

# SUMMER LEARNING



Keep your  
**brain healthy**  
over **summer** break!


**SUMMER**  
*m* *A* **+** *π*  
**CHALLENGE**

Getting Ready  
for  
5th Grade



Name \_\_\_\_\_

## Place Value Through Millions

**Essential**  How can you read, write, and represent whole numbers through millions?

The population of Idaho is about 1,550,000. Write 1,550,000 in standard form, word form, and expanded form.

You know how to read and write numbers through hundred thousands. The place-value chart can be expanded to help you read and write greater numbers, like 1,550,000.

One million is 1,000 thousands and is written as 1,000,000. The millions period is to the left of the thousands period on a place-value chart.

PERIODS								
MILLIONS			THOUSANDS			ONES		
Hundreds	Tens	Ones	Hundreds	Tens	Ones	Hundreds	Tens	Ones
		1,	5	5	0,	0	0	0
		$1 \times 1,000,000$	$5 \times 100,000$	$5 \times 10,000$	$0 \times 1,000$	$0 \times 100$	$0 \times 10$	$0 \times 1$
		1,000,000	500,000	50,000	0	0	0	0

The place value of the 1 in 1,550,000 is millions.

**Standard form:** 1,550,000

**Word Form:** One million, five hundred fifty thousand

**Expanded Form:**  $1,000,000 + 500,000 + 50,000$

**Try This!** Use place value to read and write the number.

**Standard Form:** \_\_\_\_\_

**Word Form:** Sixty-two million, eighty thousand, one hundred twenty-six

**Expanded Form:**  $60,000,000 +$  \_\_\_\_\_  $+$   
 $80,000 +$  \_\_\_\_\_  $+ 20 + 6$



**Turn and Talk** Explain how 8,000,000 is different than 800,000.

Name \_\_\_\_\_

## Check Understanding

- 1 Write the number 3,298,076 in word form and expanded form.

Word Form: \_\_\_\_\_

\_\_\_\_\_

Expanded Form: \_\_\_\_\_

Read and write the number in two other forms.

- 2 fifty million, three thousand, eighty-seven

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

- 3  $60,000,000 + 400,000 + 200 + 30 + 9$

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

## On My Own

Read and write the number in two other forms.

- 4  $70,000,000 + 8,000,000 + 20,000 + 8$

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

- 5 twenty million, eleven thousand, twelve

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Write the value of the underlined digit.

- 6 3,356,000

\_\_\_\_\_

- 7 45,687,909

\_\_\_\_\_

- 8 70,000,044

\_\_\_\_\_

- 9 30,051,218


\_\_\_\_\_

- 10 According to one organization, there are about 93,600,000 pet cats and about 77,500,000 pet dogs in the U.S. Are there more pet cats or pet dogs? Explain how you know.

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Name \_\_\_\_\_

## Decimals and Place Value

**Essential**  How can you use place value to read, write, and represent decimals?

**CONNECT** Decimals, like whole numbers, can be written in standard form, word form, and expanded form.

One of the world's tiniest frogs lives in Asia. Adult males range in length from about 1.06 to 1.28 centimeters, about the size of a pea.

You can use a place-value chart to help you understand decimals. Whole numbers are to the left of the decimal point in the place-value chart, and decimal amounts are to the right of the decimal point. The value of each place is one-tenth of the place to its left.

**Use a place-value chart.**

Write each of the decimals on a place-value chart. Be sure to line up each place and the decimal point.

Ones		Tenths	Hundredths
1	.	0	6
1	.	2	8

The place-value position of the digit 8 in 1.28 is hundredths. The value of the digit 8 in 1.28 is 8 hundredths, or  $8 \times \frac{1}{100}$  or 0.08.

You can also write 1.28 in word form and expanded form.

**Word form:** one and twenty-eight hundredths

**Expanded form:**  $1 + 0.2 + 0.08$

**Try This!** Use place value to read and write the decimal.

**Standard Form:** \_\_\_\_\_

**Word Form:** three and forty-six hundredths

**Expanded Form:**  $3 + \text{_____} + \text{_____}$



**Turn and Talk** Explain why 1.28 is not one and twenty-eight tenths in word form.

Name \_\_\_\_\_

## Check Understanding

- 1 Write the decimal 4.06 in word form and expanded form

Word Form: \_\_\_\_\_

Expanded Form: \_\_\_\_\_

Read and write the decimal in two other forms.

- 2 five and two tenths

\_\_\_\_\_

- 3  $6 + 0.8 + 0.09$

\_\_\_\_\_

\_\_\_\_\_

## On My Own

Read and write the decimal in two other forms.

- 4 seven and three hundredths:

\_\_\_\_\_

- 5  $2 + 0.3 + 0.01$

\_\_\_\_\_

\_\_\_\_\_

Write the value of the underlined digit.

- 6 4.56

\_\_\_\_\_

- 7 5.09

\_\_\_\_\_

- 8 7.4

\_\_\_\_\_

- 9 1.32

\_\_\_\_\_

- 10 James is 1.63 meters tall. Write James's height in word form. Explain how you found your answer.

\_\_\_\_\_

\_\_\_\_\_


\_\_\_\_\_

- 11 Ani was told to write the number four and eight hundredths. She wrote 4.8. Explain whether or not you think Ani is correct. If you think she is not correct, write the number correctly.

\_\_\_\_\_

\_\_\_\_\_

## Round Decimals

**Essential**  How can you round decimal amounts, including amounts of money, to the nearest whole number or dollar?

Ami sells fruits and nuts at an outdoor market. She sold a bag of nuts that weighed 1.35 pounds. About how much did the bag of nuts weigh, rounded to the nearest whole number?

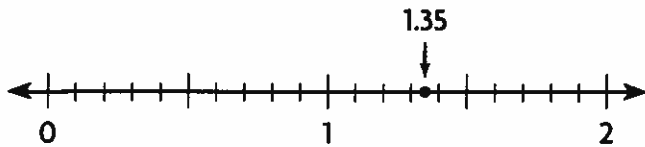
You know that you can use a number line or place value to round whole numbers. You can use the same strategies to round decimals.

**Use a number line.**

To round a decimal to the nearest whole number, find the whole numbers it is between.

\_\_\_\_\_ < 1.35 < \_\_\_\_\_

Use a number line to see which whole number 1.35 is closer to.



