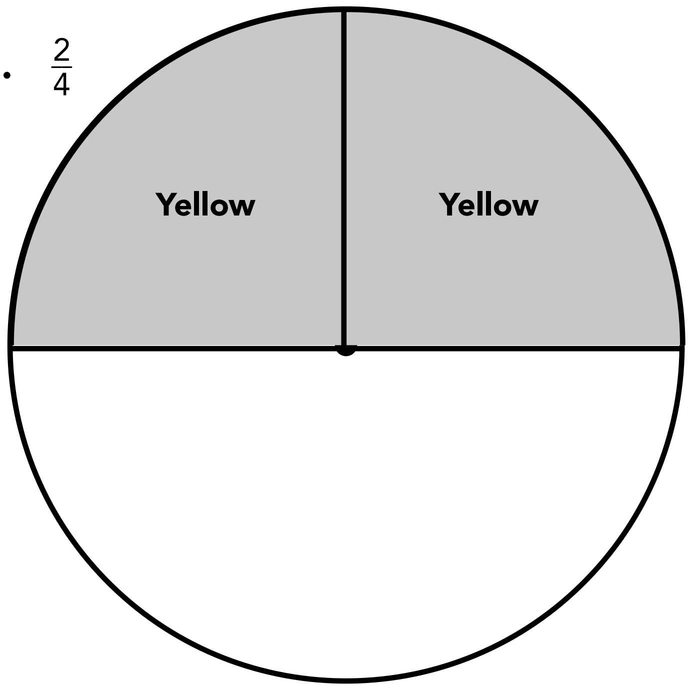
Try This

- Model the fraction with Fraction Circle pieces on the circle.
- Trace around the Fraction Circle pieces to draw the model of the fraction.
- Color the fraction parts below with the same color as the Fraction Circle pieces.

