

Math Distance Learning Packet

Grade 5

Student Version

Read and Write Decimals

Name: _____

Prerequisite: Write Fractions as Decimals

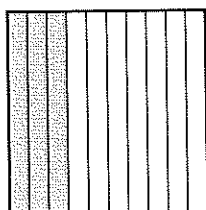
Study the example showing how to write a fraction as a decimal. Then solve problems 1–8.

Example

Models can help you write fractions with denominators of 10 or 100 as decimals.

Each section is one tenth of the whole, or 0.1.

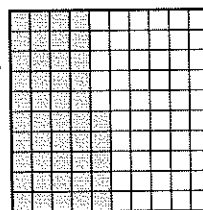
$3 \times \frac{1}{10}$,
or $\frac{3}{10}$
is shaded.



$\frac{3}{10}$ is equivalent to 0.3.

Each square is one hundredth of the whole, or 0.01.

$45 \times \frac{1}{100}$,
or $\frac{45}{100}$
is shaded.

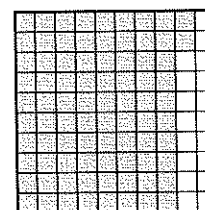


$\frac{45}{100}$ is equivalent to 0.45.

- 1 Write the amount shaded as a fraction. Then write the fraction as a decimal.

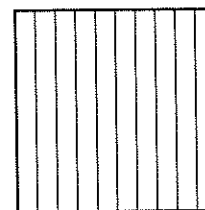
$82 \times \frac{1}{100}$ is shaded.

is equivalent to _____.



- 2 Shade the model to show 5 tenths. Then write a fraction and a decimal to describe the amount shaded.

, or _____ is shaded.



- 3 Write a fraction and a decimal to represent 17 hundredths.

and _____

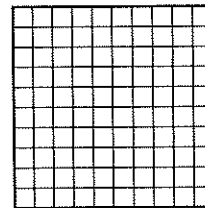
Solve.

- 4 How many places after the decimal point does the equivalent decimal have if:
- a. the denominator of the fraction is 10? _____
- b. the denominator of the fraction is 100? _____

- 5 Look at your answers to problem 4. Explain the reasoning you used to find the answers.

- 6 Shade the model to show 4 hundredths. Then write a fraction and a decimal to describe the amount shaded.

, or _____ is shaded.



- 7 Choose either Yes or No to tell if the expression or number represents 7 hundredths.

- | | | |
|-----------------------------|------------------------------|-----------------------------|
| a. $7 \times \frac{1}{10}$ | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| b. $7 \times \frac{1}{100}$ | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| c. 0.70 | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| d. 0.07 | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

- 8 Explain how using a model can help you write a fraction with a denominator of 10 or 100 as a decimal.

Read a Decimal

Study the example problem showing how to read a decimal. Then solve problems 1–7.

Example

To read a decimal, you name the place value of the smallest-sized unit, and tell how many of those units there are.

Ones	.	Tenths	Hundredths	Thousandths
0	.	0	7	3

The least place value of 0.073 is thousandths.

There are 73 thousandths.

To read the decimal 0.073, say: *seventy-three thousandths*.

- 1 Write the decimal 0.24 in the place-value chart.

Ones	.	Tenths	Hundredths	Thousandths
	.			

- 2 Using the chart in problem 1, what is the least place value of 0.24?

- 3 How do you read the decimal 0.24?

- 4 Write the word form of each decimal.

a. 0.8 _____

b. 0.08 _____

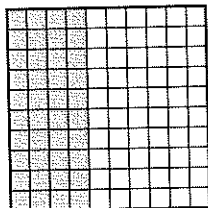
c. 0.008 _____



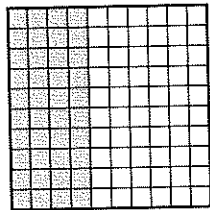
Solve.

- 5 The two grids show the same amount shaded. Is the word form of the decimals the same? Explain.

0.4 is shaded.



0.40 is shaded.



- 6 Write the expanded form of 0.68 with decimals.

$$0.68 = 0.6 + \underline{\hspace{2cm}}$$

$$= \underline{\hspace{2cm}} \times 0.1 + 8 \times \underline{\hspace{2cm}}$$

- 7 Write the expanded form of 0.031 with fractions.

$$0.031 = \square \times \frac{1}{100} + \square \times \frac{1}{1,000}$$

$$= \frac{3}{\square} + \frac{1}{\square}$$

$$= \frac{\square}{1,000} + \frac{\square}{1,000}$$

$$= \frac{\square}{1,000}$$

Vocabulary

expanded form a way to show the value of each digit in a number.

[For example, $34.56 =$

$$(3 \times 10) + (4 \times 1) +$$

$$(5 \times \frac{1}{10}) + (6 \times \frac{1}{100})]$$

Write a Mixed Number as a Decimal

Study the example showing a number written in multiple forms. Then solve problems 1–6.

Example

words	one and forty-six thousandths
mixed number	$1 \frac{46}{1,000}$
expanded form	$1 + \frac{46}{1,000}$ $1 + \frac{40}{1,000} + \frac{6}{1,000}$ $1 + \frac{4}{100} + \frac{6}{1,000}$
decimal	1.046

- 1 In the example, what does the 0 in 1.046 mean?

- 2 Fill in the missing information in the table below.

words	three and seventy-two hundredths
mixed number	$3 \frac{\square}{100}$
expanded form	$3 + \frac{72}{100}$ $3 + \frac{\square}{100} + \frac{\square}{100}$ $3 + \frac{\square}{10} + \frac{\square}{100}$
decimal	_____

Solve.

- 3 Fill in the blanks to write numbers and words to show the values of the digits.

Four and seventy-two hundredths is _____ ones and _____ hundredths. 72 hundredths is _____ hundredths and _____ hundredths, or 7 _____ and 2 _____.

- 4 Write the decimal four and seventy-two hundredths in the place-value chart and then write it in decimal form.

Ones	.	Tenths	Hundredths	Thousandths

Four and seventy-two hundredths is written _____.

- 5 When a decimal is written in word form, what indicates that the equivalent form is a mixed number and not a fraction? Explain.

- 6 The length of an Eastern Gray Tree Frog tadpole can be as long as five and twenty-two hundredths centimeters. What is this length written as a decimal?

Show your work.

Solution: _____

Read and Write Decimals

Solve the problems.

- 1 Sonya measured her pet mouse from the tip of its nose to the tip of its tail. Her mouse is fourteen hundredths of a meter long. Which of the following expresses this length as a decimal?

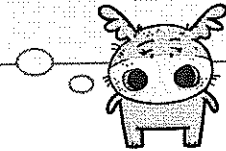
A 0.014

C 1.4

B 0.14

D 14.00

How many decimal places will this number have?



- 2 Choose either Yes or No to tell if each of the following represents 0.87.

a. $\frac{8}{10} + \frac{7}{100}$

☐ Yes ☐ No

b. $\frac{8}{100} + \frac{7}{100}$

☐ Yes ☐ No

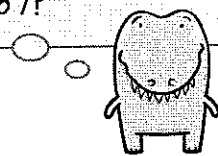
c. 87 hundredths

☐ Yes ☐ No

d. eighty-seven hundredths

☐ Yes ☐ No

What are the place values of each digit in 0.87?



- 3 $3 \times 10 + 2 \times 1 + 6 \times \frac{1}{100} + 4 \times \frac{1}{1,000}$ is the expanded form of which decimal?

A 3.2064

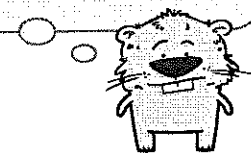
C 32.604

B 32.064

D 320.064

Santo chose C as the correct answer. How did he get that answer?

Which decimal places are represented in the expanded form?

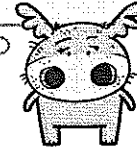


Solve.

- 4 Doria swam the 100-meter backstroke in 58.329 seconds. How do you express this time in words?

Show your work.

What mixed number could represent 58.329?

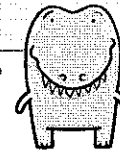


Solution: _____

- 5 Which of the following correctly represent 1.706? Circle the letter for all that apply.

- A $1 + 0.7 + 0.06$
- B $1 + 0.7 + 0.006$
- C $1 + 706 \times 0.1$
- D $1 + 7 \times 0.001 + 6 \times 0.001$
- E $1 + 7 \times 0.1 + 6 \times 0.001$

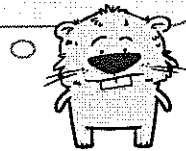
What number does each answer choice represent?



- 6 A box turtle Marcos found is 0.115 of a meter long. What is this length in expanded form?

Show your work.

How is this number represented in a place-value chart?



Solution: _____

Compare and Round Decimals

Name: _____

Prerequisite: Compare Decimals

Study the example comparing decimals in a place-value chart. Then solve problems 1–5.

Example

Compare 0.6 and 0.59 using $>$, $=$, or $<$.

Write the decimals in a place-value chart.

Ones	.	Tenths	Hundredths
0	.	6	0
0	.	5	9

Remember that 6 tenths equals 60 hundredths.

Start at the leftmost place value and compare until you find digits that are different.

Ones: $0 = 0$

Tenths: $6 > 5$

The tenths are different. $6 > 5$.

So, $0.6 > 0.59$.

- 1 Compare 8.7 and 8.5 using $>$, $=$, or $<$.

- 2 Use the place-value chart to compare the following decimals to 0.59. Find the decimals that are less than 0.59. Circle the letter of all that apply.

- A 0.07
B 0.4
C 0.6
D 0.55

Ones	.	Tenths	Hundredths
0	.	5	9
0	.	0	7
0	.	4	
0	.	6	
0	.	5	5

Solve.

- 3 Write the decimals 1.24 and 1.3 in the chart.