1.35 is closer to \_\_\_\_\_ than \_\_\_\_\_.

So, the bag of nuts weighed about \_\_\_\_\_ pound.

**1** What if Ami sold a bag of nuts that weighed 2.82 pounds? About how much does the bag weigh, rounded to the nearest whole number?

\_\_\_\_\_

**2** Describe how you would round \$3.90 to the nearest whole dollar.

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

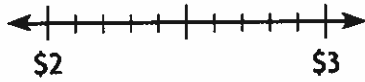


**Turn and Talk** Explain how rounding decimals is like rounding whole numbers.

Name \_\_\_\_\_

## Check Understanding

- 1 Round \$2.67 to the nearest dollar. Locate and mark \$2.67 on the number line. Which whole dollar is it closest to? \_\_\_\_\_



Round to the nearest dollar or to the nearest whole number.

- 2 \$0.78 \_\_\_\_\_      3 2.1 \_\_\_\_\_      4 3.5 \_\_\_\_\_      5 \$4.50 \_\_\_\_\_

## On My Own

Round to the nearest dollar or to the nearest whole number.

- 6 \$1.70 \_\_\_\_\_      7 2.2 \_\_\_\_\_      8 \$3.99 \_\_\_\_\_      9 3.45 \_\_\_\_\_
- 10 \$1.53 \_\_\_\_\_      11 0.9 \_\_\_\_\_      12 \$0.19 \_\_\_\_\_      13 4.38 \_\_\_\_\_

- 14 Candice spent \$13.55 at the arts and crafts fair. How much money did Candice spend, rounded to the nearest dollar?
- \_\_\_\_\_

- 15 Mr. Marsh bought 2.25 pounds of American cheese. About how many pounds of cheese did Mr. Marsh buy?
- \_\_\_\_\_



## Place Value to Compare Decimals

**Essential**  How can you use place value to compare decimals?

Hummingbirds are small, fast, light birds that feed on flowers, trees, and insects. Suppose a particular hummingbird weighs 0.16 ounces. A nickel weighs about 0.18 ounces. Does the hummingbird weigh more or less than a nickel?

**Use a place-value chart.**

Write each of the decimals on a place-value chart. Be sure to line up each place and the decimal point. Then compare the numbers in each place.

Ones		Tenths	Hundredths
0	.	1	6
0	.	1	8

$$0 = 0 \qquad 1 = \underline{\quad} \qquad 6 < \underline{\quad}$$

Since 6  $\bigcirc$  8, 0.16  $\bigcirc$  0.18.

So, the hummingbird weighs \_\_\_\_\_ a nickel.

**Try This!** Use a place-value chart to compare the decimals.

Write  $<$ ,  $>$ , or  $=$ .

A. 1.32  $\bigcirc$  1.34

B. 0.67  $\bigcirc$  0.6

C. 0.99  $\bigcirc$  0.99



**Turn and Talk** Explain why you start comparing the decimals by comparing the ones place.

Name \_\_\_\_\_

## Check Understanding

- 1 Use the place-value chart below to compare the decimals.  
Write  $<$ ,  $>$ , or  $=$ .

Ones	Tenths	Hundredths
3	.	0
3	.	1

$3 = 3$      $0 = \underline{\quad}$      $5 \bigcirc 1$

So,  $3.05 \bigcirc 3.01$ .

Compare the decimals. Write  $<$ ,  $>$ ,  $=$ .

- 2  $7.24 \bigcirc 7.42$     3  $8.80 \bigcirc 8.81$     4  $0.11 \bigcirc 0.11$     5  $4.33 \bigcirc 4.31$

## On My Own

Compare the decimals. Write  $<$ ,  $>$ ,  $=$ .

- 6  $0.04 \bigcirc 0.04$     7  $1.1 \bigcirc 1.7$     8  $0.34 \bigcirc 0.36$     9  $4.04 \bigcirc 4.01$

- 10  $9.67 \bigcirc 9.63$     11  $1.4 \bigcirc 1.42$     12  $0.02 \bigcirc 0.2$     13  $5.4 \bigcirc 5.40$

Use a place-value chart to order the decimals from least to greatest.

- 14 0.59, 0.51, 0.52    15 7.15, 7.18, 7.1    16 1.3, 1.33, 1.03

- 17 Jill, Ally, and Maria ran the 50-yard dash. Jill ran the race in 6.87 seconds. Ally ran the race in 6.82 seconds. Maria ran the race in 6.93. Who ran the race the fastest? Explain how you can use a place-value chart to find the answer.

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## Decompose Multiples of 10, 100, 1,000

**Essential**  How can you find factors of multiples of 10, 100, and 1,000?

Architects make scale models of buildings before they build the real thing. The height of an actual building is going to be 1,200 feet. The scale model is 12 feet tall. How many times the height of the model is the height of the actual building?

You can decompose a multiple of 10, 100, or 1,000 by finding factors.

**One Way** Use mental math and a pattern.

Decompose 1,200.

$$1,200 = \underline{\hspace{2cm}} \times 1$$

$$1,200 = \underline{\hspace{2cm}} \times 10$$

$$1,200 = \underline{\hspace{2cm}} \times 100$$

So, the building is 100 times the height of the model.

**Another Way** Use place value.

Decompose 1,200.

$$1,200 = 12 \text{ hundreds} = 12 \times \underline{\hspace{2cm}}$$

So,  $1,200 = 12 \times 100$ .

- Explain how you use mental math and a pattern to find factors of multiples of 10, 100, or 1,000.

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### Remember

A multiple of 10, 100, or 1,000 is a number that has a factor of 10, 100, or 1,000.



**Turn and Talk** Explain the difference between factors and multiples.

Name \_\_\_\_\_

## Check Understanding

- 1 Complete the exercise below to decompose 2,800.

$$2,800 = \underline{\hspace{2cm}} \times 1$$

$$2,800 = \underline{\hspace{2cm}} \times 10$$

$$2,800 = \underline{\hspace{2cm}} \times 100$$

- 2 Complete the exercise below to decompose 930.

$$930 = \underline{\hspace{1cm}} \text{ tens} = \underline{\hspace{1cm}} \times \underline{\hspace{1cm}}$$

Decompose each number.