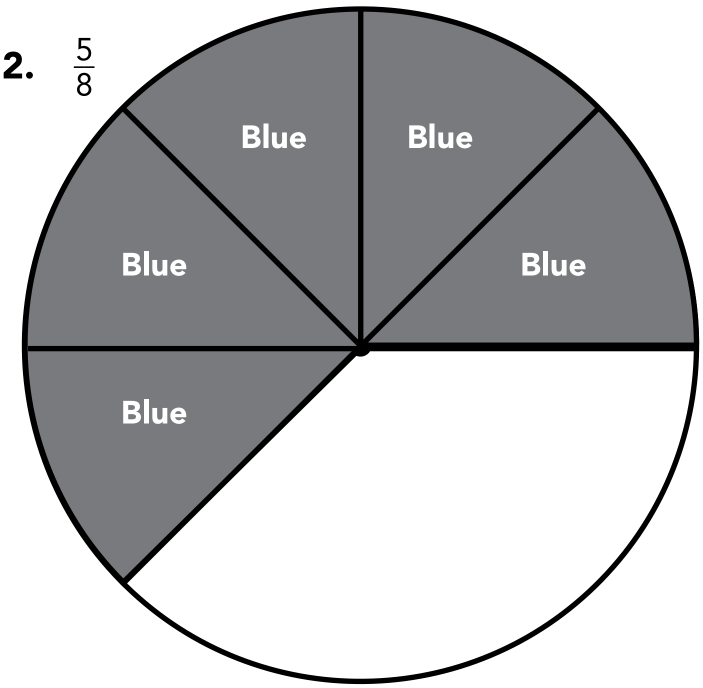


$\frac{1}{4}$ ← yellow part
← equal-sized parts

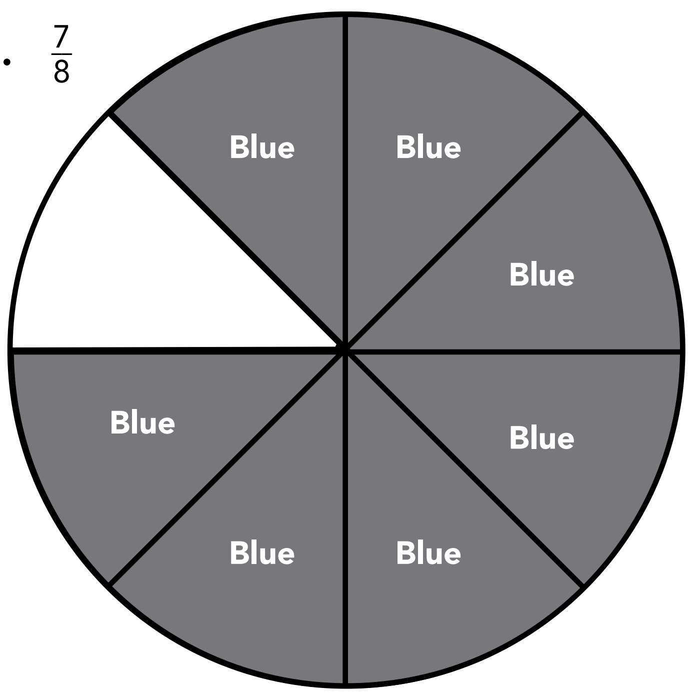
1. $\frac{2}{4}$



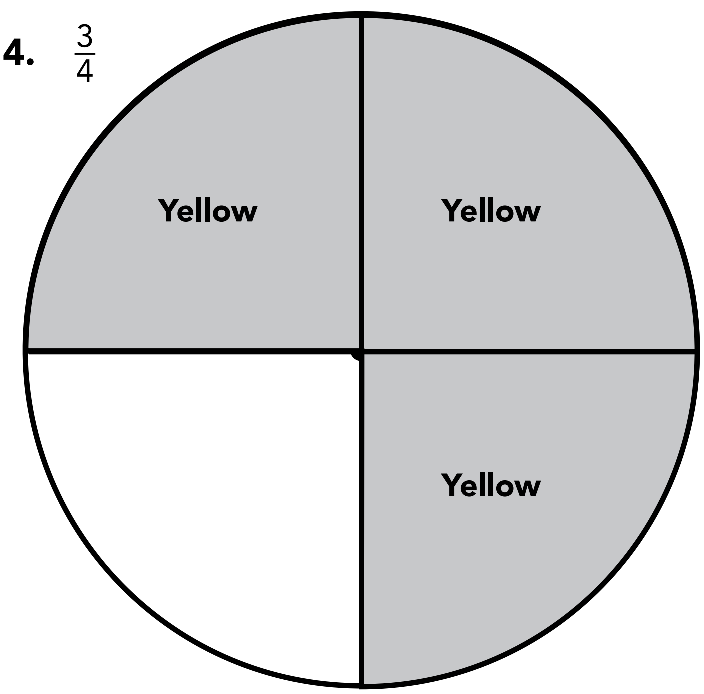
2. $\frac{5}{8}$



3. $\frac{7}{8}$



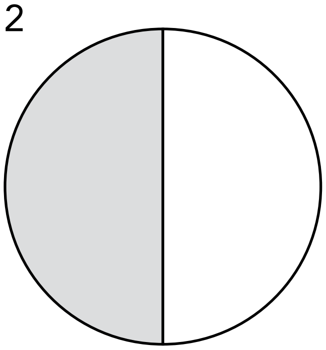
4. $\frac{3}{4}$



Name **Answer Key**

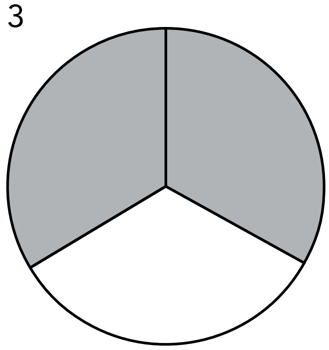
Use Fraction Circles to build the model.
Tell how many fraction pieces you used.

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



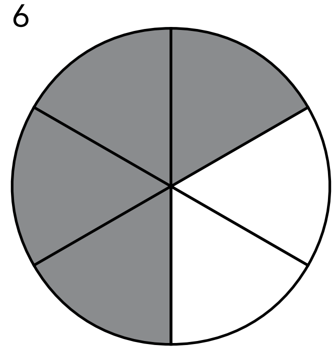
I used 1 piece.

2. $\frac{2}{3}$



I used 2 pieces.

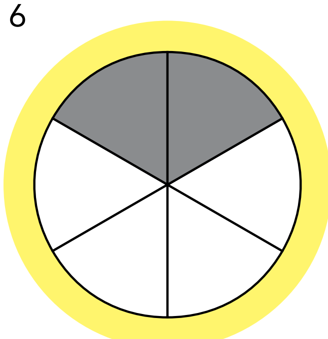
3. $\frac{4}{6}$



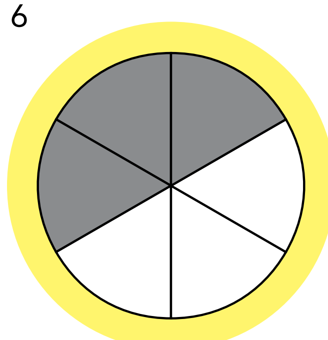
I used 4 pieces.

Use Fraction Circles to build a model of the fraction.
Sketch your model by coloring parts of the circle.

