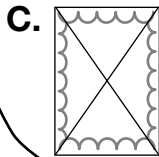
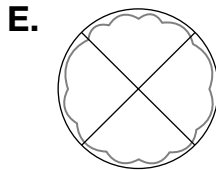
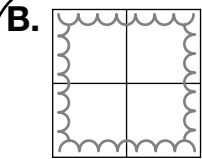
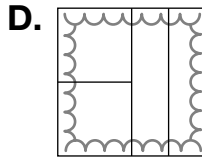
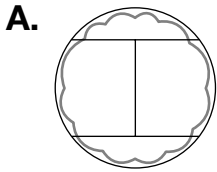


1

Fractions of an Area

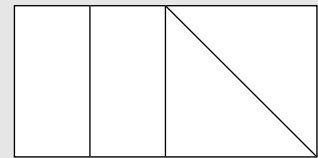
Goal Describe and compare fractions as part of an area using words, objects, pictures, and symbols.

1. Circle the letter of each cake top that shows fourths.

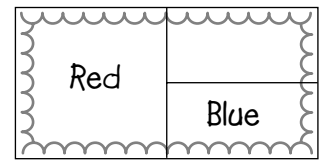


At-Home Help

Each part of this rectangle is $\frac{1}{4}$. All the parts cover the same area even though they don't all have the same shape.



Answers will vary. For example:



2. a) Make this rectangular cake top $\frac{1}{2}$ red and $\frac{1}{4}$ blue.

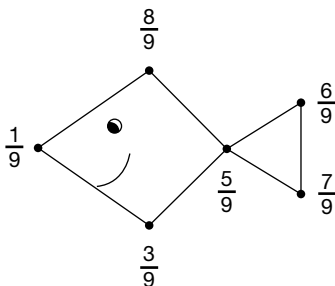
b) Write the fraction for the part that is not coloured. $\frac{1}{4}$

3. Which fraction is greater? Tell how you know.

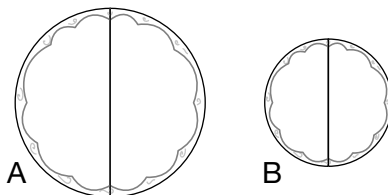
a) $\frac{5}{6}$ or $\frac{1}{6}$ $\frac{5}{6}$ since 5 is greater than 1

b) $\frac{3}{8}$ or $\frac{7}{8}$ $\frac{7}{8}$ since 7 is greater than 3

4. Join the dots in order from the least to the greatest.



5. Is $\frac{1}{2}$ of cake top A the same as $\frac{1}{2}$ of cake top B? Explain.

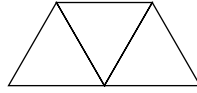


No, they are not equal areas. Even though they are both $\frac{1}{2}$ a cake, the area of $\frac{1}{2}$ of cake A is larger than the area of $\frac{1}{2}$ of cake B.

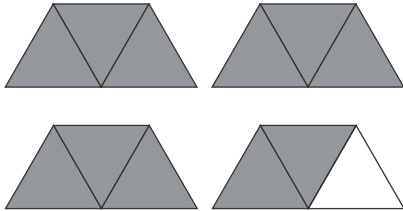
Mixed Numbers and Improper Fractions

Goal Model, write, and compare improper fractions and mixed numbers.

1. The trapezoid is the whole.



a) Colour $3\frac{2}{3}$ trapezoids.

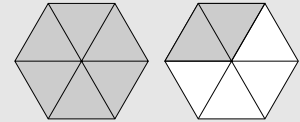


b) How many triangles did you colour? 11

c) Write the improper fraction that describes how much is coloured. $\frac{11}{3}$

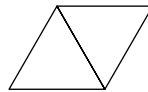
At-Home Help

6 triangles make a whole hexagon.

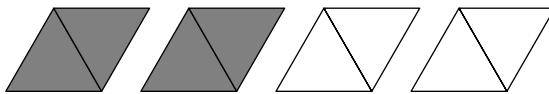


So 8 triangles show $1\frac{2}{6}$ (a **mixed number**) or $\frac{8}{6}$ (an **improper fraction**).