3  $80 = \underline{\hspace{2cm}}$

4  $320 = \underline{\hspace{2cm}}$

5  $8,000 = \underline{\hspace{2cm}}$

## On My Own

Decompose each number.

6  $90 = \underline{\hspace{2cm}}$

7  $40 = \underline{\hspace{2cm}}$

8  $890 = \underline{\hspace{2cm}}$

9  $300 = \underline{\hspace{2cm}}$

10  $7,000 = \underline{\hspace{2cm}}$

11  $3,700 = \underline{\hspace{2cm}}$

Correct the error. Write the correct decomposition.

12  $560 = 56 \times 100$   
\_\_\_\_\_

13  $4,300 = 43 \times 1,000$   
\_\_\_\_\_

14  $6,000 = 60 \times 10$   
\_\_\_\_\_

- 15 Jon goes to the bank with \$990. How many ten-dollar bills can he get?  
Show how you found your answer.

\_\_\_\_\_

# Number Patterns

**Essential**  How can you use multiplication to describe a pattern?

You know how to use a rule and a first term to write a sequence. Now, you will describe a sequence using a rule.

**Describe a pattern.**

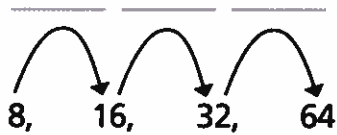
A scientist counts the number of lily pads in a pond each day. She records the number of lily pads in the table below. How many lily pads will be in the pond on days 5 and 6?

Day	1	2	3	4
Lilly Pads	8	16	32	64

**STEP 1** Describe the sequence.

Think: How do I get from one term to the next?

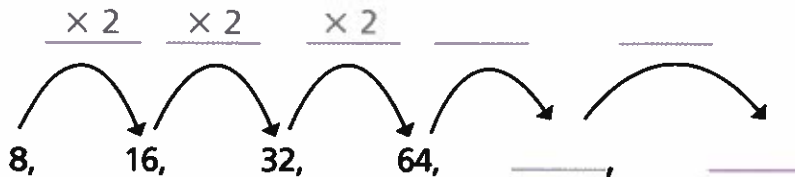
Try multiplying by 2 since  $8 \times 2 = 16$ .



Write a rule to describe the number of lily pads in the pond.

**Rule:** \_\_\_\_\_.

**STEP 2** Find the next two terms in the sequence.



So, there will be \_\_\_\_\_ lily pads on day 5 and \_\_\_\_\_ lily pads on day 6.

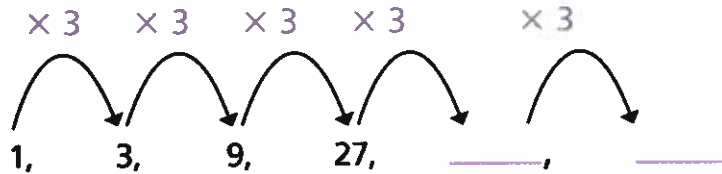


**Turn and Talk** Explain how you know the rule isn't add 8.

Name \_\_\_\_\_

### Check Understanding

1 Find the next two numbers in the pattern below.



Describe the pattern. Then find the next two numbers in the pattern.

2 1, 2, 4, 8, \_\_\_\_\_, \_\_\_\_\_

\_\_\_\_\_

3 7, 14, 28, 56, \_\_\_\_\_, \_\_\_\_\_

\_\_\_\_\_

### On My Own

Describe the pattern. Then find the next two numbers in the pattern.

4 1, 4, 16, 64, \_\_\_\_\_, \_\_\_\_\_

\_\_\_\_\_

5 2, 6, 18, 54, \_\_\_\_\_, \_\_\_\_\_

\_\_\_\_\_

Determine the pattern and use it to fill in the blanks.

6 1, 5, 25, \_\_\_\_\_, 625

7 3, 6, \_\_\_\_\_, 24, \_\_\_\_\_

8 2, \_\_\_\_\_, 32, \_\_\_\_\_, 512

9 A clothing store starts selling a new type of sneaker. The table shows the number of pairs of sneakers sold in the first four weeks. If the pattern continues, how many pairs of sneakers will the store sell in weeks 5 and 6? Explain.

Week	1	2	3	4
Pairs Sold	5	10	20	40

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Name \_\_\_\_\_

## Add Related Fractions

**Essential** ? How can you add fractions when one denominator is a multiple of the other?

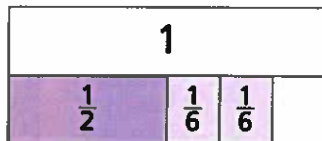
When you add fractions, you find how many equal-size pieces there are in all. The denominator shows the size of the pieces. To add fractions with denominators that are not the same, first find equivalent fractions with the same denominator.

**Activity Materials** ■ fraction strips

Find  $\frac{1}{2} + \frac{2}{6}$ .

**STEP 1** Model the problem.

Think: To add fractions, you need to count equal size pieces. The  $\frac{1}{2}$  strip and the  $\frac{1}{6}$  strip are different sizes.



**STEP 2** Show  $\frac{1}{2}$  using  $\frac{1}{6}$  strips.

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



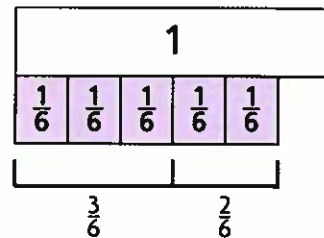
**STEP 3** Add. Use the equivalent fraction you found.

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

How many  $\frac{1}{6}$  strips are there?

Write the sum.  $\frac{3}{6} + \frac{2}{6} = \underline{\quad}$ .

So,  $\frac{1}{2} + \frac{2}{6} = \underline{\quad}$ .



- Describe how the sizes of the  $\frac{1}{2}$  strip and the  $\frac{1}{6}$  strip compare. Then describe how the denominators of the fractions  $\frac{1}{2}$  and  $\frac{1}{6}$  are related.

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**Turn and Talk** Explain how you know  $\frac{1}{2}$  and  $\frac{3}{6}$  are equivalent fractions.



Name \_\_\_\_\_

### Check Understanding

- 1 Explain which fraction strips you could use to add  $\frac{1}{3}$  and  $\frac{3}{6}$ .

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- 2 Use fraction strips to add  $\frac{1}{4} + \frac{2}{8}$ .

$$\frac{1}{4} + \frac{2}{8} = \underline{\quad}$$

Add. Use fraction strips to help.