Ones	.	Tenths	Hundredths

Compare 1.24 and 1.3 using $>$, $=$, or $<$.

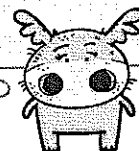
- 4 Look at problem 3. In which places do you need to compare digits? In which place do you *not* need to compare digits? Explain.

- 5 Which change would make the statement below true?
Circle the letter of the correct answer.

$$3.7 < 3.56$$

- A Put a 0 in the hundredths place to change 3.7 to 3.70.
- B Change the hundredths digit in 3.56 to 8.
- C Change the tenths digit in 3.7 to 6.
- D Change the tenths digit in 3.56 to 8.

What new statement would result from each change?



Compare Decimals Written as Mixed Numbers

Study the example problem comparing decimals rewritten as mixed numbers. Then solve problems 1–6.

Example

Package A weighs 1.401 kilograms. Package B weighs 1.29 kilograms. Write an inequality statement comparing the weights of the packages.

Express the weights as mixed numbers with like denominators. Then compare.

$$1.401 = 1 \frac{401}{1,000} \qquad 1.29 = 1 \frac{29}{100} = 1 \frac{290}{1,000}$$

$1 \frac{401}{1,000}$ is greater than $1 \frac{290}{1,000}$.

So, $1.401 > 1.29$. The weight of Package A is greater than the weight of Package B.

- 1** Complete the steps to write an inequality statement comparing 2.087 and 2.15 using mixed numbers.

$$2.087 = 2 \frac{\boxed{}}{\boxed{}} \qquad 2.15 = 2 \frac{15}{\boxed{}} = 2 \frac{\boxed{}}{1,000}$$

$$2 \frac{\boxed{}}{\boxed{}} \text{ is } \underline{\hspace{2cm}} \text{ than } 2 \frac{\boxed{}}{\boxed{}}.$$

$$2.087 \underline{\hspace{2cm}} 2.15$$

- 2** Which statement and reasoning is true about the decimals 0.4 and 0.06? Circle the letter of all that apply.

- A** $0.4 > 0.06$ because $\frac{40}{100} > \frac{6}{100}$.
- B** $0.4 > 0.06$ because 4 tenths is greater than 6 hundredths.
- C** $0.4 < 0.06$ because $\frac{4}{10} < \frac{6}{10}$.
- D** $0.4 < 0.06$ because 6 hundredths is greater than 4 tenths.

Solve.

- 3 Write a number from the box to make each statement true.

- a. $0.07 =$ _____
b. $0.07 >$ _____
c. $0.07 <$ _____

0.007	0.070	0.072
0.068	0.608	

- 4 Compare 5.269 and 5.038.

- a. Write 5.269 and 5.038 as sums of fractions.

$$5.269 = 5 + \frac{\boxed{}}{10} + \frac{6}{\boxed{}} + \frac{\boxed{}}{1,000}$$

$$5.038 = 5 + \frac{3}{\boxed{}} + \frac{\boxed{}}{1,000}$$

- b. Write 5.269 and 5.038 as mixed numbers.

$$5.269 = 5 \frac{\boxed{}}{1,000}$$

$$5.038 = 5 \frac{\boxed{}}{\boxed{}}$$

- c. Compare 5.269 and 5.038 using $>$, $=$, or $<$.

- 5 Look at problem 4. Why is 5.269 written as the sum of four numbers and 5.038 as the sum of only three numbers?

- 6 Daslyn has a piece of rope 2.085 meters long and another piece 2.63 meters long. Which piece can she cut to make a piece that is 2.5 meters long?

Show your work.

Solution: _____

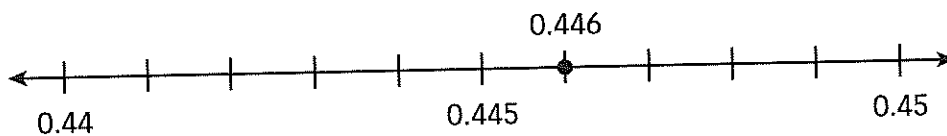
Round Decimals

Study the example problem showing how to round a decimal by plotting it on a number line. Then solve problems 1–5.

Example

Chiara runs 0.446 kilometer in one lap around the track. What is this distance rounded to the nearest hundredth?

Place 0.446 on a number line to see its relationship to nearby hundredths.

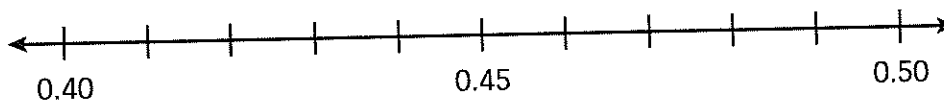


0.446 is between 0.44 and 0.45, and closer to 0.45.

The distance rounded to the nearest hundredth is 0.45 kilometer.

- 1** Round 0.446 kilometer to the nearest tenth by following these steps:

- a. Complete the marking of the number line to show hundredths.



- b. Label 0.446 on the number line.
- c. Determine whether 0.446 is closer to 0.4 or 0.5. If the hundredths digit in 0.446 is 5 or greater, round up. If the hundredths digit in 0.446 is less than 5, round down. What is 0.446 kilometer rounded to the nearest tenth?

Solve.

- 2 Aubra and Tony are rounding the number 1.65 to the nearest tenth. On a number line they see 1.65 is exactly halfway between 1.6 and 1.7. Aubra says to round to the greater value, 1.7. Tony says because it is in the middle, you can round to either value. Who is right? Explain.

- 3 Complete the table to compare 4.77 to nearby tenths.
To the nearest tenth, 4.77 rounds to _____.

- 4 One gallon is equal to about 3.785 liters. What is this amount rounded to the nearest tenth?

Show your work.

Ones	.	Tenths	Hundredths
4	.	7	
4	.	7	7
4	.	8	

Solution: _____

- 5 Look at problem 4. What is the greatest number of whole liters of water you could pour into a one-gallon container without it overflowing? Explain your answer.

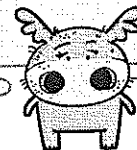
Compare and Round Decimals

Solve the problems.

- 1 Which of the following decimals is greater than 0.66 but less than 0.68? Circle the letter for all that apply.

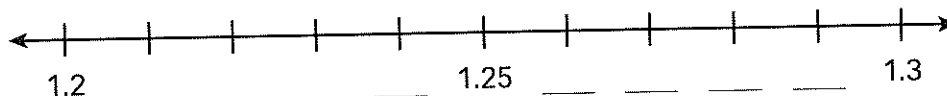
- A 0.67
B 0.57
C 0.665
D 0.695

How do I represent these numbers in a place-value chart?



- 2 A carton holds 1.248 liters of fruit juice. What is this amount rounded to the nearest tenth? Use the number line below.

Show your work.



Which digits do I need to look at? Which digits can I ignore?



Solution: _____

- 3 Which of the following comparison statements is *not* true? Circle the letter for all that apply.

- A $6\frac{41}{100} > 6\frac{38}{100}$
B $6 + \frac{4}{10} + \frac{1}{100} > 6 + \frac{3}{10} + \frac{8}{100}$
C $6 + 4 \times \frac{1}{10} + 1 \times \frac{1}{100} < 6 + 3 \times \frac{1}{10} + 8 \times \frac{1}{100}$
D $6.41 < 6.38$

If a number is in a form that is not easy to compare, how can I rewrite it?



Solve.

- 4** The lengths of four trails are listed below.

Oak Trail	10.653 kilometers
Maple Trail	10.592 kilometers
Pine Trail	10.732 kilometers
Spruce Trail	10.484 kilometers

Which numbers do I need to compare?



Which trail is closest in length to 10.5 kilometers?

- A** Oak Trail **C** Pine Trail
B Maple Trail **D** Spruce Trail

Padma chose **B**. How did she get that answer?

- 5** Which change would make the statement below true?
Circle the letter of all that apply.

2.309 rounded to the nearest tenth is 2.4.

- A** Take out the 0 in the hundredths place to change 2.309 to 2.39.
B Change the 3 in the tenths place of 2.309 to 4.
C Change the 4 in the tenths place of 2.4 to 3.
D Change the 0 in the hundredths place of 2.309 to 4.

How does each change affect the numbers in the statement?



Add and Subtract Decimals

Name: _____

Prerequisite: Add and Subtract Whole Numbers

Study the example showing subtracting whole numbers using regrouping. Then solve problems 1–6.

Example

Find $8,305 - 4,267$.

Write the problem vertically.

$$\begin{array}{r} 2 \quad 10 \\ 8, \cancel{3}05 \\ - 4,267 \\ \hline \end{array}$$

3 hundreds = 2 hundreds + 10 tens

Align places and regroup as needed.

$$\begin{array}{r} 9 \quad 10 \quad 15 \\ 2 \quad 10 \quad 15 \\ 8, \cancel{3}0\cancel{5} \\ - 4,267 \\ \hline \end{array}$$

10 tens = 9 tens + 10 ones

5 ones + 10 ones = 15 ones

Subtract.

$$\begin{array}{r} 9 \quad 10 \quad 15 \\ 2 \quad 10 \quad 15 \\ 8, \cancel{3}0\cancel{5} \\ - 4,267 \\ \hline \end{array}$$

4,038 So, $8,305 - 4,267 = 4,038$.

- 1 Which of the equations represents regrouping needed for the problem shown? Circle the letter for all that apply.

$$\begin{array}{r} 52,134 \\ - 36,091 \\ \hline \end{array}$$

- A 3 tens = 2 tens + 10 ones
 B 1 hundred = 0 hundreds + 10 tens
 C 2 thousands = 1 thousand + 10 hundreds
 D 5 ten thousands = 4 ten thousands + 10 thousands

- 2 Find the difference for the subtraction problem in problem 1.

Show your work.

Solution: _____

Solve.