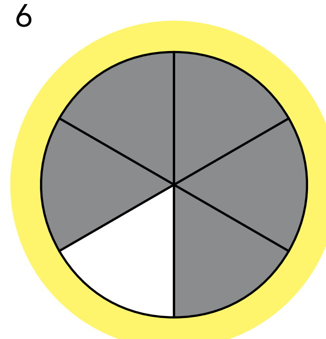
4. $\frac{2}{6}$



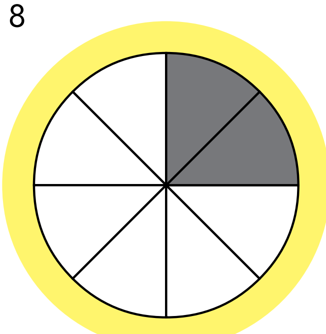
5. $\frac{3}{6}$



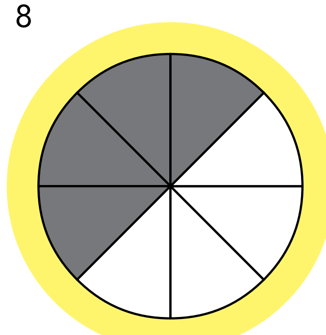
6. $\frac{5}{6}$



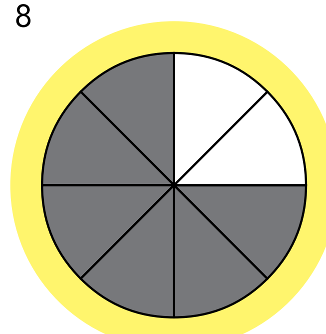
7. $\frac{2}{8}$



8. $\frac{4}{8}$



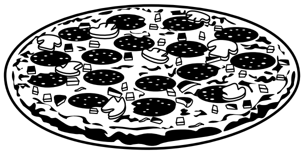
9. $\frac{6}{8}$



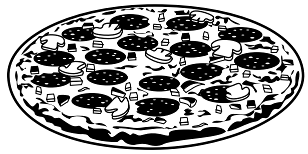
Name **Answer Key**

3

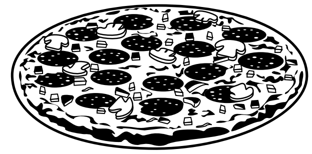
Cut these pizzas as shown.



a. 2 exact pieces

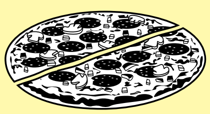


b. 3 exact pieces

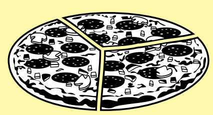


c. 4 exact pieces

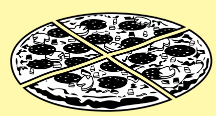
ANSWER a.



b.



c.



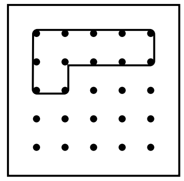
COMMENTS & EXTENSIONS Do students only cut pie slices to divide the pie into pieces? Are there others ways to divide a pizza into 2, 3, or 4 pieces?

Is it easier to cut a circular pizza into 2 equal slices, 3 equal slices, or 4 equal slices? Why? Which is most difficult?

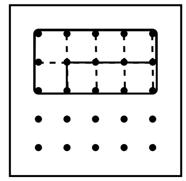
Name **Answer Key**

Try This

- Part of a shape is shown. Use a rubber band to model it.
- Use another rubber band to show the whole.
- Record the whole shape.
- Fill in the blanks.



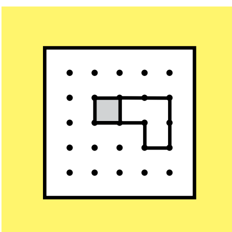
This is $\frac{5}{8}$.



The rest of the shape is $\frac{3}{8}$.

The whole shape is $\frac{8}{8}$ or 1.

1. This is $\frac{1}{4}$.

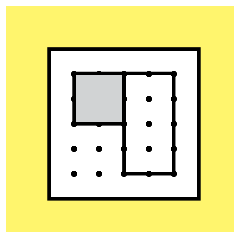


One possible geoboard answer is shown for each problem.

The rest of the shape is $\frac{3}{4}$.

The whole shape is $\frac{4}{4}$ or 1.

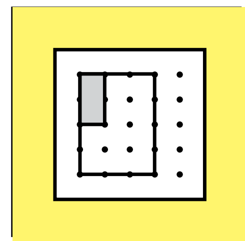
2. This is $\frac{1}{3}$.



The rest of the shape is $\frac{2}{3}$.

The whole shape is $\frac{3}{3}$ or 1.

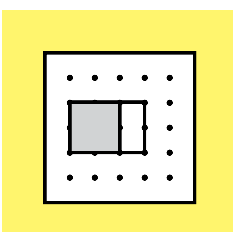
3. This is $\frac{1}{6}$.



The rest of the shape is $\frac{5}{6}$.

The whole shape is $\frac{6}{6}$ or 1.

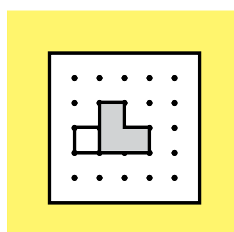
4. This is $\frac{2}{3}$.



The rest of the shape is $\frac{1}{3}$.

The whole shape is $\frac{3}{3}$ or 1.

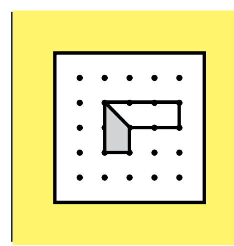
5. This is $\frac{3}{4}$.



The rest of the shape is $\frac{1}{4}$.

The whole shape is $\frac{4}{4}$ or 1.

6. This is $\frac{3}{8}$.



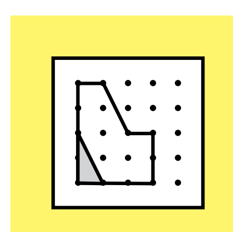
The rest of the shape is $\frac{5}{8}$.

The whole shape is $\frac{8}{8}$ or 1.

Challenge

Put a rubber band around any 4 pins on a geoboard to make a triangle.

This shape shows $\frac{1}{9}$. The rest of the shape is $\frac{8}{9}$.