3  $\frac{1}{4} + \frac{1}{2} = \underline{\quad}$

4  $\frac{1}{2} + \frac{3}{8} = \underline{\quad}$

5  $\frac{1}{2} + \frac{3}{10} = \underline{\quad}$

### On My Own

Add. Use fraction strips to help.

6  $\frac{1}{3} + \frac{2}{6} = \underline{\quad}$

7  $\frac{1}{5} + \frac{3}{10} = \underline{\quad}$

8  $\frac{3}{8} + \frac{1}{4} = \underline{\quad}$

9  $\frac{5}{12} + \frac{1}{3} = \underline{\quad}$

10  $\frac{1}{3} + \frac{8}{12} = \underline{\quad}$

11  $\frac{8}{10} + \frac{1}{5} = \underline{\quad}$

- 12 Paola used  $\frac{1}{4}$  of a carton of eggs today and  $\frac{4}{12}$  of the carton yesterday. What fraction of the carton of eggs did she use in all? Explain how you found your answer.

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## Subtract Related Fractions

**Essential** ? How can you subtract fractions when one denominator is a multiple of the other?

When you subtract fractions, you must use equal-size pieces.

To subtract fractions with different denominators, first find equivalent fractions with the same denominator. You can also compare to find the difference.

**Activity Materials** ■ fraction strips

Find  $\frac{5}{8} - \frac{1}{4}$ .

**One Way** Find an equivalent fraction.

Model the problem.

Think: You need to subtract  $\frac{1}{4}$  from  $\frac{5}{8}$ , but the  $\frac{1}{4}$  strip and the  $\frac{1}{8}$  strip are different sizes.

Show  $\frac{1}{4}$  using  $\frac{1}{8}$  strips.

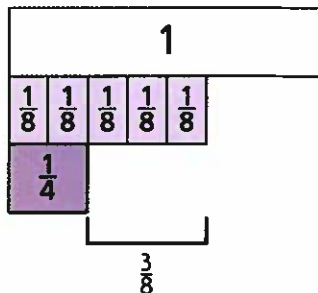
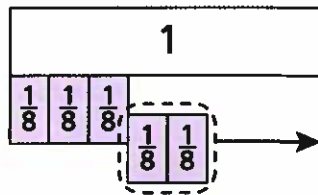
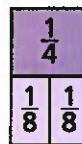
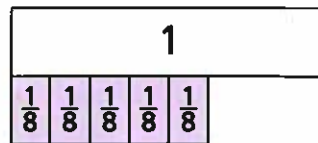
$$\frac{1}{4} = \frac{2}{8}$$

Subtract. Use the equivalent fraction you found.

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

Write the difference.  $\frac{5}{8} - \frac{2}{8} = \underline{\quad}$

So,  $\frac{5}{8} - \frac{1}{4} = \underline{\quad}$



**Another Way** Compare to find the difference.

Model the problem.

Think: The  $\frac{1}{4}$  strip is the same size as two  $\frac{1}{8}$  strips.

Compare the  $\frac{1}{4}$  strip to the five  $\frac{1}{8}$  strips. Find the difference.

$$\frac{5}{8} - \frac{1}{4} = \underline{\quad}$$

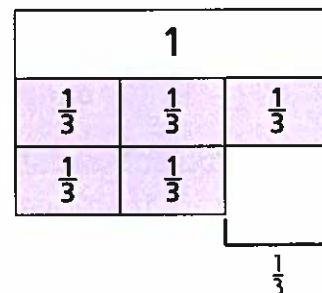


**Turn and Talk** Explain how the  $\frac{1}{4}$  strip is related to the  $\frac{1}{8}$  strip. Then describe how the denominators 4 and 8 are related.

Name \_\_\_\_\_

### Check Understanding

- 1 A student subtracted  $\frac{2}{3}$  from 1 whole as shown at the right. Explain the student's method. Then find the difference.




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- 2 Use fraction strips to subtract  $\frac{5}{6} - \frac{1}{2}$ .

$\frac{5}{6} - \frac{1}{2} = \underline{\hspace{2cm}}$

Subtract. Use fraction strips to help.

3  $\frac{1}{2} - \frac{3}{8} = \underline{\hspace{2cm}}$

4  $1 - \frac{2}{5} = \underline{\hspace{2cm}}$

5  $\frac{2}{4} - \frac{2}{12} = \underline{\hspace{2cm}}$

### On My Own

Subtract. Use fraction strips to help.

6  $\frac{4}{5} - \frac{2}{10} = \underline{\hspace{2cm}}$

7  $\frac{7}{8} - \frac{3}{4} = \underline{\hspace{2cm}}$

8  $\frac{5}{6} - \frac{2}{3} = \underline{\hspace{2cm}}$

9  $\frac{7}{10} - \frac{2}{5} = \underline{\hspace{2cm}}$

10  $\frac{2}{6} - \frac{1}{3} = \underline{\hspace{2cm}}$

11  $\frac{6}{8} - \frac{1}{2} = \underline{\hspace{2cm}}$

- 12 Boris had  $\frac{2}{3}$  of a book left to read. He read  $\frac{1}{6}$  of the book today. What fraction of the book does he have left to read now? Explain how you found your answer.

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Name \_\_\_\_\_

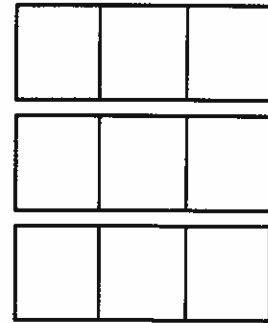
## Compare Fraction Products

**Essential** ? How does the size of the product compare to the size of each factor when multiplying fractions in real-world situations?

**One Way** Use a model.

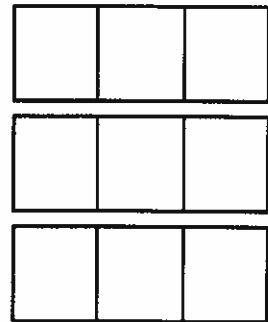
**A.** Serena uses  $\frac{2}{3}$  yard of fabric to make a pillow. How much fabric does she need to make 3 pillows?