- 3 You can also show regrouping above addition problems. The addition to the right is partially completed. Why is there a 1 above the hundreds place?

$$\begin{array}{r} 627,643 \\ + 236,083 \\ \hline 726 \end{array}$$

- 4 Look at problem 3.

- Estimate the sum.
- Find the sum. _____
- Is your answer reasonable? Explain.

Use the information in the chart to solve problems 5 and 6.

- 5 How much higher is the summit of Mt. McKinley than the summit of Mt. Kosciuszko?

Show your work.

Mountain (Continent)	Elevation (feet)
Everest (Asia)	29,035
McKinley (North America)	20,237
Kosciuszko (Australia)	7,310

Solution: _____

- 6 How much higher is the summit of Mt. Everest than the combined elevations of Mt. McKinley and Mt. Kosciuszko?

Show your work.

Solution: _____

Add Decimals to Hundredths

Study the example problem showing decimal addition using a place-value chart. Then solve problems 1–5.

Example

Alana walks 3.45 miles before lunch and 5.18 miles after lunch. How many miles does she walk in all?

Ones	.	Tenths	Hundredths
3	.	4	5
5	.	1	8

$$3 \text{ ones} + 5 \text{ ones} = 8 \text{ ones}$$

$$4 \text{ tenths} + 1 \text{ tenth} = 5 \text{ tenths}$$

$$5 \text{ hundredths} + 8 \text{ hundredths} = 13 \text{ hundredths}$$

$$\begin{aligned} \text{Sum} &= 8 \text{ ones} + 5 \text{ tenths} + 13 \text{ hundredths} \\ &= 8 \text{ ones} + 6 \text{ tenths} + 3 \text{ hundredths} \end{aligned}$$

Alana walks 8.63 miles in all.

- 1 Look at the example problem. Suppose Alana walks 6.6 miles the next day. Complete the steps below to find the number of miles she walks in two days.

Ones	.	Tenths	Hundredths
8	.	6	3
<input type="text"/>	.	<input type="text"/>	<input type="text"/>

$$\text{Sum} = 14 \text{ ones} + \text{_____} \text{ tenths} + \text{_____} \text{ hundredths}$$

$$= \text{_____} \text{ ones} + 2 \text{ tenths} + 3 \text{ hundredths}$$

$$= \text{_____} \text{ ten} + \text{_____} \text{ ones} + \text{_____} \text{ tenths} + \text{_____} \text{ hundredths}$$

Alana walks _____ miles in two days.

Solve.

- 2 You can also add decimals by writing the problem vertically, lining up the decimal points to keep track of place values.

$$\begin{array}{r} 14.52 \\ + 22.29 \\ \hline 1 \end{array}$$

The problem to the right is partially completed. Explain why there is a 1 above the tenths place.

- 3 Find the sum for the addition problem in problem 2. Tell whether each statement about it is *True* or *False*.

- a. It is more than 36. ☐ True ☐ False
- b. It is closer to 37 than 36. ☐ True ☐ False
- c. It is 36.71. ☐ True ☐ False
- d. It is 36.81. ☐ True ☐ False

- 4 The size 4 soccer ball Sean's team uses should weigh no more than 0.37 kilogram, and no less than 0.31 kilogram. A soccer bag has two balls in it. What is the most they could weigh together? The least?

Show your work.

Solution: _____

- 5 Look at problem 4. Will three soccer balls weigh more than 1 kilogram? Explain.

Subtract Decimals to Hundredths

Study the example problem showing decimal subtraction using a place-value chart. Then solve problems 1–5.

Example

Last year Jeff ran the 40-yard dash in 5.8 seconds. This year he ran it in 5.48 seconds. How much faster did he run this year than last year?

Use a place-value chart to write this year's and last year's times.

Regroup as needed in order to subtract.

	Ones	.	Tenths	Hundredths
Last year's time	5	.	8	0
Is the same as	5	.	7	10
This year's time	5	.	4	8

$$5 \text{ ones} - 5 \text{ ones} = 0 \text{ ones}$$

$$7 \text{ tenths} - 4 \text{ tenths} = 3 \text{ tenths}$$

$$10 \text{ hundredths} - 8 \text{ hundredths} = 2 \text{ hundredths}$$

$$\text{Difference} = 0 \text{ ones} + 3 \text{ tenths} + 2 \text{ hundredths}$$

Jeff ran 0.32 second faster this year than last year.

- 1 Look at the example problem. Jeff's brother Rob ran the 40-yard dash in 4.95 seconds this year. Complete the steps. How much faster did Rob run than Jeff?

	Ones	.	Tenths	Hundredths
Jeff's time	5	.	4	8
Is the same as	4	.	<input type="text"/>	<input type="text"/>
Rob's time	4	.	9	5

$$\underline{\hspace{2cm}} \text{ ones} - 4 \text{ ones} = \underline{\hspace{2cm}} \text{ ones}$$

$$\underline{\hspace{2cm}} \text{ tenths} - 9 \text{ tenths} = \underline{\hspace{2cm}} \text{ tenths}$$

$$\underline{\hspace{2cm}} \text{ hundredths} - 5 \text{ hundredths} = \underline{\hspace{2cm}} \text{ hundredths}$$

$$\text{Difference} = 0 \text{ ones} + \underline{\hspace{2cm}} \text{ tenths} + \underline{\hspace{2cm}} \text{ hundredths}$$

Rob ran second faster than Jeff.

Solve.

- 2 You can also subtract decimals by writing the problem vertically, lining up the decimal points to keep track of place values.

$$\begin{array}{r} 2.11 \\ 7.37 \\ - 5.24 \\ \hline \end{array}$$

The problem to the right is partially completed.
Explain the regrouping shown.

- 3 Find the difference for the subtraction problem in problem 2. Use the numbers in the box to complete the statements.

2	3	7
2.07	2.17	2.7

The difference is _____.

The difference is closest to the whole number _____.

- 4 Between 6:00 PM and 8:00 PM the temperature fell 5.25°F. At 6:00 PM the temperature was 62.4°F. What was the temperature at 8:00 PM?

- A 57.25°F C 10.10°F
B 57.15°F D 10.9°F

- 5 Haley's anole lizard measures 14.5 centimeters. Caleb's anole lizard measures 12.34 centimeters. An anole lizard's tail is half its length. How much longer is the tail of Haley's lizard than the tail of Caleb's lizard?

Show your work.

Solution: _____

Add and Subtract Decimals

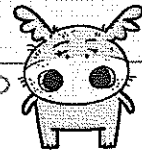
Solve the problems.

- 1 Jake bought 4.08 pounds of apples. He knows that 1.19 pounds are Gala apples and the rest are Cameo apples. How many pounds of Cameo apples did he buy?

- A 2.89 C 3.89
B 3.11 D 5.27

Chase chose answer C. How did he get that answer?

Do you need to regroup to find the answer?



- 2 Tell whether each number sentence is *True* or *False*.

- | | | |
|----------------------------|-------------------------------|--------------------------------|
| a. $8.35 + 7.9 = 16.25$ | <input type="checkbox"/> True | <input type="checkbox"/> False |
| b. $5.31 - 3 = 2.31$ | <input type="checkbox"/> True | <input type="checkbox"/> False |
| c. $94.43 + 74.9 = 169.33$ | <input type="checkbox"/> True | <input type="checkbox"/> False |
| d. $183.7 + 28.34 = 467.1$ | <input type="checkbox"/> True | <input type="checkbox"/> False |

Remember to line up the decimal points to keep track of place values.



- 3 How did you decide your answer to d. in problem 2? Explain.

Did you estimate or compute to decide your answer to d.?

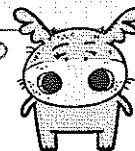


Solve.

- 4 The distance between the goals on a soccer field is 52 meters. Each goal has a box that extends 5.49 meters into the field. What is the distance from the front of the box at one end of the field to the front of the box at the other end of the field?

Show your work.

Can I draw a diagram to help understand the problem?



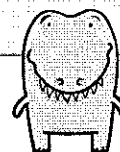
Solution: _____

- 5 Ms. Chen's fifth-grade class held bake sales on Tuesday and Thursday during lunch to raise money to buy science equipment for the classroom.

They raised \$20.55 more on Thursday than on Tuesday. Use this information to fill in the data that are missing from the table.

	1 st lunch	2 nd lunch	3 rd lunch	TOTAL
Tuesday	\$21.45		\$25.90	
Thursday		\$26.35		\$86.70
TOTAL	\$50.55		\$57.15	

Where do you find how much money was raised on Thursday in the table?



Multiply Decimals

Name: _____

Prerequisite: Multiply Whole Numbers

Study the example problem showing one way to multiply whole numbers using partial products. Then solve problems 1–6.

Example

There are 325 stickers in one package. How many stickers are in 60 packages?

$$325 \times 60 = ?$$

$$\begin{array}{r} 325 \\ \times 60 \\ \hline 300 \leftarrow 6 \text{ tens} \times 5 \text{ ones} \\ 1,200 \leftarrow 6 \text{ tens} \times 2 \text{ tens} \\ + 18,000 \leftarrow 6 \text{ tens} \times 3 \text{ hundreds} \\ \hline 19,500 \end{array}$$

$$325 \times 60 = 19,500 \quad \text{There are 19,500 stickers in 60 packages.}$$

- 1 Look at the example problem. How would the partial products and the sum of the partial products change if there were 6 packages instead of 60? Explain.

- 2 Complete the steps to find the product.