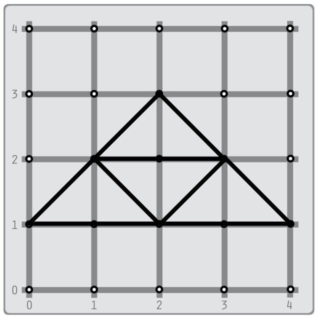


Lesson 3 **Given Parts, Show Whole**

Name Answer Key

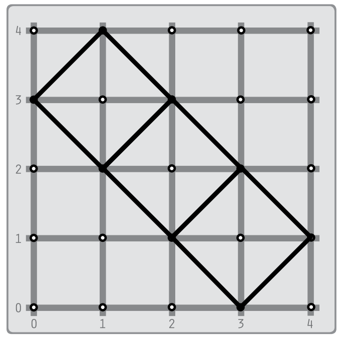
Use a geoboard and rubber bands to build the model. Write the number of equal-sized parts the model shows.

1.



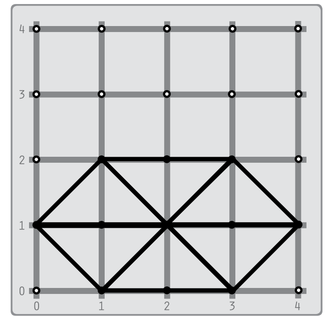
The model shows 4 equal-sized parts.

2.



The model shows 3 equal-sized parts.

3.

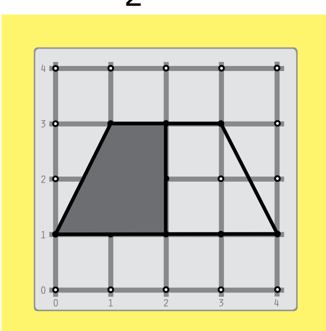


The model shows 6 equal-sized parts.

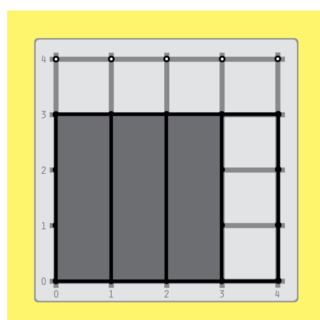
Use a geoboard and rubber bands to model the shape and divide it into equal-sized parts. Draw the model and shade the given fraction.

Sample answers given.

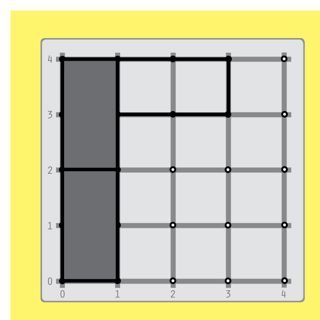
4. Make 2 parts. Shade $\frac{1}{2}$.



5. Make 4 parts. Shade $\frac{3}{4}$.



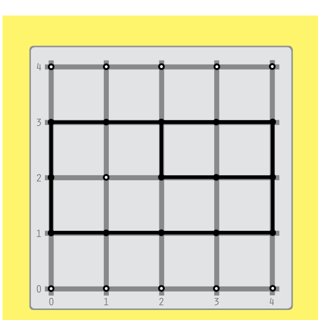
6. Make 3 parts. Shade $\frac{2}{3}$.



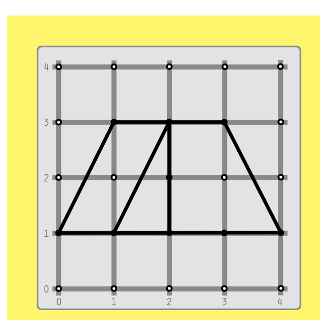
Use a geoboard and rubber bands to build the whole shape for the given part. Draw the model.

Sample answers given.

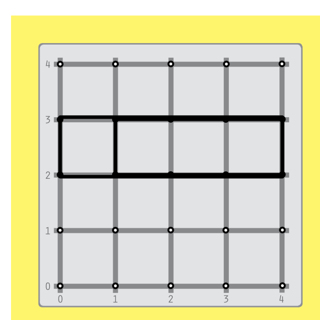
7. $\frac{1}{4}$ is given.



8. $\frac{1}{6}$ is given.



9. $\frac{3}{4}$ is given.

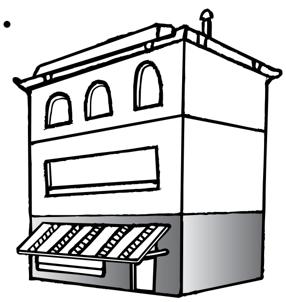


Name **Answer Key**

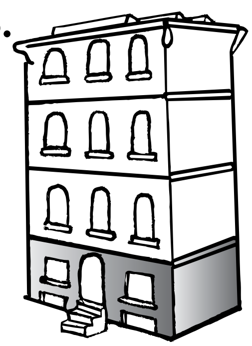
4

What fraction of the building is shaded?

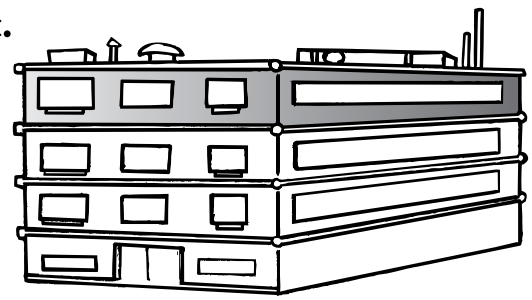
a.



b.



c.