2. The rhombus is the whole.



a) Colour $\frac{4}{2}$ rhombuses.

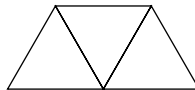


b) Colour $\frac{7}{2}$ rhombuses.

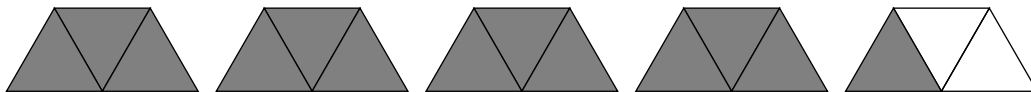


c) Which is greater, $\frac{4}{2}$ or $\frac{7}{2}$? How do you know? $\frac{7}{2}$ because 3 more triangles are shaded than for $\frac{4}{2}$ (or because $1\frac{1}{2}$ more rhombuses are shaded).

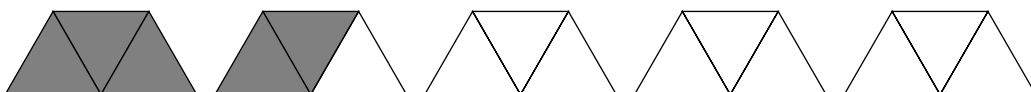
3. The trapezoid is the whole.



a) Colour $4\frac{1}{3}$ trapezoids. Then write the improper fraction. $\frac{13}{3}$



b) Colour $\frac{5}{3}$ trapezoids. Then write the mixed number. $1\frac{2}{3}$



c) Which is greater, $4\frac{1}{3}$ or $\frac{5}{3}$? How do you know? $4\frac{1}{3}$ because 8 more triangles are shaded than for $\frac{5}{3}$ (or because 4 whole trapezoids are more than 1 whole trapezoid).

Fractions of a Set

Goal

Describe parts of sets using proper and improper fractions and mixed numbers.

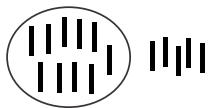
Use toothpicks, bread tags, or other counters to help you if necessary.

At-Home Help

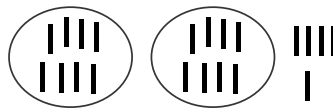
Mixed numbers and improper fractions can be used to describe parts of sets. For example, eggs come in cartons of 12. 14 eggs could be described as a mixed number, $1\frac{2}{12}$, or as an improper fraction, $\frac{14}{12}$.

- Liza is writing thank-you cards. They come in packages of 8. She has used $1\frac{3}{8}$ of a package.
 - How many cards has she used? 11
 - What improper fraction describes $1\frac{3}{8}$ of a package? $\frac{11}{8}$
- Mollie is putting pop cans in cartons. She puts 12 cans in each carton.
 - Write the mixed number that describes how many cartons she can fill with 37 cans. $3\frac{1}{12}$
 - Write this amount as an improper fraction. $\frac{37}{12}$
- Write the mixed number for each improper fraction. Then draw pictures of toothpicks to show the mixed number as sets and parts of sets.

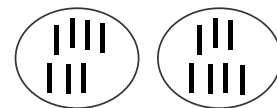
a) $\frac{15}{10}$ $1\frac{5}{10}$



b) $\frac{21}{8}$ $2\frac{5}{8}$



c) $\frac{14}{7}$ 2



- Arrange these numbers in order from least to greatest.

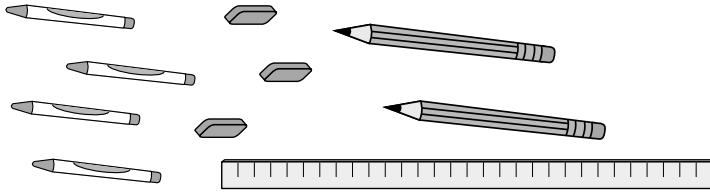
a) $\frac{6}{3}, \frac{1}{3}, \frac{4}{3}, \frac{8}{3}, \frac{10}{3}$ $\frac{1}{3}, \frac{4}{3}, \frac{6}{3}, \frac{8}{3}, \frac{10}{3}$

b) $1\frac{1}{5}, \frac{4}{5}, 2\frac{4}{5}, \frac{7}{5}, \frac{15}{5}$ $\frac{4}{5}, 1\frac{1}{5}, \frac{7}{5}, 2\frac{4}{5}, \frac{15}{5}$

Decimal Tenths

Goal Write decimal tenths using words and symbols.