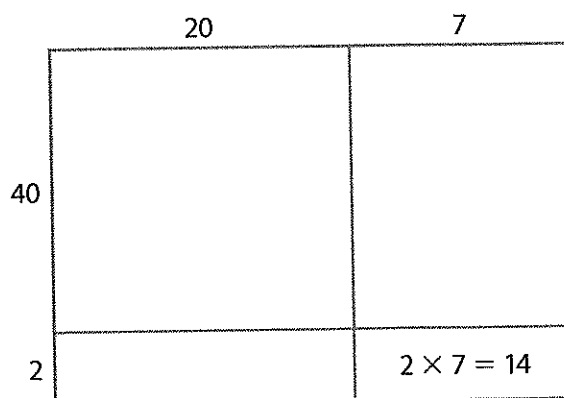
$$\begin{array}{r} 325 \\ \times 6 \\ \hline \boxed{} \quad (6 \times 5) \\ \boxed{} \quad (\times) \\ + \boxed{} \quad (\times) \\ \hline \boxed{} \end{array}$$



Solve.

3 Show how to find 42×27 using an area model.

- Write the missing equations in the model.
- Use the information from the model to complete the equation.



$$42 \times 27 = \underline{\hspace{1cm}} + \underline{\hspace{1cm}} + \underline{\hspace{1cm}} + \underline{\hspace{1cm}} = \underline{\hspace{1cm}}$$

4 Is your answer to problem 3 reasonable? Explain your thinking.

5 A pet-supply store sells dog biscuits and cat treats. The store has 27 boxes of dog biscuits and 21 pouches of cat treats. Each box holds 18 dog biscuits. Each pouch holds 24 cat treats. Are there more dog biscuits or cat treats in the store?

Show your work.

Solution: _____

6 Look at problem 5. How many more boxes of dog biscuits do you need in order for there to be more dog biscuits than cat treats? Explain.

Multiply Decimals by Whole Numbers

Study the example showing multiplying a decimal by a whole number using partial products. Then solve problems 1–7.

Example

$$3.17 \times 4 = \boxed{?} \quad \text{Estimate: } 3 \times 4 = 12$$

$$\begin{array}{r} 3.17 \\ \times 4 \\ \hline 28 \leftarrow 4 \text{ ones} \times 7 \text{ hundredths} = 28 \text{ hundredths} \\ 40 \leftarrow 4 \text{ ones} \times 1 \text{ tenth} = 4 \text{ tenths} = 40 \text{ hundredths} \\ + 1,200 \leftarrow 4 \text{ ones} \times 3 \text{ ones} = 12 \text{ ones} = 1,200 \text{ hundredths} \\ \hline 1,268 \text{ hundredths} = 12.68 \end{array}$$

- 1 Look at the example. Compare the product with the estimate. Is it reasonable that the product is greater than the estimate? Explain.

- 2 Complete the steps to find the product.

$$\begin{array}{r} 0.35 \\ \times 3 \\ \hline \boxed{} \leftarrow 3 \text{ ones} \times \boxed{} \text{ hundredths} = \boxed{} \text{ hundredths} \\ + \boxed{} \leftarrow 3 \text{ ones} \times \boxed{} \text{ tenths} = \boxed{} \text{ tenths} = \boxed{} \text{ hundredths} \\ \hline \boxed{} \text{ hundredths} = \boxed{} \end{array}$$

- 3 Look at problem 2. Why wasn't the zero in the ones place included as a partial product?



Solve.

- 4 Write the decimal point in each product so that the equation is correct.

a. $6 \times 8.29 = 4974$ c. $9.72 \times 7 = 6804$

b. $0.53 \times 5 = 265$ d. $3.18 \times 16 = 5088$

- 5 Explain how you decided where to place the decimal points in the products in problem 4.

- 6 Complete the steps to find 3.18×16 .

3.18	3.18
$\times 10$	$\times 6$
<hr/>	<hr/>
80	<div></div>
<div></div>	<div></div>
<div></div>	<div></div>
$+$ <div></div>	$+$ <div></div>
<hr/>	<hr/>
<div></div>	<div></div>

$3.18 \times 16 =$ _____ hundredths $+$ _____ hundredths
 $=$ _____ hundredths $=$ _____

- 7 In the city where Sonya lives it rained an average of 4.05 inches each month last year. About how many inches of rain fell in all?

Show your work.

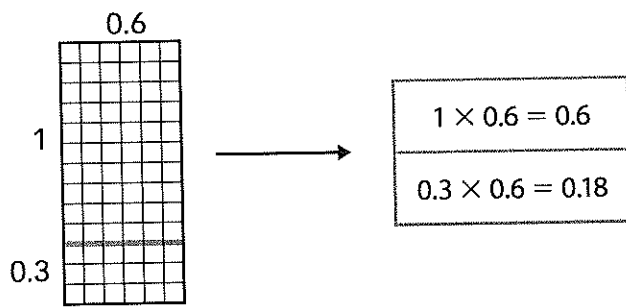
Solution: _____

Multiply With an Area Model

Study the example showing multiplying a decimal by a decimal using an area model. Then solve problems 1–5.

Example

Find 1.3×0.6 .



$$1.3 \times 0.6 = 0.6 + 0.18 = 0.78$$

- 1 Complete the area model. Find the product of 2.3×1.5 .

1	0.5
$2 \times 1 = 2$	

$$2.3 \times 1.5 = \underline{\hspace{2cm}}$$

- 2 How would the area model in problem 1 need to change if the factor 2.3 was changed to 12.3?



Solve.

- 3 Halen wrote the product 0.4 for the problem shown. Don says that is not correct since when you multiply tenths by tenths the product will be in the hundredths. Is Don right? Explain.

$$0.5 \times 0.8 = \boxed{?}$$

- 4 Use numbers from the box to complete the equations.

- a. $0.5 \times 0.4 = \underline{\hspace{2cm}}$ c. $0.2 \times 0.5 = \underline{\hspace{2cm}}$
b. $0.5 \times 4 = \underline{\hspace{2cm}}$ d. $2 \times 0.5 = \underline{\hspace{2cm}}$

0.01	0.1	1
0.02	0.2	2

- 5 The Barga school grows lettuce and other vegetables for school lunches. The school garden is 8.4 meters long and 6.4 meters wide. The section used to grow lettuce is 2.2 meters long and 0.8 meter wide. How many square meters of ground does the garden cover? How many square meters of the garden is used to grow lettuce?

Show your work.

Solution: The garden covers _____ square meters of ground and _____ square meters of the garden is used to grow lettuce.

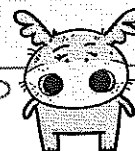
Multiply Decimals

Solve the problems.

- 1 Fabiola's basketball team practices 4.25 hours each week. The basketball season is 14 weeks long. How much time does Fabiola spend in practice during the season?

Show your work.

Can I use an area model to solve this problem?



Solution: _____

- 2 The model represents the expression 0.7×0.3 . Choose the product.

A 0.21

C 0.30

B 2.1

D 0.03

0.7



Val chose **C** as the correct answer. How did she get that answer?

What does each small square in the model represent?



- 3 Find the product of 0.6×0.6 .

A 30.6

C 3.06

B 3.6

D 0.36

Will the product be in tenths or hundredths?

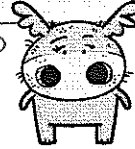


Solve.

- 4 One pound of red grapes costs \$2.42. Ella buys 0.5 pound. How much does she spend on red grapes?

Show your work.

Will the product be greater or less than 2.42?

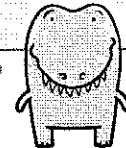


Solution: _____

- 5 Terry lives 0.9 kilometer from school. He walks back and forth to school each day. How many kilometers does he walk to and from school each week?

Show your work.

How many days in a week is Terry in school?



Solution: _____

Divide Decimals

Name: _____

Prerequisite: Divide Whole Numbers

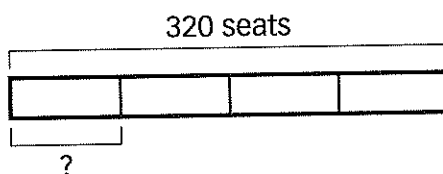
Study the example problem showing how to use a bar model to represent division. Then solve problems 1–5.

Example

Stands at the Lincoln Football Field seat 320 people. They are divided into 4 equal sections. How many people can sit in each section?

$$320 \div 4 = \boxed{?}$$

You can represent this division problem with a bar model.



To find $320 \div 4$, think $4 \times \boxed{?} = 320$.

$$320 = 32 \text{ tens}$$

$$4 \times 8 \text{ tens} = 32 \text{ tens}$$

$$4 \times 80 = 320$$

$$320 \div 4 = 80$$

80 people can sit in each section.

- 1 Look at the example. How would the quotient change if the total number of seats was 3,200 instead of 320? Explain.

- 2 Rewrite each division problem as a multiplication problem and solve.

a. $490 \div 7 = \boxed{?}$ $\underline{\hspace{1cm}} \times \boxed{?} = \underline{\hspace{1cm}}$ $490 \div 7 = \underline{\hspace{1cm}}$

b. $2,400 \div 12 = \boxed{?}$ $\underline{\hspace{1cm}} \times \boxed{?} = \underline{\hspace{1cm}}$ $2,400 \div 12 = \underline{\hspace{1cm}}$

c. $350 \div 50 = \boxed{?}$ $\underline{\hspace{1cm}} \times \boxed{?} = \underline{\hspace{1cm}}$ $350 \div 50 = \underline{\hspace{1cm}}$

d. $5,400 \div 90 = \boxed{?}$ $\underline{\hspace{1cm}} \times \boxed{?} = \underline{\hspace{1cm}}$ $5,400 \div 90 = \underline{\hspace{1cm}}$



Solve.

- 3 Choose Yes or No to tell whether the expression represents the number 40.

a. $1,600 \div 4$

☐ Yes ☐ No

b. $120 \div 3$

☐ Yes ☐ No

c. $480 \div 12$

☐ Yes ☐ No

d. $280 \div 70$

☐ Yes ☐ No

- 4 A large drink dispenser used at a school field day holds 640 ounces of lemonade. How many glasses of lemonade can be poured from the dispenser if each glass holds 8 ounces?