ANSWER **a.** $\frac{1}{3}$ is shaded; **b.** $\frac{1}{4}$ is shaded; **c.** $\frac{1}{4}$ is shaded

COMMENTS & EXTENSIONS According to a researcher of mathematical giftedness, Julian Stanley, a major aspect of mathematical thinking is the ability to see straight into the heart of an issue. Help students to see that in building **a** 1 of 3 levels of the building is shaded. Thus $\frac{1}{3}$ is shaded. There is no need to count the shaded blocks and the total number of blocks, though one can if one wants to.

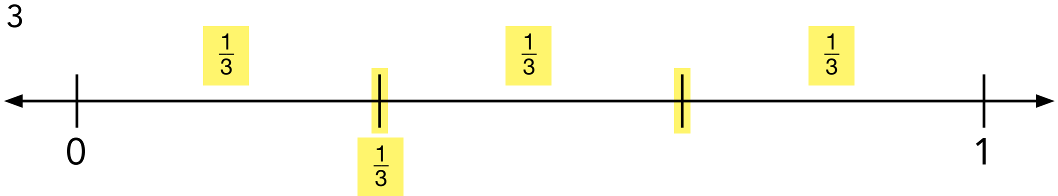
Unit Fractions on a Number Line

Name **Answer Key**

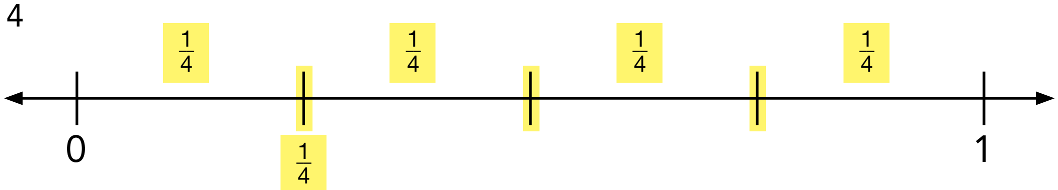
Try This

- Model each unit fraction on the number line.
- Use Fraction Towers to divide the whole into equal parts.
- Locate and label the unit fraction.

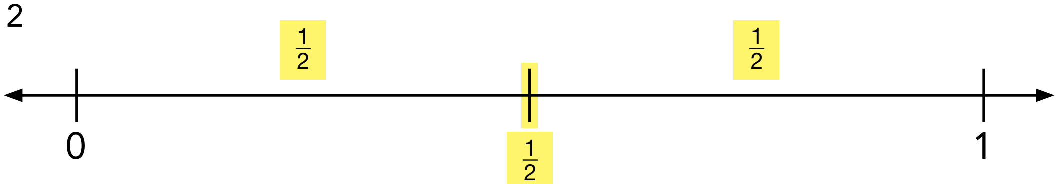
1. $\frac{1}{3}$



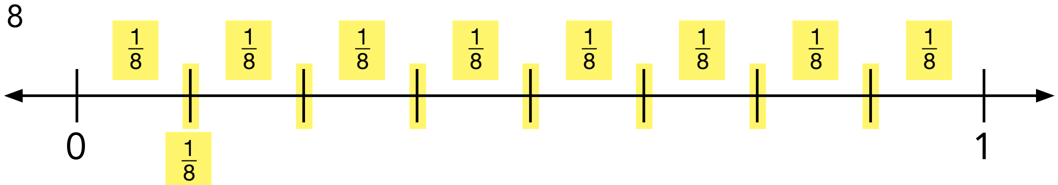
2. $\frac{1}{4}$



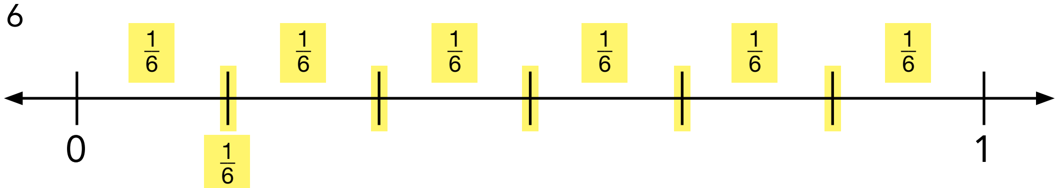
3. $\frac{1}{2}$



4. $\frac{1}{8}$



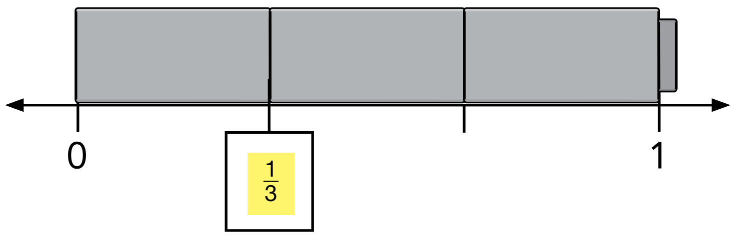
5. $\frac{1}{6}$



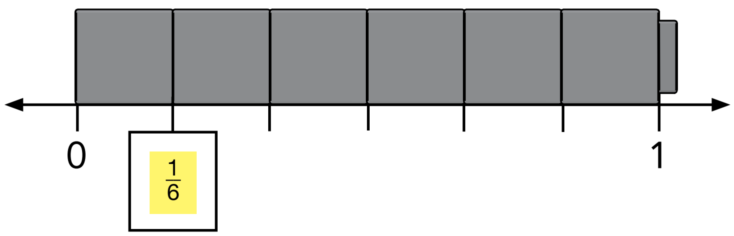
Name Answer Key

Use Fraction Tower Cubes and a blank Fraction Number Line to build the model. Write the unit fraction in the box.