1. Complete the chart.



Item	Fraction of items	Decimal	Words
pencils	$\frac{2}{10}$	0.2	two tenths
erasers	$\frac{3}{10}$	0.3	three tenths
crayons	$\frac{4}{10}$	0.4	four tenths
rulers	$\frac{1}{10}$	0.1	one tenth
glue sticks	$\frac{0}{10}$	0.0	zero tenths

At-Home Help

Decimals are a way to describe fractions. The fraction $\frac{2}{10}$ is written **0.2** and read **two tenths**. A decimal point separates the ones place from the fractional part. The 0 means there is no whole amount and the 2 is the numerator in the fraction $\frac{2}{10}$.

2. Write each decimal as a fraction.

a) 0.2 $\frac{2}{10}$ b) 1.0 $\frac{10}{10}$ c) 0.9 $\frac{9}{10}$

3. Write each fraction as a decimal. Then write it in words.

a) $\frac{1}{10}$ 0.1 b) $\frac{0}{10}$ 0.0 c) $\frac{5}{10}$ 0.5
 one tenth zero tenths five tenths

4. Draw and colour a design on the strip following the directions given.

Answers will vary. For example:



a) Put stars in less than $\frac{4}{10}$ of the boxes. Write the decimal amount of stars. 0.3

c) Colour almost all of the boxes. Write the decimal amount of coloured boxes. 0.9

b) Put triangles in more than $\frac{1}{2}$ of the boxes. Write the decimal amount of triangles. 0.6

d) Write the decimals closest to 0 0.3 $\frac{1}{2}$ 0.6 1 0.9

Decimal Tenths Greater Than 1

Goal Model, write, and compare decimal tenths greater than 1.

Use the metre sticks on the side of the page to help you.

1. Find 1.5 m on the metre sticks.

a) What does the 1 in 1.5 m tell you?

one whole metre

b) What does the 5 in 1.5 m tell you?

five tenths of a metre or five decimetres

c) Write 1.5 in words. one metre and five tenths

d) How many decimetres is 1.5 m? 15 dm

e) Write 1.5 m as a mixed number. $1\frac{5}{10}$

2. Write a decimal for each mixed number. Then find each length in metres on the metre stick. The first one is done for you.

a) $2\frac{1}{10}$ 2.1

d) $2\frac{4}{10}$ 2.4

b) $1\frac{6}{10}$ 1.6

e) $1\frac{2}{10}$ 1.2

c) $2\frac{8}{10}$ 2.8

f) $1\frac{9}{10}$ 1.9

3. Write each measurement in metres using decimals.

a) one metre four decimetres 1.4 m

b) twenty-five decimetres 2.5 m

c) two metres eight decimetres 2.8 m

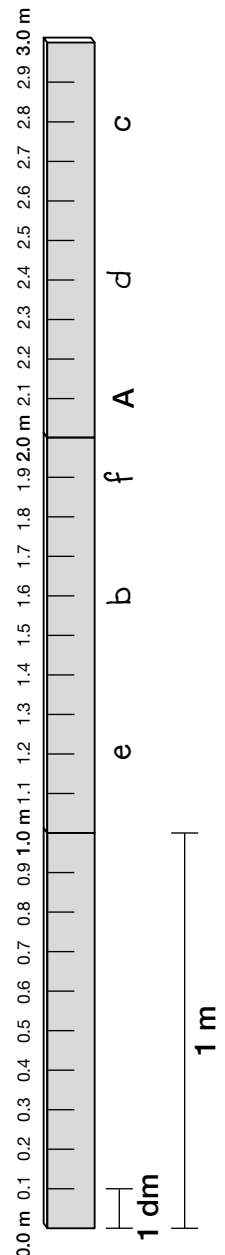
4. Arrange these measurements from longest to shortest.