Show your work.

Solution: _____

- 5 Each costume for a dance group in a talent show requires 2 yards of black material and 3 yards of red material. The dance group has 30 yards of black material and 60 yards of red material. What is the greatest number of costumes they can make? Explain.

Show your work.

Solution: _____

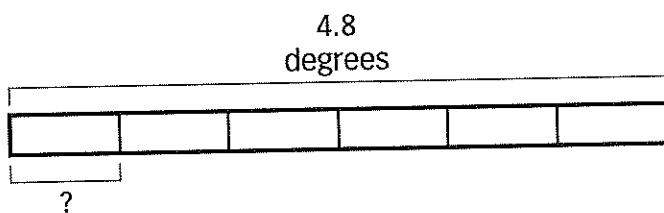
Divide a Decimal by a Whole Number

Study the example problem showing one way to divide a decimal by a whole number. Then solve problems 1–5.

Example

The temperature rose 4.8 degrees in 6 hours. If the temperature rose by an equal amount each hour, how many degrees did it rise each hour?

You can represent this with a bar model.



To find $4.8 \div 6$, think $6 \times \boxed{?} = 4.8$.

$$4.8 = 48 \text{ tenths} \quad 6 \times 8 \text{ tenths} = 48 \text{ tenths}$$

$$6 \times 0.8 = 4.8$$

$$4.8 \div 6 = 0.8$$

The temperature rose 0.8 degree each hour.

- 1 Look at the example problem. Suppose the temperature had risen 5.4 degrees in 6 hours. Complete the steps to solve $5.4 \div 6$.

- a. $5.4 \div 6$ Think: $\underline{\hspace{1cm}} \times \boxed{?} = \underline{\hspace{1cm}}$
- b. $5.4 = \underline{\hspace{1cm}}$ tenths $\underline{\hspace{1cm}} \times \boxed{?} = \underline{\hspace{1cm}}$ tenths
- c. $6 \times \underline{\hspace{1cm}}$ tenths = $\underline{\hspace{1cm}}$ tenths
- d. $5.4 \div 6 = \underline{\hspace{1cm}}$

- 2 Use numbers from the box. Write the number of tenths and hundredths in each decimal.

$$3.5 = \underline{\hspace{1cm}} \text{ tenths} \quad 3.5 = \underline{\hspace{1cm}} \text{ hundredths}$$

$$0.79 = \underline{\hspace{1cm}} \text{ tenths} \quad 0.79 = \underline{\hspace{1cm}} \text{ hundredths}$$

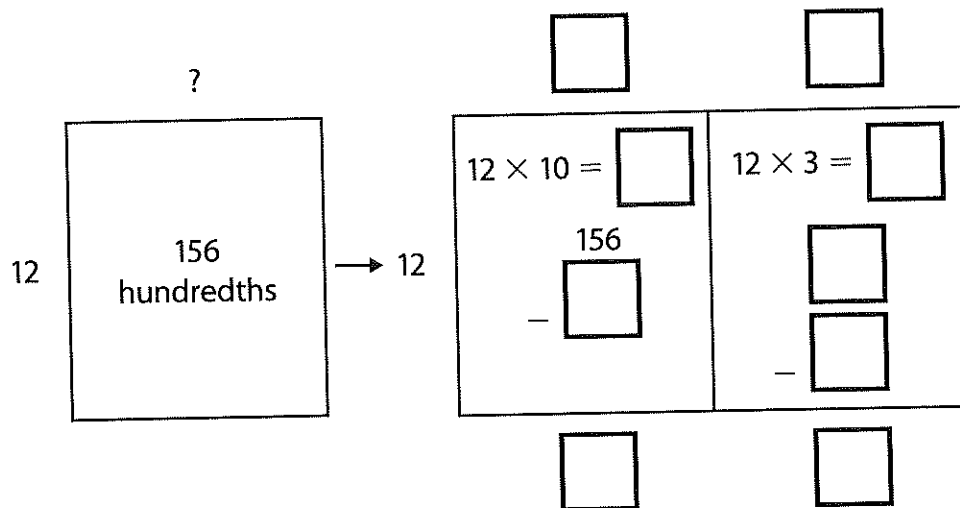
3.5	0.79	0.35
350		35
7.9	79	790

Solve.

- 3 Complete the steps for using an area model to solve $1.56 \div 12$.

$1.56 \div 12$ is the same as $\underline{\hspace{2cm}} \times \boxed{?} = \underline{\hspace{2cm}}$.

$1.56 = \underline{\hspace{2cm}}$ hundredths



$156 \text{ hundredths} \div 12 = \underline{\hspace{2cm}} \text{ hundredths}$

$1.56 \div 12 = \underline{\hspace{2cm}}$

- 4 Conor earns \$9 an hour for yard work. He raked leaves one afternoon and earned \$29.25. How many hours did he rake leaves?

Show your work.

Solution: _____

- 5 Look at problem 4. How much does Conor earn for each minute he does yard work?

Show your work.

Solution: _____

There are 60 minutes in 1 hour.



Divide by Tens

Study the example showing one way to divide a decimal by a decimal. Then solve problems 1–7.

Example

What is $2.1 \div 0.7$?

You can represent this problem with decimal grids.

Each large square represents 1 whole.

To find $2.1 \div 0.7$, think $0.7 \times ? = 2.1$.

The lines separate groups of 0.7.

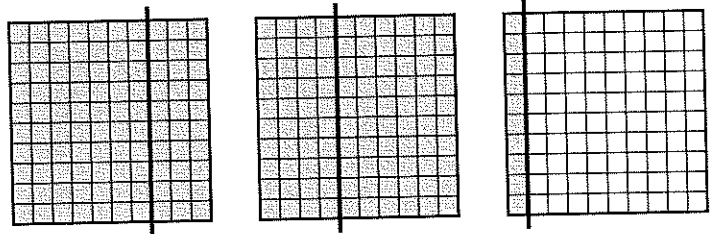
$2.1 = 21$ tenths

$0.7 = 7$ tenths

In words: 7 tenths $\times ? = 21$ tenths

7 tenths $\times 3 = 21$ tenths

$2.1 \div 0.7 = 3$



- 1 Look at the example. How is the quotient, 3, represented by the grids?

- 2 What other expressions are represented by the decimal grids in the example problem? Circle the letter of all that apply.

A 0.7×3

C $0.7 \div 3$

B 3×0.7

D $2.1 \div 3$

- 3 How many grids would you need to represent the problem $4.5 \div 0.5$? Explain.

Solve.

4 Complete the steps to solve $4.5 \div 0.5$.

- a. $4.5 \div 0.5$ Think: $\underline{\hspace{1cm}} \times \boxed{?} = \underline{\hspace{1cm}}$
- b. $4.5 = \underline{\hspace{1cm}}$ tenths and $0.5 = \underline{\hspace{1cm}}$ tenths
- c. 5 tenths $\times \underline{\hspace{1cm}} = 45$ tenths
- d. $4.5 \div 0.5 = \underline{\hspace{1cm}}$

5 Rewrite each division problem as a multiplication problem and solve.

- a. $6.3 \div 0.9 = \boxed{?}$ $\underline{\hspace{1cm}} \times \boxed{?} = \underline{\hspace{1cm}}$ $6.3 \div 0.9 = \underline{\hspace{1cm}}$
- b. $3.2 \div 0.4 = \boxed{?}$ $\underline{\hspace{1cm}} \times \boxed{?} = \underline{\hspace{1cm}}$ $3.2 \div 0.4 = \underline{\hspace{1cm}}$
- c. $1.8 \div 0.3 = \boxed{?}$ $\underline{\hspace{1cm}} \times \boxed{?} = \underline{\hspace{1cm}}$ $1.8 \div 0.3 = \underline{\hspace{1cm}}$
- d. $2.4 \div 1.2 = \boxed{?}$ $\underline{\hspace{1cm}} \times \boxed{?} = \underline{\hspace{1cm}}$ $2.4 \div 1.2 = \underline{\hspace{1cm}}$

6 The Razdan family drinks 0.5 gallon of milk a day. Will 2.5 gallons of milk last them more than 1 week? Explain.

Show your work.

Solution: _____

7 Mrs. Lang is hanging drawings for the school art show across a wall that is 2.8 meters wide. She determines each picture, along with the space needed around each picture, will take up 0.4 meter along the wall. How many pictures can she hang in one row across the wall?

Show your work.

Solution: _____

Print by Hand

Study the example showing one way to divide by hundredths. Then solve problems 1–6.

Example

$$1.8 \div 0.04 = ?$$

Identify the least place. Write each decimal to the least place.

$$0.04 = 4 \text{ hundredths}$$

$$1.8 = 180 \text{ hundredths}$$

$$180 \text{ hundredths} \div 4 \text{ hundredths} = 45$$

$$1.8 \div 0.04 = 45$$

Divide as you would with whole numbers, using partial quotients or another method.

$$\begin{array}{r} 45 \\ \underline{5} \\ 40 \\ 4 \overline{)180} \\ \underline{-160} \\ 20 \\ \underline{-20} \\ 0 \end{array}$$

1 Complete the steps to solve $1.02 \div 0.06$.

a. $1.02 \div 0.06$

b. $1.02 = \underline{\hspace{2cm}}$ hundredths
 $0.06 = \underline{\hspace{2cm}}$ hundredths

c. $102 \div 6 = \underline{\hspace{2cm}}$

d. $1.02 \div 0.06 = \underline{\hspace{2cm}}$

2 Did you use partial quotients or another method to divide 102 by 6 in problem 1? Explain.

3 Check your answer to problem 1 by writing the decimals in a multiplication equation.

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



Solve.