- Shade the model to show 3 groups of  $\frac{2}{3}$ .
- Write an expression for three groups of  $\frac{2}{3}$ :  $\underline{\quad} \times \underline{\quad}$ .
- What can you say about the product when  $\frac{2}{3}$  is multiplied by a whole number? Write *greater than* or *less than*.  
The product is  $\underline{\hspace{2cm}}$   $\frac{2}{3}$ .



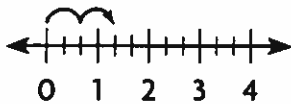
**B.** Serena has 3 yards of fabric. She uses  $\frac{2}{3}$  of it to make a blanket. How much fabric does she use to make the blanket?

- There are 3 wholes. Each represents one yard.
- Shade  $\frac{2}{3}$  of each whole.
- Write an expression for  $\frac{2}{3}$  of three wholes:  $\underline{\quad} \times \underline{\quad}$ .
- What can you say about the product when 3 is multiplied by a fraction less than 1? Write *greater than* or *less than*.  
The product is  $\underline{\hspace{2cm}}$  3.

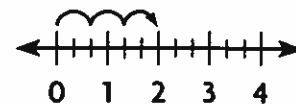


**Another Way** Use a number line.

**A.** Show  $\frac{2}{3} \times 2$ .



**B.** Show  $\frac{2}{3} \times 3$ .



Complete each statement with *greater than* or *less than*.

- The product of  $\frac{2}{3}$  and 2 is  $\underline{\hspace{2cm}}$   $\frac{2}{3}$ .
- The product of a whole number greater than 1 and  $\frac{2}{3}$  will be  $\underline{\hspace{2cm}}$  the whole number factor.



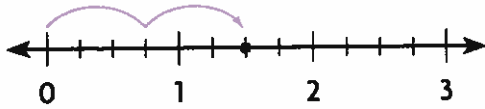
**Turn and Talk** What if a different fraction was multiplied by 2 and 3? Would your statements still be true? Explain.

Name \_\_\_\_\_

### Check Understanding

- 1 Complete the statement with *greater than* or *less than*.

$2 \times \frac{3}{4}$  will be \_\_\_\_\_  $\frac{3}{4}$ .



Complete each statement with *greater than* or *less than*.

2  $3 \times \frac{2}{5}$  will be \_\_\_\_\_ 3.

3  $3 \times \frac{1}{3}$  will be \_\_\_\_\_  $\frac{1}{3}$ .

### On My Own

Complete each statement with *greater than* or *less than*.

4  $3 \times \frac{3}{8}$  will be \_\_\_\_\_  $\frac{3}{8}$ .

5  $\frac{5}{6} \times 5$  will be \_\_\_\_\_  $\frac{5}{6}$ .

6  $\frac{3}{10} \times 6$  will be \_\_\_\_\_  $\frac{3}{10}$ .

7  $4 \times \frac{5}{9}$  will be \_\_\_\_\_ 4.

- 8 Celia wants to sew 4 pillows. She needs  $\frac{3}{8}$  yard of fabric for each pillow. Will she need more than  $\frac{3}{8}$  yard or less than  $\frac{3}{8}$  yard of fabric to make all the pillows? Explain.

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- 9 Rohan walks  $\frac{3}{4}$  mile to school each day. After 5 days, will Rohan have walked more than 5 miles or less than 5 miles to school? Explain.

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## Repeated Subtraction with Fractions

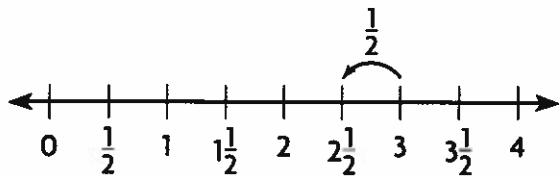
**Essential** ? How can you use repeated subtraction to solve problems involving division with fractions?

Mr. Jones is making snacks for his family. He has 3 cups of almonds and is dividing them into  $\frac{1}{2}$ -cup portions. How many portions can he make?

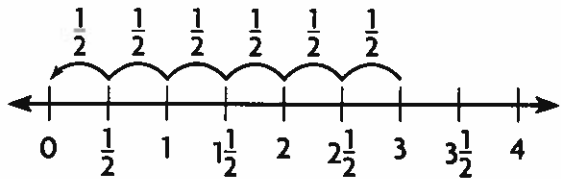
You have used repeated subtraction to divide whole numbers. Now, you will use repeated subtraction to solve a problem involving division by a fraction.

Use repeated subtraction to divide 3 by  $\frac{1}{2}$ .

**STEP 1** Start at 3 and count back  $\frac{1}{2}$ .



**STEP 2** Subtract by  $\frac{1}{2}$  until you reach 0 or get as close to it as possible.



**STEP 3** Find the number of times you counted back by  $\frac{1}{2}$ .

You counted \_\_\_\_\_ groups of  $\frac{1}{2}$  to reach 0.

So, Mr. Jones can make \_\_\_\_\_ half-cup portions of almonds.

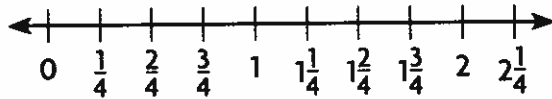


**Turn and Talk** Explain why you count the number of groups of  $\frac{1}{2}$ .

Name \_\_\_\_\_

### Check Understanding

- 1 Use repeated subtraction and the number line to find  $2 \div \frac{1}{4}$ .



Start subtracting at \_\_\_\_\_.

Count back by groups of \_\_\_\_\_.

How many groups did you count to reach 0? \_\_\_\_\_

Use repeated subtraction to divide.

2  $2 \div \frac{1}{3}$   
\_\_\_\_\_

3  $5 \div \frac{1}{2}$   
\_\_\_\_\_

4  $1 \div \frac{1}{8}$   
\_\_\_\_\_

### On My Own

Use repeated subtraction to divide.

5  $1 \div \frac{1}{5}$   
\_\_\_\_\_

6  $2 \div \frac{1}{2}$   
\_\_\_\_\_

7  $4 \div \frac{1}{3}$   
\_\_\_\_\_

8  $2 \div \frac{1}{5}$   
\_\_\_\_\_

9  $7 \div \frac{1}{2}$   
\_\_\_\_\_

10  $3 \div \frac{1}{4}$   
\_\_\_\_\_

- 11 You are putting raisins into snack bags. You have 3 cups of raisins. You want to put  $\frac{1}{3}$  cup of raisins in each bag. How many bags can you make?