1.0 m, 2.2 m, 3.0 m, 1.8 m, 2.3 m, 1.2 m

3.0 m, 2.3 m, 2.2 m, 1.8 m, 1.2 m, 1.0 m

At-Home Help

The drawing below shows 3 metre sticks end-to-end. The decimal marked A is 2.1 m. This represents 2 whole metres and 1 tenth of a metre, or 2 whole metres and 1 decimetre (1 dm).



Adding Decimal Tenths

Goal Add decimals in tenths.

Use the number line on the side of the page to help you with the questions.

1. a) Find 2.5 on the number line. Add 1.0 to it.

What is the answer? 3.5

- b) Find 3.6 on the number line. Add 2.2 to it.

What is the answer? 5.8

- c) Find 3.9 on the number line. Add 1.8 to it.

What is the answer? 5.7

2. Add the lengths.

- a) 2.3 m and 1.8 m

4.1 m

- e) 5.3 cm and 0.8 cm

6.1 m

- b) 3.0 km and 1.4 km

4.4 m

- f) 4.0 m and 1.9 m

5.9 m

- c) 4.3 m and 1.2 m

5.5 m

- g) 2.7 dm and 2.7 dm

5.4 m

- d) 2.8 m and 0.6 m 3.4 m

3. Larry walked 3.5 km and then ran 2.2 km.

How far did he go?

5.7 km

4. Find 4 different pairs of decimal tenths that add to 4.0.

Answers will vary. For example, $3.0 + 1.0$, $2.0 + 2.0$, $2.5 + 1.5$, $3.5 + 0.5$.

5. Find 4 different pairs of decimal tenths that add to 6.1.

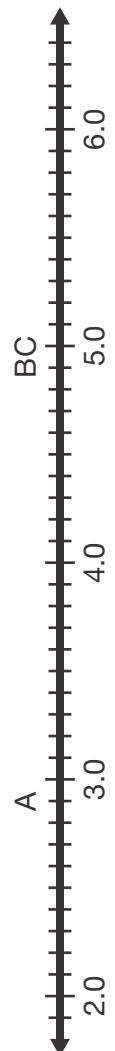
Answers will vary. For example, $6.0 + 0.1$, $5.0 + 1.1$, $4.0 + 2.1$, $3.0 + 3.1$.

At-Home Help

To add decimals, use the number line. For example, to add 2.9 and 2.1:

- Start at 2.9. (It's marked A.)
- Jump 2.0 from 2.9 to 4.9. (It's marked B.) That's 2 wholes added.
- Jump 0.1 more from 4.9 to 5.0. (It's marked C.) That's 1 tenth added.

$$2.9 + 2.1 = 5.0$$



Subtracting Decimal Tenths

Goal Subtract decimals in tenths.

Use the number line on the side of the page to help you.

To answer the riddle “What happens to a duck when it flies upside down?”:

- find each difference
- use the code below to match each difference with a letter

1. $4.0 - 0.9 = \underline{3.1}$	6. $3.8 - 1.2 = \underline{2.6}$
2. $3.0 - 1.9 = \underline{1.1}$	7. $4.3 - 3.6 = \underline{0.7}$
3. $5.0 - 2.0 = \underline{3.0}$	8. $5.2 - 4.8 = \underline{0.4}$
4. $4.0 - 1.3 = \underline{2.7}$	9. $4.9 - 2.2 = \underline{2.7}$
5. $2.0 - 0.5 = \underline{1.5}$	10. $4.6 - 2.3 = \underline{2.3}$

Code

1.5	2.6	3.1	2.7	3.0	1.1	0.7	0.4	2.3
A	C	I	U	Q	T	K	S	P

<u>I</u>	<u>T</u>	<u>Q</u>	<u>U</u>	<u>A</u>	<u>C</u>	<u>K</u>	<u>S</u>	<u>U</u>	<u>P</u>
1.	2.	3.	4.	5.	6.	7.	8.	9.	10.