1.

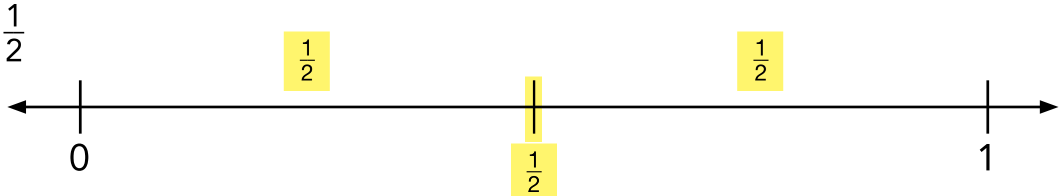


2.

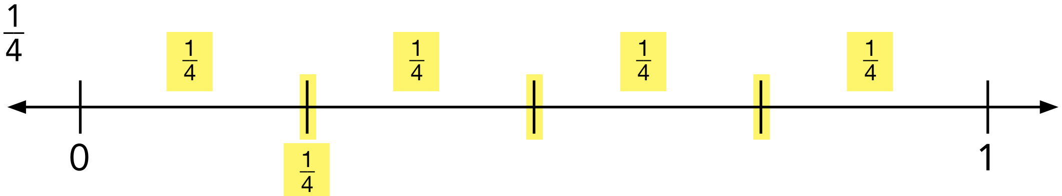


Use Fraction Tower Cubes to divide the whole into equal parts, and label each part. Locate and label the unit fraction.

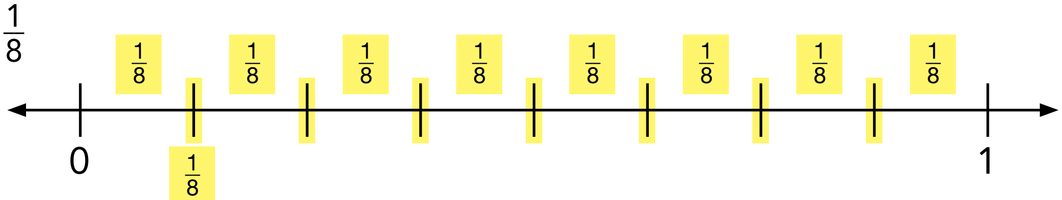
3. $\frac{1}{2}$



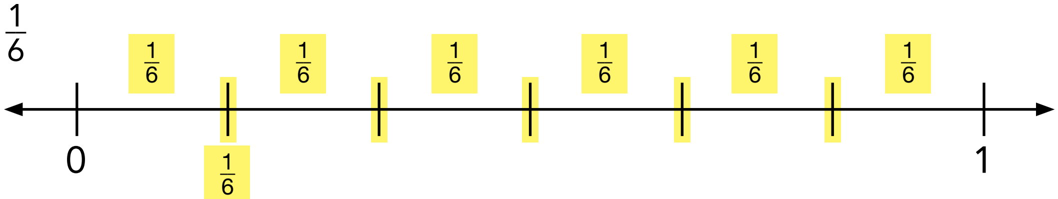
4. $\frac{1}{4}$



5. $\frac{1}{8}$



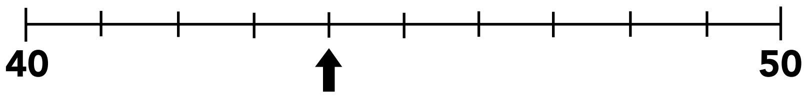
6. $\frac{1}{6}$



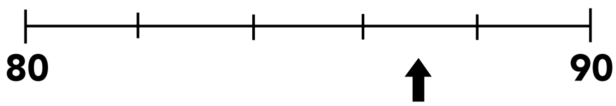
Name **Answer Key**

5

a. What number does the arrow point to?



b. What number does the arrow point to?