4 Choose *True* or *False* for each equation.

- a. $1.23 = 123$ hundredths ☐ True ☐ False
- b. $0.5 = 50$ hundredths ☐ True ☐ False
- c. 74 hundredths $= 7.4$ ☐ True ☐ False
- d. $1,088$ hundredths $= 10.88$ ☐ True ☐ False

5 Jaden buys 1.15 pounds of cheese at the deli counter. If each slice is 0.05 pound, how many slices of cheese does she buy?

Show your work.

Solution: _____

6 Ray feeds his dog 0.12 kilogram of dry dog food each day. He wants to buy the smallest bag that has enough food to feed his dog for one month. Should he buy the bag that has 1.8 kilograms, 2.4 kilograms, or 4.2 kilograms of dog food?

Show your work.

Solution: _____

Divide Decimals

Solve the problems.

- 1 Evan walks his dog 4 times around the perimeter of a park, for a total distance of 2.8 kilometers. How many kilometers does he walk each time around? Circle the letter of the correct answer.

A 0.07 C 0.7
B 0.12 D 1.2

What basic fact can help you solve this problem?



- 2 How many 45¢ stamps can you buy with \$9? Circle the letter of the correct answer.

A 0.2 C 20
B 2 D 200

Da Jin chose **D** as the correct answer. How did he get that answer?

How do you write 45¢ as a decimal? \$9 as a decimal?



- 3 Which change would make the statement below true?

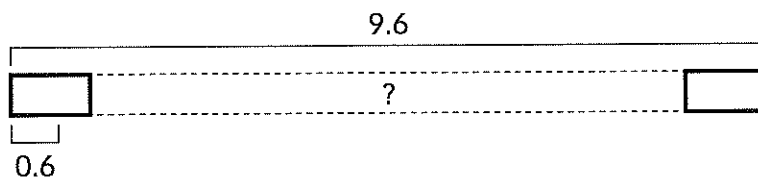
$$3.9 = 39 \text{ hundredths}$$

A Change 3.9 to 3.90.
B Change *hundredths* to *tenths*.
C Change *hundredths* to *ones*.
D Change 3.9 to 390.

It may be helpful to rewrite the equation for each change described.



- 4 Choose Yes or No to tell if the expression is represented by the bar model.



a. $9.6 \div 0.6$

☐ Yes

☐ No

b. $9.6 \div 6$

☐ Yes

☐ No

c. $0.06 \div 9.6$

☐ Yes

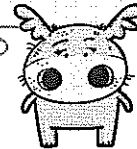
☐ No

d. $0.6 \div 9.6$

☐ Yes

☐ No

What is the least place shown in the two decimals?



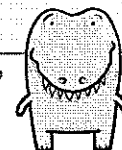
- 5 Banks sell quarters in rolls. Each roll has a value of \$10.

Part A

How many quarters are in one roll?

Show your work.

What operation can you use to solve the problem?



Solution: _____

Part B

If a roll of dimes also had a value of \$10, how many dimes would be in the roll?

Show your work.

Solution: _____

Name: _____

Prerequisite: How do you measure the area of a rectangle?



Study the example problem showing how to find the area of a rectangle. Then solve problems 1–7.

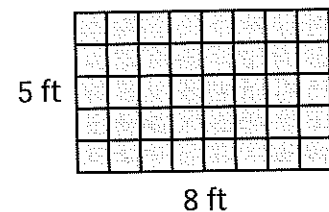
Example

Nan tiled a 5-foot by 8-foot section of her kitchen floor. Each tile covers 1 square foot. What is the area of the floor that she tiled?

Area is the number of square units a figure covers.
The floor has 5 rows of tiles.
There are 8 tiles in each row.

Multiply 5 feet \times 8 feet to find the area of the tiled floor.

Area = 5 feet \times 8 feet = 40 square feet

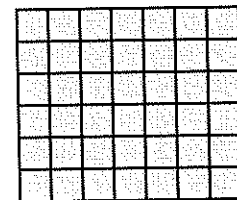


- 1** Each square in the rectangle on the right covers 1 square centimeter.

There are _____ rows of squares.

There are _____ squares in each row.

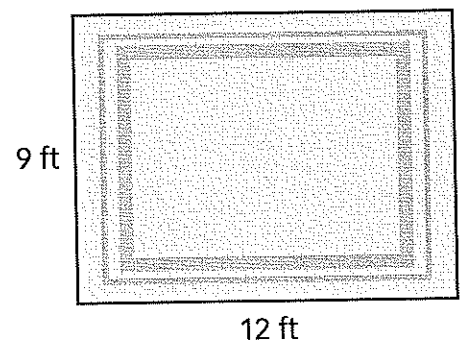
The area of the rectangle is _____ square centimeters.



- 2** What is the area of the rug at the right?

Show your work.

Solution: _____

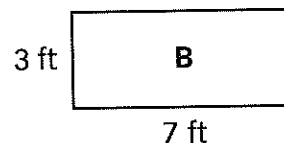
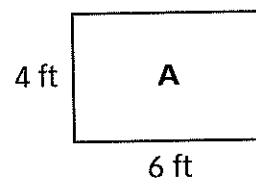


- 3** The infield of a baseball field is a square with sides that are 90 feet. What is the area of the infield?

Solve.

- 4 The diagram shows the dimensions of two desks that Hannah is thinking about buying. What is the area of each desktop?

Show your work.



Solution: _____

- 5 The width of Andy's porch is 5 feet. Its area is 40 square feet. How long is the porch?

Show your work.

Solution: _____

- 6 Look at problem 5. Andy wants to extend his porch by adding on to the length. This new section will have the same width, but he wants the porch to have a total area of 60 square feet. What should he make the length of the new section?

Show your work.

Solution: _____

- 7 Jillian wants her rectangular garden to cover an area of 180 square feet. What are the lengths and widths of two possible rectangles she can use? Explain.

Find Volume Using Unit Cubes

Study the example problem showing how to use unit cubes to find the volume of a rectangular prism. Then solve problems 1–8.

Example

Peter stacked unit cubes to build this rectangular prism. What is the volume of the figure?

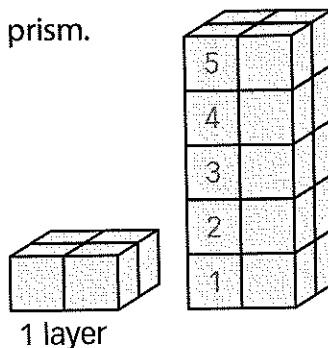
There are 4 unit cubes in 1 layer.

There are 5 layers.

$$4 + 4 + 4 + 4 + 4 = 20 \text{ unit cubes}$$

$$5 \times 4 = 20 \text{ unit cubes}$$

Volume = 20 cubic units

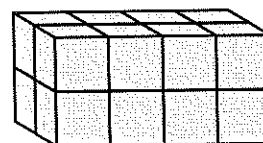


- 1 Look at figure A and fill in the blanks below.

There are _____ layers and _____ cubic units in each layer.

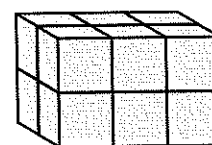
The volume of this figure is

_____ \times _____ = _____ cubic units.



A

- 2 What is the volume of figure B? Tell how you know.



B

- 3 Elena stacks 2 layers of 4 unit cubes to fill a small box.

How many cubes are in the box? _____

What is the volume of Elena's box? _____

Vocabulary

cubic unit a cube, 1 unit on each edge, used to measure volume.

volume the amount of space inside a solid figure.

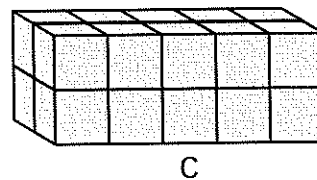
Solve.

- 4 Look at figure C and fill in the blanks below.

There are _____ layers and _____ cubic units in each layer.

The volume of this block is

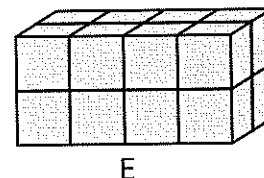
_____ \times _____ = _____ cubic units.



- 5 What is the volume of figure D? _____



- 6 How many of figure D does it take to fill figure E? How does the volume of figure D relate to the volume of figure E? Explain.



- 7 A block has a volume of 36 cubic units. It has 9 layers of cubic units. How many cubic units are in each layer?

- 8 Draw or describe box F that has a volume of 5 cubic units. Then draw or describe a box that has 3 times the volume of box F. What is the volume of the second box?

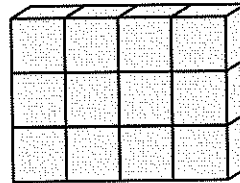
Solution: _____

Reason and Write

Study the example. Underline two parts that you think make it a particularly good answer and a helpful example.

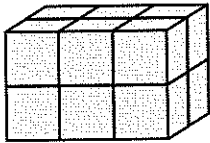
Example

Niles built this rectangular prism with unit cubes. Then he took apart the prism and built a different prism with the same number of cubes. Draw a picture of the second prism that Niles could have made.



Describe the number of layers and the number of cubes in each layer of both prisms. Write a statement to compare the volume of the prisms.

Show your work. Use pictures, words, or numbers to explain your answer.



The first prism that Niles built has 3 layers and 4 cubes in each layer.

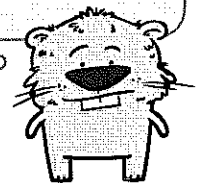
The second prism that Niles built has 2 layers and 6 cubes in each layer.

$3 \times 4 = 12$ and $2 \times 6 = 12$. Both prisms are made of 12 unit cubes, so both have a volume of 12 cubic units.

The volume of both prisms is the same.

Where does the example...

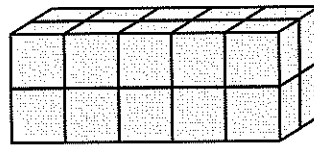
- show a drawing?
- describe the number of layers and number of cubes in each layer?
- compare the volume of each prism?