11. The difference between the lengths of the front foot and the back foot of a skunk is 1.5 cm. Circle the letter of the lengths the feet could be.
- A. 4.0 cm and 1.5 cm **C. 3.0 cm and 1.5 cm**
- B. 3.5 cm and 0.5 cm D. 1.0 cm and 0.5 cm
12. A black bear’s front foot is 14.0 cm long.
A grizzly bear’s front foot is 11.5 cm long.
What is the difference between the lengths of their front feet?
Use a ruler to help you.

2.5 cm

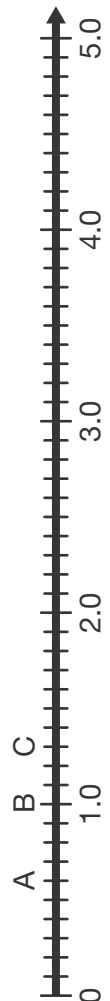
At-Home Help

Count on to subtract decimal tenths. To subtract $1.3 - 0.6$:

- Find 0.6 on the number line. (It’s marked A.)
- Count to 1.0. (It’s marked B.). That’s 4 tenths.
- Count from 1.0 to 1.3. (It’s marked C.) That’s another 3 tenths.

4 tenths and 3 tenths is 7 tenths, or 0.7.

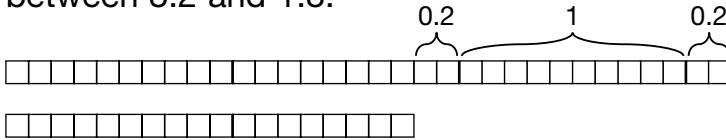
So $1.3 - 0.6 = 0.7$.



Communicate About Decimal Operations

Goal Use a model to explain how to add and subtract decimals.

1. These base ten blocks show the difference between 3.2 and 1.8.

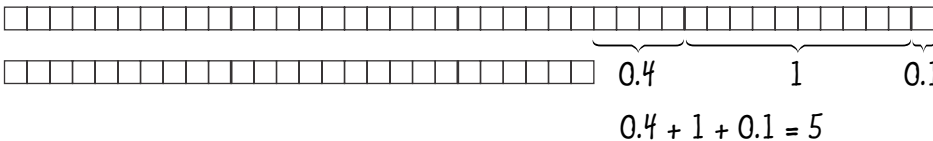


$$0.2 + 1 + 0.2 = 1.4$$

Check the answer by adding 1.8 and 1.4.

$$1.8 + 1.4 = 3.2$$

2. These base ten blocks show the difference between 4.1 and 2.6.



$$0.4 + 1 + 0.1 = 1.5$$

- a) Write an explanation using a diagram to show how the difference is found. Use the Communication Checklist to check your explanation.

b) What is the difference? 1.5

c) What could you add to check? 2.6 and 1.5

- d) Check.

$$2.6 + 1.5 = 4.1$$

3. These base ten blocks show the sum of 1.6 and 2.7.



a) How many rods are there altogether? 3

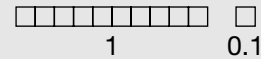
b) How many cubes are there altogether? 13

c) Express the number of cubes in part b) as rods and cubes. 1 rod, 3 cubes

d) What is the sum of 1.6 and 2.7? 4.3

At-Home Help

Base ten blocks are useful for modelling addition and subtraction of decimal tens. 1 tens rod is 1 dm (decimetre). 1 unit cube is 1 cm, or 0.1 dm.



Communication Checklist

- Did you show all your steps?
- Did you put the steps in order?
- Did you explain your thinking?
- Did you use math language?

Decimal Hundredths Less Than or Equal to 1

Goal
Write hundredths as decimals using words and symbols.