ANSWER a. 44; **b.** 87

COMMENTS & EXTENSIONS For line **a**, place a new arrow at

- **a.** 42
- **b.** 47.5
- **c.** 40.5

For line **b**, place a new arrow at

- **a.** 83
- **b.** 80.5
- **c.** 87.5

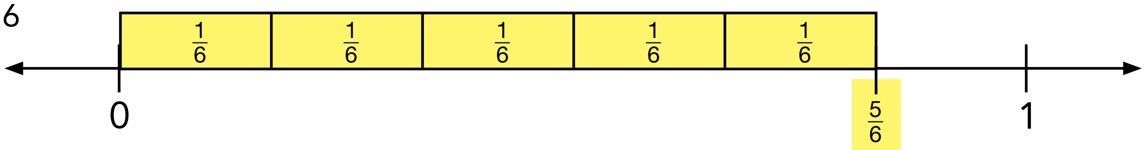
Lesson 5 **Fractions on a Number Line**

Name **Answer Key**

Try This

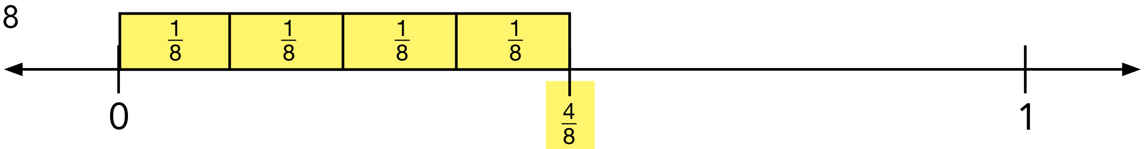
- Model the fraction on the number line using Fraction Tower Cubes.
- Draw your model. Mark and label the fraction.
- Fill in the answer blanks.

1. $\frac{5}{6}$



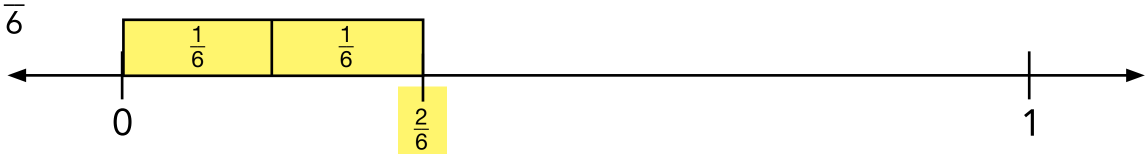
$\frac{5}{6}$ has a length of __ 5 __ units that are each $\frac{1}{6}$ long.

2. $\frac{4}{8}$



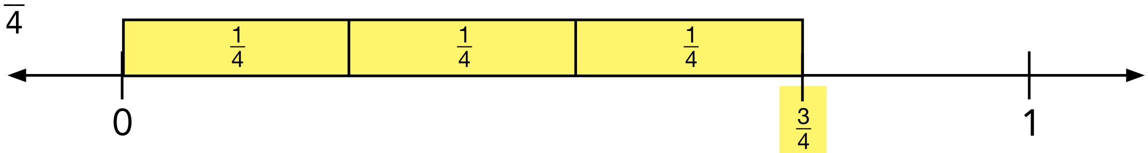
$\frac{4}{8}$ has a length of __ 4 __ units that are each $\frac{1}{8}$ long.

3. $\frac{2}{6}$



$\frac{2}{6}$ has a length of __ 2 __ units that are each __ $\frac{1}{6}$ __ long.

4. $\frac{3}{4}$



$\frac{3}{4}$ has a length of __ 3 __ units that are each __ $\frac{1}{4}$ __ long.

Extension

Fill in the blanks.

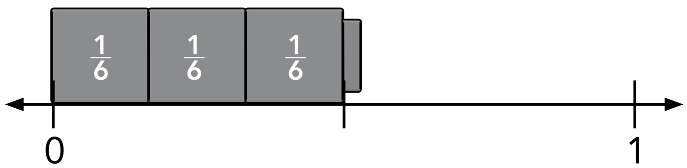
5. $\frac{3}{10}$ has a length of __ 3 __ units that are each __ $\frac{1}{10}$ __ long.

6. $\frac{7}{12}$ has a length of __ 7 __ units that are each __ $\frac{1}{12}$ __ long.

Name **Answer Key**

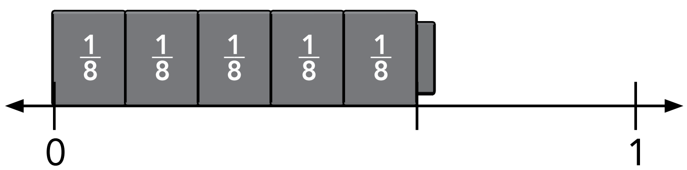
Use Fraction Tower Cubes and the Fraction Number Line to build the model. Then fill in the blank in the sentence.

1.



$\frac{3}{6}$ has a length of ___3___ units that are each $\frac{1}{6}$ long.

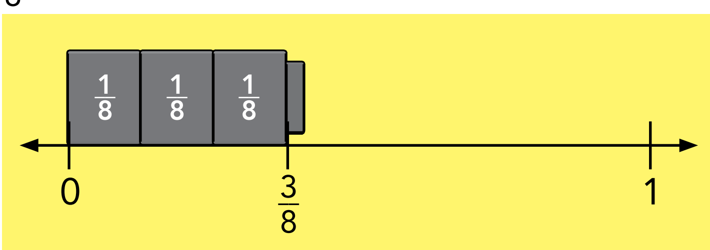
2.



$\frac{5}{8}$ has a length of ___5___ units that are each $\frac{1}{8}$ long.