\_\_\_\_\_

- 12 Margaret is cutting straws that are 4 inches long into  $\frac{1}{2}$ -inch pieces. She has two straws. She needs twenty  $\frac{1}{2}$ -inch pieces. Does she have enough to cut 20 pieces? Explain.

\_\_\_\_\_  
\_\_\_\_\_

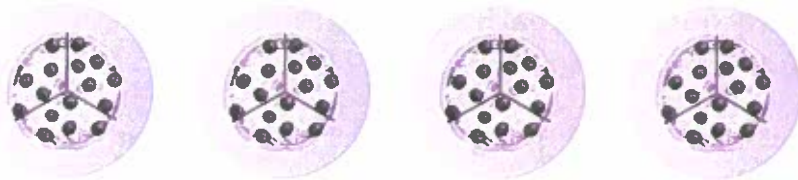
## Fractions and Division

**Essential**  How can you write division problems as fractions?

Division and fractions both show sharing equal numbers of things or making equal-size groups. You can write division problems as fractions.

Mavi and her 2 sisters want to share 4 small pizzas equally. How much pizza will each person have?

Think: What is 4 divided by 3, or  $4 \div 3$ ?



Each pizza is divided into \_\_\_\_\_ equal slices.

How many slices are in 4 pizzas? \_\_\_\_\_

What fraction of the pizza is each slice? \_\_\_\_\_

How many  $\frac{1}{3}$ -size slices does each sister get? \_\_\_\_\_

What fraction of the pizzas does each sister get? \_\_\_\_\_

So,  $4 \div 3$  is the same as  $\frac{4}{3}$ .



**Turn and Talk** How can you write  $\frac{4}{3}$  as a mixed number?



Name \_\_\_\_\_

### Check Understanding

- 1** Alex baked a pan of corn bread and cut it into 12 equal-size pieces. Alex and his 3 sisters want to share the pieces equally.


What division problem can you write

to solve the problem? \_\_\_\_\_

Write the division problem as a fraction. \_\_\_\_\_

Write the division problem as a fraction. Write each fraction greater than 1 as a whole number or mixed number.

**2**  $6 \div 2$

\_\_\_\_\_

**3**  $1 \div 4$

\_\_\_\_\_

**4**  $1 \div 3$

\_\_\_\_\_

**5**  $32 \div 8$

\_\_\_\_\_

### On My Own

Write the division problem as a fraction. Write each fraction greater than 1 as a whole number or mixed number.

**6**  $5 \div 6$

\_\_\_\_\_

**7**  $3 \div 2$

\_\_\_\_\_

**8**  $1 \div 8$

\_\_\_\_\_

**9**  $2 \div 4$

\_\_\_\_\_

**10**  $12 \div 3$

\_\_\_\_\_

**11**  $9 \div 4$

\_\_\_\_\_

**12**  $11 \div 2$

\_\_\_\_\_

**13**  $8 \div 6$

\_\_\_\_\_

- 14** Stefan and his 2 friends want to share 16 muffins equally. Will each friend get more than or less than 5 whole muffins? Explain how you know.

\_\_\_\_\_

\_\_\_\_\_





Name \_\_\_\_\_

### Check Understanding

- 1** To graph the point (6, 3), where do you start?  
In which direction and how many units will you  
move first? What will you do next? Describe the steps  
and record them on the grid.

\_\_\_\_\_

\_\_\_\_\_

Use the grid for Exercises 2–5. Write the ordered pair  
for each point.

**2** A

\_\_\_\_\_

**3** B

\_\_\_\_\_

**4** C

\_\_\_\_\_

**5** D

\_\_\_\_\_

### On My Own

Use the grid for Exercises 6–13.  
Write the ordered pair for each point.

**6** E

\_\_\_\_\_

**7** F

\_\_\_\_\_

**8** G

\_\_\_\_\_

**9** H

\_\_\_\_\_

Write the point for each ordered pair.

**10** (3, 8)

\_\_\_\_\_

**11** (8, 9)

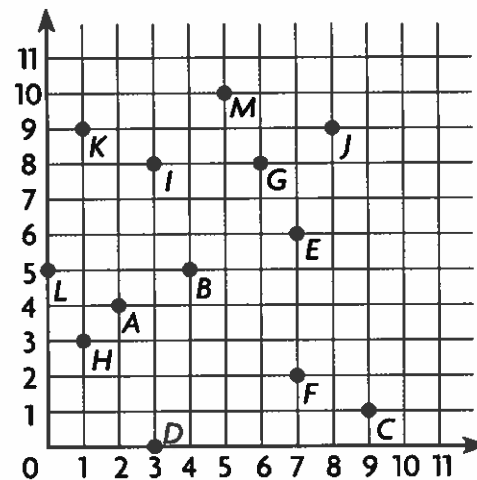
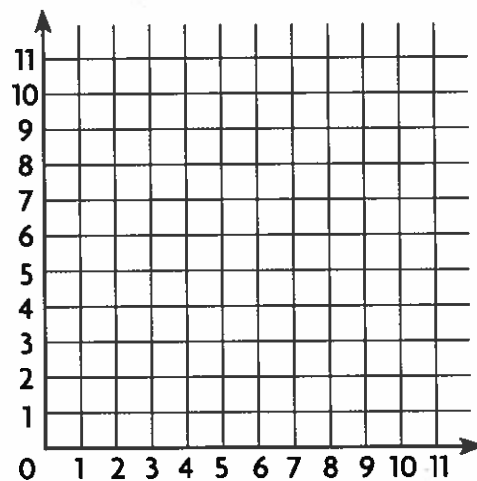
\_\_\_\_\_

**12** (1, 9)

\_\_\_\_\_

**13** (0, 5)

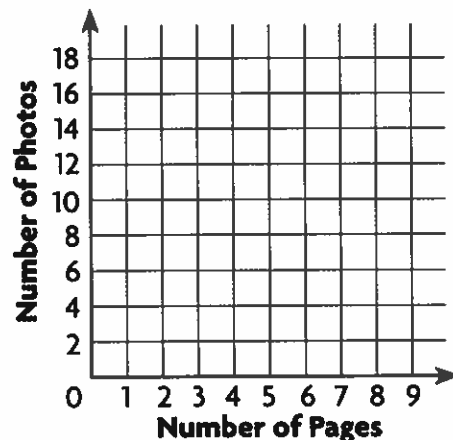
\_\_\_\_\_



There are four photos on each page of a photo album.  
Complete the table. Write the data in the table as ordered  
pairs. Then graph the ordered pairs on the grid. Use the  
number of pages as the first number and the number of  
photos as the second number in the ordered pair.