1. Write each fraction as a decimal and in words.

a) $\frac{23}{100}$ _____ 0.23, 23 hundredths

b) $\frac{4}{100}$ _____ 0.04, 4 hundredths

c) $\frac{99}{100}$ _____ 0.99, 99 hundredths

2. Order the decimals in Question 1 from least

to greatest. _____ 0.04, 0.23, 0.99

3. Write each decimal as a fraction.

a) 0.52 _____ $\frac{52}{100}$

b) 0.07 _____ $\frac{7}{100}$

c) 0.89 _____ $\frac{89}{100}$

4. Write the decimal from Question 3 that is closest to each number.

a) 1 _____ 0.89

b) 0 _____ 0.07

c) $\frac{1}{2}$ _____ 0.52

5. Describe using fractions, decimals, and words.

a) E _____ $\frac{8}{100}$, 0.08, 8 hundredths

b) t _____ $\frac{7}{100}$, 0.07, 7 hundredths

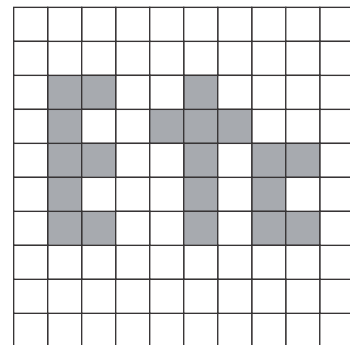
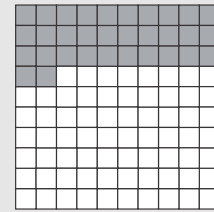
c) c _____ $\frac{5}{100}$, 0.05, 5 hundredths

d) Etc _____ $\frac{20}{100}$, 0.20, 20 hundredths

e) part not shaded _____ $\frac{80}{100}$, 0.80, 80 hundredths

At-Home Help

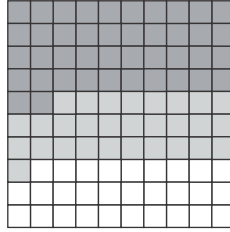
 32 hundredths of this grid is shaded. This is 0.32 or $\frac{32}{100}$.

 68 hundredths of this grid is not shaded. This is 0.68 or $\frac{68}{100}$.


Add and Subtract Hundredths

Goal Add and subtract decimal hundredths using grids and calculators.

1. This 100 grid shows
 $0.42 + 0.29$.

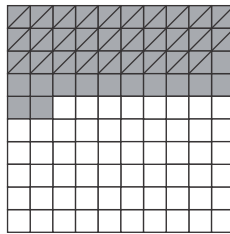


- a) What is the sum?

0.71

- b) Explain how you know. 71 squares are shaded altogether.

2. This 100 grid shows
 $0.42 - 0.29$.



- a) What is the difference?

0.13

- b) Explain how you know. 13 shaded squares are not stroked out.

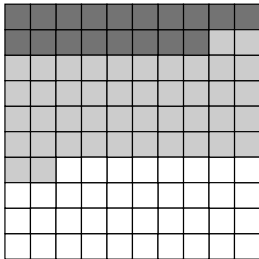
At-Home Help

A 100 grid can be used to add decimal hundredths. Shade the number of squares equal to each decimal number. Then count all the shaded squares. (See Question 1.)

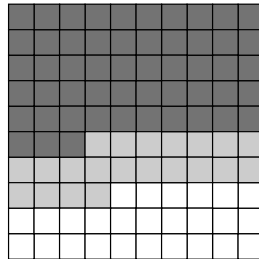
A 100 grid can be used to subtract decimal hundredths. One way is to shade the number of squares equal to the greater decimal number. Stroke out the number of shaded squares that is equal to the lesser number. Then count the shaded squares that didn't get stroked out. (See Question 2.)