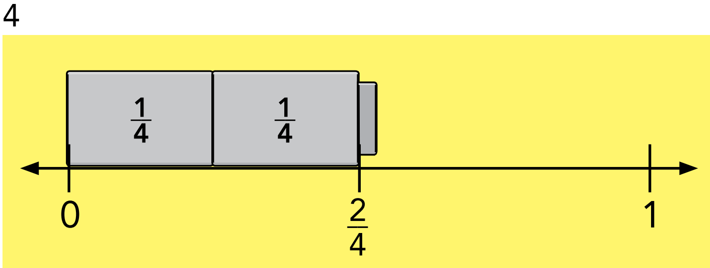
Use Fraction Tower Cubes and the Fraction Number Line to model the number. Sketch the model. Then fill in the blanks in the sentence.

3. $\frac{3}{8}$



$\frac{3}{8}$ has a length of ___3___ units that are each $\frac{1}{8}$ long.

4. $\frac{2}{4}$



$\frac{2}{4}$ has a length of ___2___ units that are each ___$\frac{1}{4}$___ long.

Fill in the blanks.

5. $\frac{2}{3}$ has a length of ___2___ units that are each $\frac{1}{3}$ long.

6. $\frac{5}{6}$ has a length of ___5___ units that are each $\frac{1}{6}$ long.

7. $\frac{3}{4}$ has a length of ___3___ units that are each ___$\frac{1}{4}$___ long.

8. $\frac{2}{6}$ has a length of ___2___ units that are each ___$\frac{1}{6}$___ long.

Name **Answer Key**

6

Find something in your classroom that measures about

a. 1 inch long.

b. 2 inches long.

c. 4 inches long.

d. 10 inches long.

e. 100 inches long.

ANSWER Answers will vary.

COMMENTS & EXTENSIONS Ask students to find benchmarks—perhaps half a thumb length for 1 inch—for these measurements.

Ask students to perform this activity with the metric measurements 1 cm, 10 cm, and 100 cm. Have them name an item that is the given length.

Guess how many inches wide your class is. How did you decide on a guess? Check your guess.

Name **Answer Key**

Try This

- Use the inch ruler to measure the length of each ribbon.
- Record the lengths in the second column.
- Use the quarter-inch ruler to measure the length of each ribbon.
- Record the lengths in the third column.

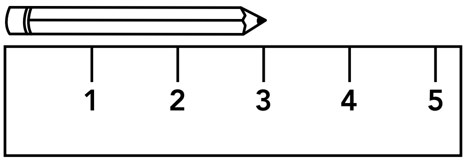
Ribbon Color	Inch Ruler Measurement	Quarter-Inch Ruler Measurement
1. Red	Accept all reasonable answers. in.	$5\frac{3}{4}$ in.
2. Orange	Accept all reasonable answers. in.	$9\frac{1}{2}$ in.
3. Yellow	Accept all reasonable answers. in.	$3\frac{1}{4}$ in.
4. Green	Accept all reasonable answers. in.	7 in.
5. Blue	Accept all reasonable answers. in.	$11\frac{1}{2}$ in.
6. Purple	Accept all reasonable answers. in.	$\frac{1}{4}$ in.
7. Black	Accept all reasonable answers. in.	$10\frac{3}{4}$ in.
8. White	Accept all reasonable answers. in.	$2\frac{1}{4}$ in.

Which ruler gave more precise measurements? Why? ______

Name **Answer Key**

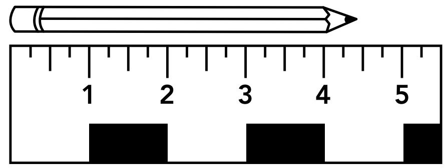
Look at the model. What is the length of the pencil to the nearest $\frac{1}{2}$-inch?

1.



3 inches

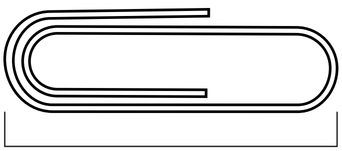
2.



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

Measure to the nearest inch, $\frac{1}{2}$-inch, and $\frac{1}{4}$-inch.

3.

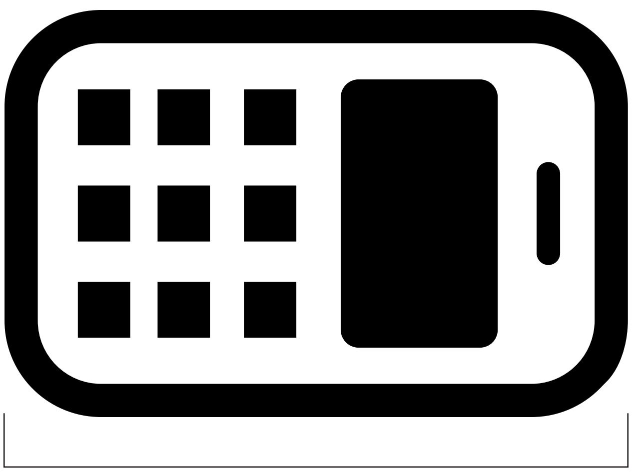


2 inches

$1\frac{1}{2}$ or 2 inches

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

4.



3 inches

3 or $3\frac{1}{2}$ inches

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

5.

5 inches

5 or $5\frac{1}{2}$ inches

$5\frac{1}{4}$ inches