**14**

Number of Pages	1		3	4
Number of Photos	4	8		



## Area and Tiling

**Essential** ? How can you use tiling to find the area of a rectangle?

Rhonda is tiling the floor of her new sunroom. The diagram shows the layout of the tiles. Each tile measures 4 square feet. What is the area of Rhonda's sunroom floor?

To find the area of the sunroom floor, you can combine the areas of the half tiles and the whole tiles.

**Find the area of the sunroom floor.**

**STEP 1** Find the area of the half tiles.

Count the number of half tiles. \_\_\_\_\_

1 tile = 4 square feet, so 1 half tile =  $4 \div 2$  or \_\_\_\_\_ square feet.

Multiply the number of half tiles by \_\_\_\_\_ square feet to find the area of the half tiles:

\_\_\_\_\_  $\times$  \_\_\_\_\_ = \_\_\_\_\_ square feet

**STEP 2** Find the area of the whole tiles.

Find the number of whole tiles:  $b \times h =$  \_\_\_\_\_  $\times$  \_\_\_\_\_ = \_\_\_\_\_ tiles

Since the area of 1 tile is \_\_\_\_\_ square feet, multiply the number of whole tiles by \_\_\_\_\_ to find the area of the whole tiles.

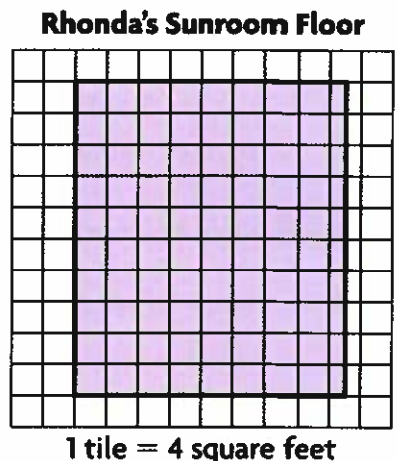
\_\_\_\_\_  $\times$  \_\_\_\_\_ = \_\_\_\_\_ square feet

**STEP 3** Find the total area.

Add the areas of the half tiles and whole tiles.

half tiles      whole tiles  
↓                    ↓  
\_\_\_\_\_ + \_\_\_\_\_ = \_\_\_\_\_ square feet

So, the area of Rhonda's sunroom floor is \_\_\_\_\_ square feet.



**Remember**  
The formula for the area of a rectangle is  $A = b \times h$  or  $l \times w$ .



**Turn and Talk** Explain how to find the area of 6 half tiles if 1 whole tile is 9 square inches.

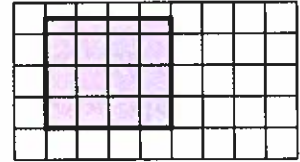
Name \_\_\_\_\_

### Check Understanding

1 Find the area of the shaded shape.

**STEP 1** Find the area of the half squares:

\_\_\_\_\_ half squares  $\times$  \_\_\_\_\_ square yards = \_\_\_\_\_ square yards



1 square = 16 square yards

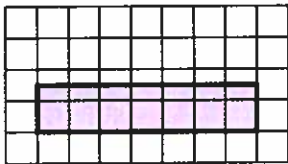
**STEP 2** Find the area of the half squares:

\_\_\_\_\_  $\times$  \_\_\_\_\_ = \_\_\_\_\_ squares  
 \_\_\_\_\_ squares  $\times$  \_\_\_\_\_ square yards = \_\_\_\_\_ square yards

**STEP 3** Find the total area: \_\_\_\_\_ + \_\_\_\_\_ = \_\_\_\_\_

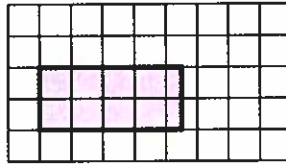
Find the area of each shaded shape. Write the area in square units.

2



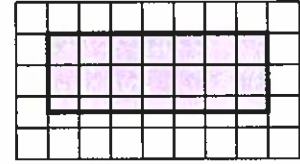
1 square = 4 square yards

3



1 square = 9 square feet

4



1 square = 4 square meters

### On My Own

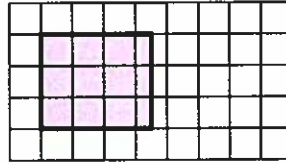
Find the area of each shaded shape. Write the area in square units.

5



1 square = 9 square miles

6



1 square = 16 square meters

7



1 square = 25 square meters

8 A mosaic table top is shown. Each square has an area of 5 square inches. What is the area of the table top? Explain.

Table Top



1 square = 5 square inches

## Multiply Three Factors

**Essential**  How can you find the product of three factors?

You can use properties of multiplication to help make multiplication of three factors easier.

Sam ships 4 boxes of car model kits to Toy Mart. Each box contains 16 cartons, with 6 kits in each carton. How many car model kits does Sam ship?

**Example** Find  $4 \times (16 \times 6)$ .

### STEP 1

Simplify the problem. Rewrite  $4 \times (16 \times 6)$  as a product of two factors.

$$\begin{aligned}
 4 \times (16 \times 6) &= 4 \times (\text{ } \times 16) && \text{Commutative Property} \\
 &= (4 \times \text{ }) \times 16 && \text{Associative Property} \\
 &= \text{ } \times 16
 \end{aligned}$$

So,  $4 \times (16 \times 6) = 24 \times 16$ .

So, Sam ships \_\_\_\_\_ car model kits.

### STEP 2

Multiply.

$$\begin{array}{r}
 16 \\
 \times 24 \\
 \hline
 \square \leftarrow 4 \times 16 \\
 + \square \leftarrow 20 \times 16 \\
 \hline
 \square \leftarrow \text{Add}
 \end{array}$$

### Try This!

$$\begin{aligned}
 (18 \times 8) \times 3 &= 18 \times (\text{ } \times \text{ }) && \text{Associative Property} \\
 &= 18 \times \text{ } \\
 &= \text{ }
 \end{aligned}$$



**Turn and Talk** Explain how using properties makes it easier to multiply three factors.

Name \_\_\_\_\_

## Check Understanding

- 1 Find the product of  $7 \times (6 \times 13)$ .