3. Add or subtract using the 100 grids provided. If you have a calculator, check your answers.

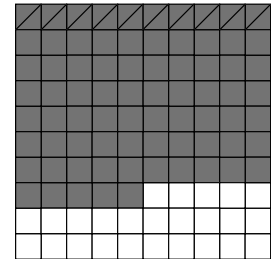
a) $0.18 + 0.44 = 0.62$



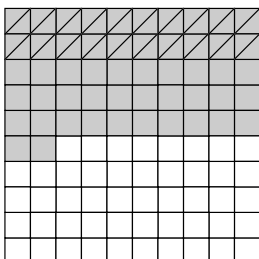
c) $0.53 + 0.21 = 0.74$



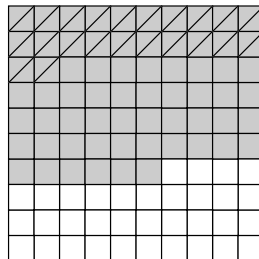
e) $0.75 - 0.10 = 0.65$



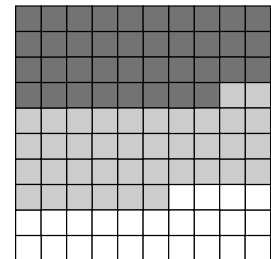
b) $0.52 - 0.20 = 0.32$



d) $0.66 - 0.22 = 0.44$



f) $0.38 + 0.38 = 0.76$



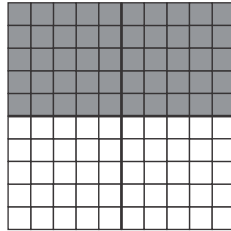
Relating Fractions and Decimals

Goal

Explore, model, and calculate how fractions and decimals are related.

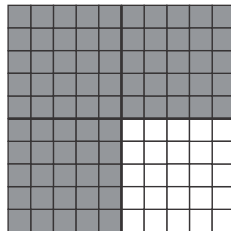
1. a) Shade $\frac{1}{2}$.

$$\frac{1}{2} \text{ as a decimal hundredth} \\ = \underline{\quad 0.50 \quad}$$



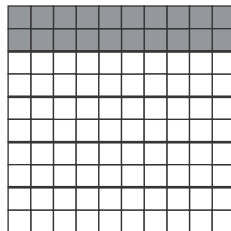
- b) Shade $\frac{3}{4}$.

$$\frac{3}{4} \text{ as a decimal hundredth} \\ = \underline{\quad 0.75 \quad}$$



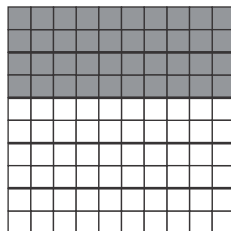
- c) Shade $\frac{1}{5}$.

$$\frac{1}{5} \text{ as a decimal hundredth} \\ = \underline{\quad 0.20 \quad}$$



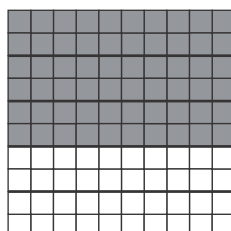
- d) Shade $\frac{2}{5}$.

$$\frac{2}{5} \text{ as a decimal hundredth} \\ = \underline{\quad 0.40 \quad}$$



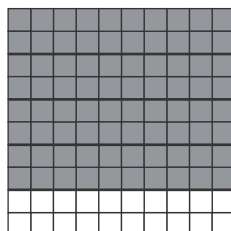
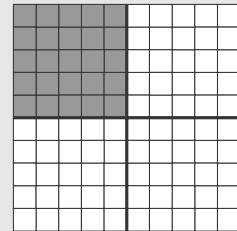
- e) Shade $\frac{3}{5}$.

$$\frac{3}{5} \text{ as a decimal hundredth} \\ = \underline{\quad 0.60 \quad}$$



- f) Shade $\frac{4}{5}$.

$$\frac{4}{5} \text{ as a decimal hundredth} \\ = \underline{\quad 0.80 \quad}$$


At-Home Help


The grid is $\frac{1}{4}$ shaded. This is 25 hundredths of the grid, or 0.25.

$$\frac{1}{4} = 0.25$$

You can check by dividing the numerator 1 by the denominator 4 using a calculator.

If you have a calculator, check that each decimal hundredth is correct. Divide the numerator of each fraction by its denominator.

Test Yourself Page 1

Circle the correct answer.

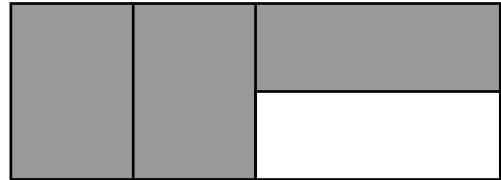
1. Which statement does **not** describe this rectangle?