Solve the problem. Use what you learned from the example on the previous page.

Example

Leah built this rectangular prism with unit cubes. Then she took apart the prism and built a different prism with the same number of cubes. Draw a picture of the second prism that Leah could have made.

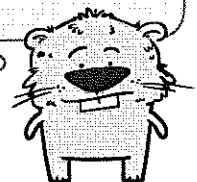


Describe the number of layers and the number of cubes in each layer of both prisms. Write a statement to compare the volume of the prisms.

Show your work. Use pictures, words, or numbers to explain your answer.

Did you...

- show a drawing?
- describe the number of layers and number of cubes in each layer?
- compare the volume of each prism?



Find Volume Using Unit Cubes

Name: _____

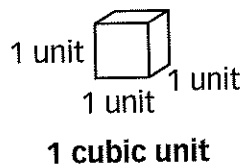
Prerequisite: Count Unit Cubes to Find Volume

Study the example problem showing how to find volume by counting unit cubes. Then solve problems 1–8.

Example

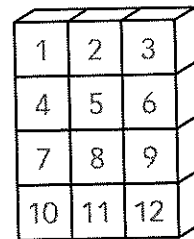
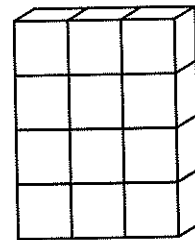
Harry stacked blocks to make a wall. What is the volume of the wall?

The volume of each block is 1 cubic unit.

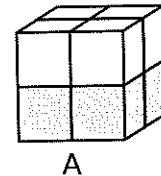


Count the blocks in the wall to find the volume.

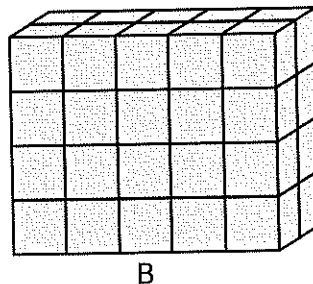
There are 12 blocks. The volume is 12 cubic units.



- 1** The green cubes show 1 layer of figure A.
Figure A has _____ layers.
There are _____ cubes in each layer.
The volume of figure A is _____ cubic units.



- 2** Fill in the blanks to describe figure B.
_____ layers
_____ cubes in each layer
Volume = _____ cubic units



- 3** If you add another layer to figure B, what would the volume be? Explain.

Vocabulary

cubic unit a cube, 1 unit on each edge, used to measure volume.

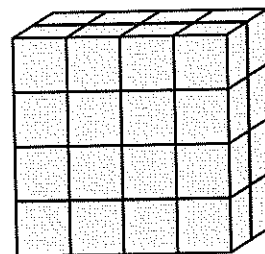
volume the amount of space inside a solid figure.

Solve.

- 4 Figure M has _____ layers.

There are _____ cubes in each layer.

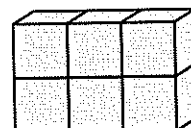
The volume of figure M is _____ cubic units.



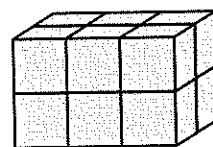
M

- 5 Figure N is a rectangular prism that has twice the volume of figure M. How many layers and how many cubes in each layer could there be in figure N?

- 6 What is the volume of figure R? _____



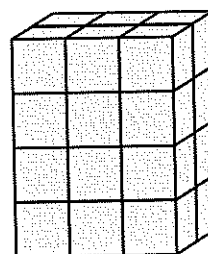
R



S

- 7 How many of figure R does it take to fill figure S? How does the volume of figure S relate to the volume of figure R? Explain.

- 8 Show how to find the volume of box T. Then draw or describe a different box that has the same volume as box T.



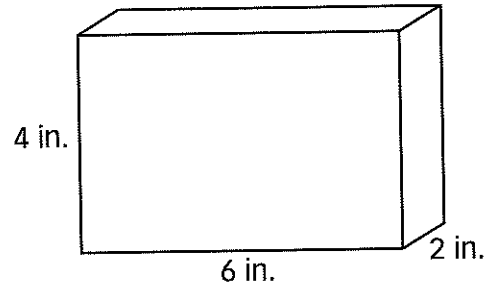
T

Find the Volume of a Rectangular Prism

Study the example problem showing how to use layers to find the volume of a rectangular prism. Then solve problems 1–7.

Example

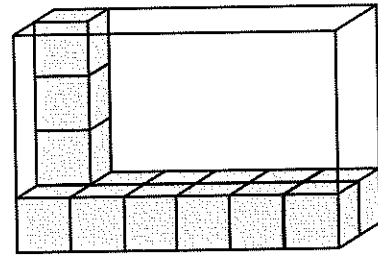
Keith uses this box to store his colored markers. What is the volume of the box?



Think about filling the box with 1-inch cubes. One layer has 2 rows of 6 cubes, or 12 cubes. There are 4 layers of cubes.

$$12 + 12 + 12 + 12 = 48 \text{ or } 12 \times 4 = 48$$

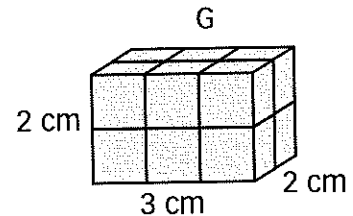
The volume of the box is 48 cubic inches.

**1** Look at prism G.

There are _____ layers with _____ cubes in each layer.

_____ cubes + _____ cubes = _____ cubes.

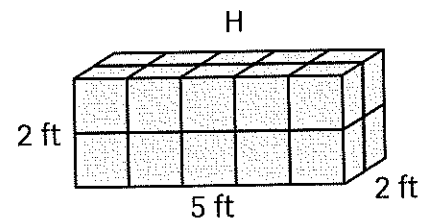
The volume is _____ cubic centimeters.

**2** Look at prism H.

There are _____ layers with _____ cubes in each layer.

_____ layers \times _____ cubes = _____ cubes.

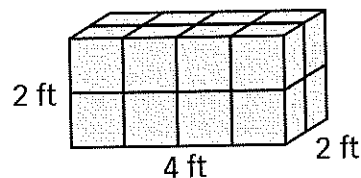
The volume is _____ cubic feet.



Solve.

- 3 What is the volume of this rectangular prism?

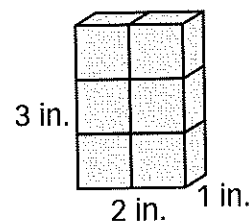
Show your work.



Solution: _____

- 4 Mia has a box that she filled with the cubes at the right. What is the volume of Mia's box?

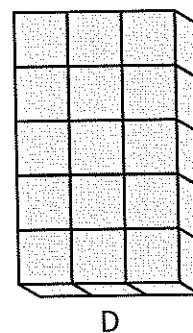
Show your work.



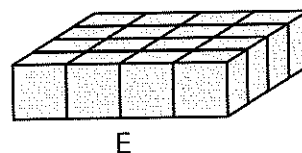
Solution: _____

- 5 A box is 2 inches long, 1 inch wide, and 6 inches tall. What is the relationship between the volume of this box and the one in problem 4? Tell how you know.

- 6 Which has a greater volume, box D or box E? Explain.



- 7 Add a layer to box D and compare the volumes of the new box D and box E.

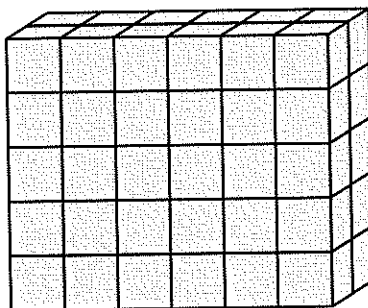


Find Volume Using Unit Cubes

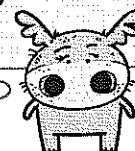
Solve the problems.

- 1 What is the volume of this rectangular prism?

- A 12 cubic units
B 13 cubic units
C 30 cubic units
D 60 cubic units

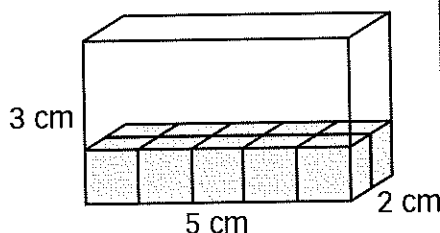


How many cubes are in each layer?



- 2 What is the volume of this box?

- A 6 cubic centimeters
B 10 cubic centimeters
C 15 cubic centimeters
D 30 cubic centimeters



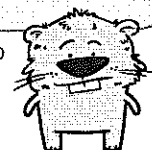
How many layers of cubes will there be if you fill the box?



Cindy chose **B** as the correct answer. How did she get that answer?

- 3 Draw or describe a different rectangular prism that has the same volume as the prism in problem 1.

What are some factors of the number that tells the volume in problem 1?



Solve.

- 4 Which expressions can be used to find the volume of this rectangular prism? Circle the letter of all that apply.

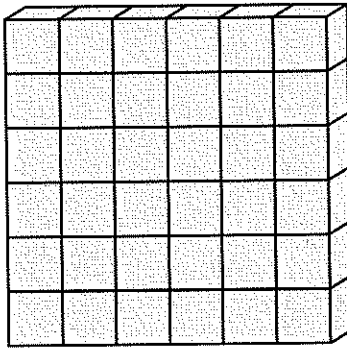
A $6 + 4 + 1$

B $6 + 6 + 6 + 6 + 6 + 6$

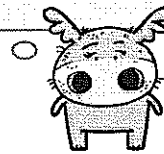
C 6×1

D $6 + 6 + 1$

E $6 \times 6 \times 1$



There is more than one way to find the volume of a rectangular prism.

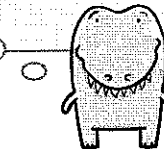


- 5 If you add 2 layers to the rectangular prism in problem 4, how much greater is the volume?