**STEP 1** Simplify the problem.

Rewrite  $7 \times (6 \times 13)$  as a product of two factors.

$$7 \times (6 \times 13) = (\underline{\quad} \times \underline{\quad}) \times 13$$

Associative Property

$$= \underline{\quad} \times \underline{\quad}$$

**STEP 2** Simplify.

$$\begin{array}{r} 13 \\ \times 42 \\ \hline \end{array}$$

Find each product.

- 2  $3 \times (14 \times 3) = \underline{\quad}$     3  $2 \times (4 \times 13) = \underline{\quad}$     4  $(16 \times 6) \times 3 = \underline{\quad}$

## On My Own

Find each product.

- 5  $7 \times (17 \times 4) = \underline{\quad}$     6  $(18 \times 4) \times 6 = \underline{\quad}$     7  $9 \times (17 \times 5) = \underline{\quad}$
- 8  $(5 \times 26) \times 3 = \underline{\quad}$     9  $9 \times (19 \times 2) = \underline{\quad}$     10  $(21 \times 4) \times 6 = \underline{\quad}$

- 11 There are 3 basketball leagues. Each league has 8 teams. Each team has 13 players. How many players are there in all 3 leagues?
- \_\_\_\_\_

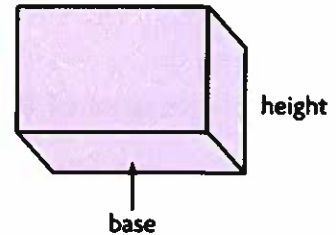
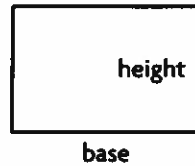
- 12 There are 8 boxes of tennis balls. There are 24 cans of tennis balls in each box. There are 3 tennis balls in each can. How many tennis balls are there in all?
- \_\_\_\_\_



## Find Area of the Base

**Essential** ? How can you find the area of the base of a rectangular prism?

**CONNECT** The base of a rectangle is different than the base of a rectangular prism. The base of a rectangle is a side, but the base of a rectangular prism is a rectangle. To find the area of a rectangle, use the formula  $A = b \times h$  or  $l \times w$ .



### Example

Ana is making a diorama for a class project. The diorama is in the shape of a rectangular prism. She wants to paint the bottom of the diorama. What is the area of the base?

The base shape is a rectangle.

Use a formula to find the area.

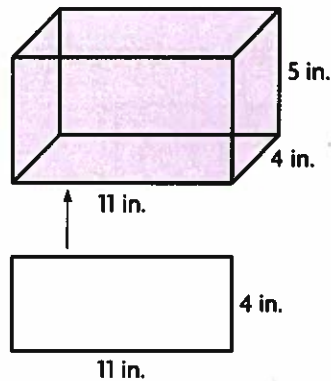
$$A = b \times h$$

$$\text{base} = \underline{\hspace{2cm}} \text{ inches}$$

$$\text{height} = \underline{\hspace{2cm}} \text{ inches}$$

$$A = \underline{\hspace{2cm}} \times \underline{\hspace{2cm}}$$

$$A = \underline{\hspace{2cm}} \text{ square inches}$$



So, the area of the base of the diorama is \_\_\_\_\_ square inches.

#### Remember

Area of a rectangle:

$$A = b \times h \text{ or } l \times w$$

$$\text{Area of a square: } A = s \times s$$



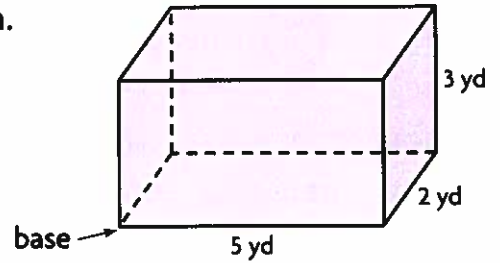
**Turn and Talk** Why would multiplying 11 by 5 give an incorrect answer for the area of the base?

Name \_\_\_\_\_

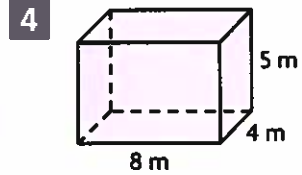
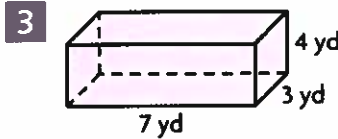
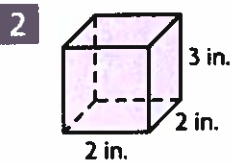
### Check Understanding

1 Find the area of the base of the rectangular prism.

The base shape is a \_\_\_\_\_.  
 length = \_\_\_\_\_ yards, width = \_\_\_\_\_ yards  
 $A = \underline{\hspace{1cm}} \times \underline{\hspace{1cm}} = \underline{\hspace{1cm}}$  square yards  
 So, the area of the base is \_\_\_\_\_ square yards.



Find the area of the base of the rectangular prism.



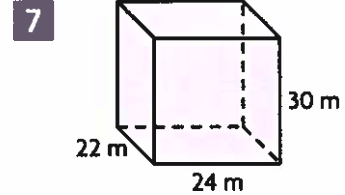
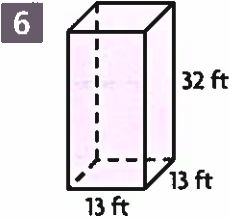
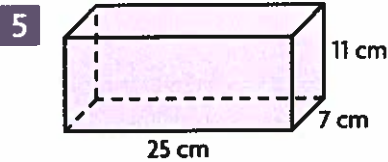
\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

### On My Own

Find the area of the base of the rectangular prism.

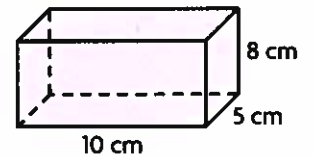


\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

8 Julio makes sugar cubes for horses. Each sugar cube edge is 1 centimeter in length. He packs the sugar cubes in the box shown without gaps. Julio says he can fit 80 sugar cubes in the bottom layer. Is he correct? Explain.



\_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_