A. $\frac{3}{4}$ of the rectangle is shaded.

B. $\frac{1}{3}$ of the rectangle is not shaded.

C. Each section is $\frac{1}{4}$ of the whole area even though the sections are not the same shape.

D. $\frac{1}{4}$ of the rectangle is not shaded.



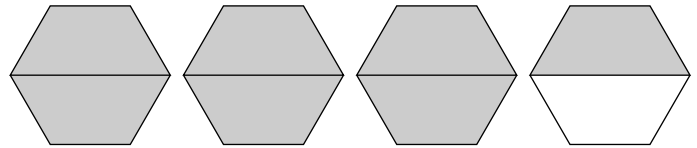
2. Which is a mixed number that describes the amount of hexagons that are shaded?

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

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

F. $3\frac{1}{8}$

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



3. Juice boxes come in packages of 3. John has 14 juice boxes. Which fraction shows how many packages he has?

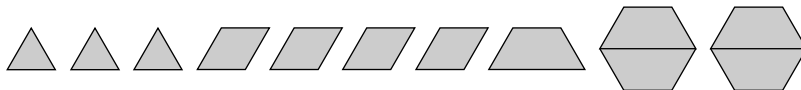
A. $\frac{13}{3}$ packages

B. $4\frac{2}{3}$ packages

C. $\frac{3}{3}$ packages

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

4. Which of the following correctly describes this set of pattern blocks?



E. 0.01 of the set are trapezoids.

F. The triangles and hexagons are more than 0.5 of the set.

G. 4.0 of the set are rhombuses.

H. The rhombuses and trapezoids are more than 0.4 of the set.

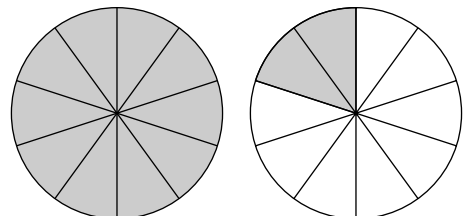
5. Which of the following shows the decimal amount shaded?

A. 12.0

C. 1.2

B. 1.12

D. 0.12



Test Yourself Page 2

Circle the correct answer.

6. What is the sum of 3.8 and 4.2?

E. 8.0

F. 7.10

G. 7.0

H. 0.4

7. What is the difference between 5.2 and 3.7?

A. 8.9

B. 1.5

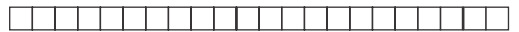
C. 1.3

D. 1.2

8. What operation is shown by these base ten blocks?

E. $2.2 - 0.3 = 2.5$

G. $2.2 - 0.3 = 1.9$



F. $2.2 + 0.3 = 2.5$

H. $2.2 + 0.3 = 1.9$



9. What is $\frac{3}{100}$ as a decimal?

A. 0.3

B. 3.0

C. 0.03

D. 0.30

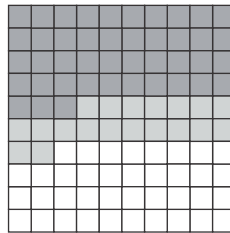
10. What operation is shown on this grid?

E. $0.43 + 0.19 = 0.62$

F. $0.43 - 0.19 = 0.24$

G. $0.43 + 0.19 = 0.24$

H. $0.43 - 0.19 = 0.62$



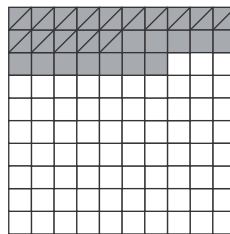
11. What operation is shown on this grid?

A. $0.27 + 0.15 = 0.42$

B. $0.27 - 0.15 = 0.42$

C. $0.27 + 0.15 = 0.12$

D. $0.27 - 0.15 = 0.12$



12. Which decimal represents $\frac{1}{4}$ on a calculator or on a 100 grid?

E. 0.4

F. 0.25

G. 1.4

H. 0.40