Show your work.

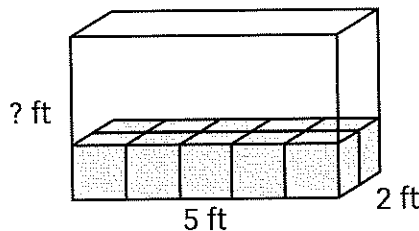
Solution: _____

What does the problem ask you to find?

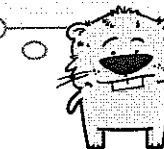


- 6 Mr. Carlo is building a storage box in his workshop. The space where he plans to put the box is 5 feet long and 2 feet wide. He wants the volume of the box to be at least 36 cubic feet, but no more than 56 cubic feet. How tall should Mr. Carlo make the box? Explain.

Show your work.



You can start by finding the number of cubic feet in 1 layer.



Solution: _____

Find Volume Using Formulas

Name: _____

Prerequisite: Find Volume with Unit Cubes

Study the example problem showing different ways to find the volume of a rectangular prism. Then solve problems 1–5.

Example

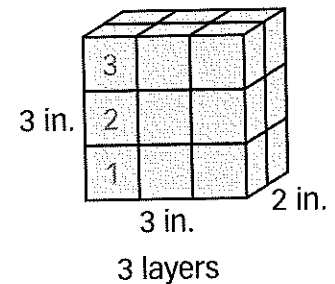
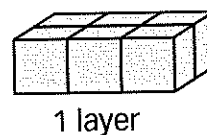
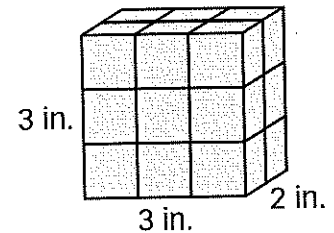
A gift box is 3 inches long, 2 inches wide, and 3 inches tall. What is the volume of the box?

You can fill the box with 1-inch cubes.
Count the cubes.
There are 18 cubes.

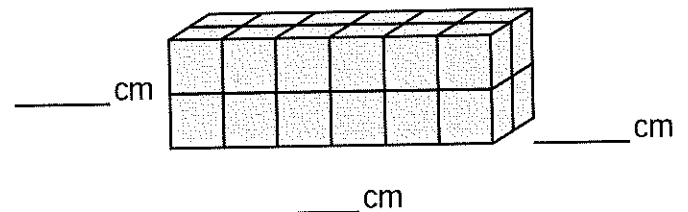
You can also count the cubes in 1 layer.
There are 6 cubes in 1 layer.
The box has 3 layers.

$$6 + 6 + 6 = 18 \text{ or } 6 \times 3 = 18$$

The volume of the box is 18 cubic inches.



- 1 The rectangular prism at the right is made of centimeter cubes.



- Fill in the blanks to show the number of centimeters on each edge.
- Complete the following sentences.
The bottom layer has _____ cubes.
There are _____ layers.
- What is the volume of the rectangular prism?

- Suppose you add another layer to the prism.
What would the new volume be?

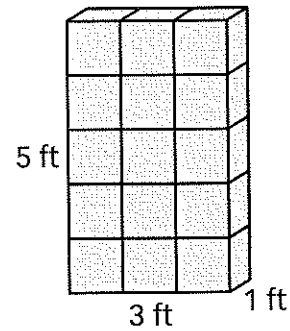
Vocabulary

volume the amount of space inside a solid figure.

Solve.

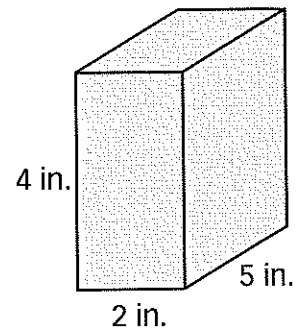
- 2 What is the volume of this rectangular prism?

Show your work.



Solution: _____

- 3 Max fills this box with 1-inch cubes. Tell how many cubes are in 1 layer and how many layers there are. Then find the volume.



- 4 A toy box has a volume of 60 cubic feet. The box is 5 feet long and 4 feet wide. What is the height of the toy box?

Show your work.

Solution: _____

- 5 Jorge has 40 one-inch cubes. What are 2 different ways that he can stack the cubes to make a rectangular prism?

Use a Formula to Find the Volume of a Rectangular Prism

Study the example problem showing how to use formulas to find the volume of a rectangular prism. Then solve problems 1–7.

Example

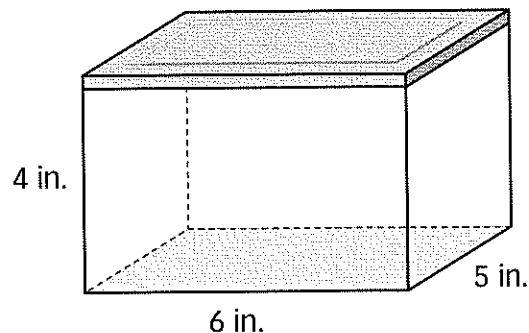
Gwen puts her leftover food in a rectangular container. The container is 6 inches long, 5 inches wide, and 4 inches tall. What is the volume of the container?

Use the formula $\text{volume} = \text{length} \times \text{width} \times \text{height}$.

$\text{volume} = 6 \times 5 \times 4$, or 120 cubic inches

Or use the formula $\text{volume} = \text{area of the base} \times \text{height}$.
The area of the base is the same as the $\text{length} \times \text{width}$.

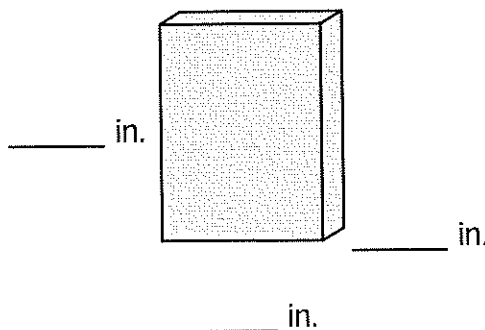
$6 \times 5 = 30$ and $30 \times 4 = 120$ cubic inches



- 1 Ted's box is 4 inches tall, 3 inches long, and 1 inch wide.

- a. Label the picture of the box with its dimensions.
b. What is the volume of the box?

Show your work.



Solution: _____

- 2 A rectangular prism has a square base with sides that are 2 feet long. The height of the prism is 5 feet. What is the volume of the prism?

Show your work.

Solution: _____

Solve.

- 3 Greg's shed is 10 feet long, 6 feet wide, and 8 feet tall. What is the volume of the shed?

Show your work.

Solution: _____

- 4 The base of a rectangular prism has sides that are 2 centimeters and 4 centimeters long. The height of the prism is 3 centimeters. What is the volume of the prism?

Show your work.

Solution: _____

- 5 What is the volume of a box that is 8 inches long, 2 inches wide, and 6 inches tall?

Show your work.

Solution: _____

- 6 The base of a rectangular prism is a rectangle with sides that are 7 inches and 5 inches long. Its height is 10 inches. Write two different equations that you can use to find the volume.

- 7 Jin has two boxes. Box A has dimensions of 6 centimeters, 5 centimeters, and 9 centimeters. Box B has dimensions of 4 centimeters, 10 centimeters, and 7 centimeters. Which box holds more? Explain.

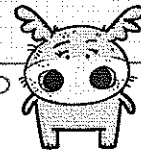
Use the formula for Volume

Solve the problems.

- 1 Which of these rectangular prisms have the same volume? Circle the letter for all that apply.

	Length	Width	Height
A	4 ft	2 ft	3 ft
B	5 ft	1 ft	3 ft
C	6 ft	4 ft	1 ft
D	2 ft	8 ft	2 ft
E	6 ft	2 ft	2 ft

Look for equal products.

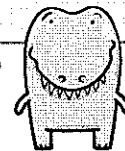


- 2 The volume of a rectangular prism is 48 cubic meters. Its height is 2 meters and its length is 3 meters. What is its width?

- A 6 meters C 16 meters
B 8 meters D 24 meters

Delia chose **A** as the correct answer. How did she get that answer?

This looks like a two-step problem.

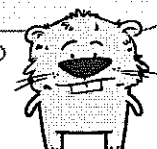


- 3 Tabia stores her hair bands in a cube-shaped container. The cube has a volume of 64 cubic inches. What is the length of the edges of the cube?

Show your work.

Solution: _____

All edges of a cube are the same length.

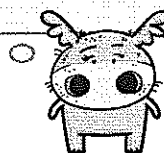


Solve.

- 4 A gift shop sells rectangular glass dishes in different sizes. Some of the dimensions are given in the table. Fill in the missing dimensions.

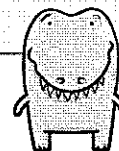
Volume in Cubic Inches	Length in Inches	Width in Inches	Height in Inches
18	<input type="text"/>	3	2
24	2	<input type="text"/>	3
30	3	2	<input type="text"/>
40	<input type="text"/>	4	2
48	4	3	<input type="text"/>

Use the volume formula and fill in the numbers that you know.



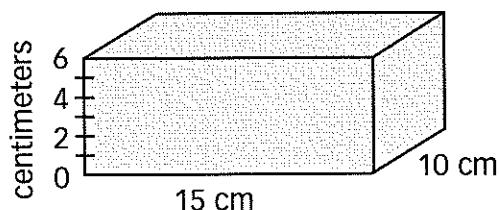
- 5 How can you make three different rectangular prisms using 18 one-centimeter cubes? Give the length, width, and height of each prism.

What are the factors of 18?



- 6 Jamie wants to use this container to make a block of ice that has a volume of 600 cubic centimeters. Draw a line that shows to what height she should fill the container with water.

Show your work.



What dimensions do you know?



Understand the Coordinate Plane

Name: _____

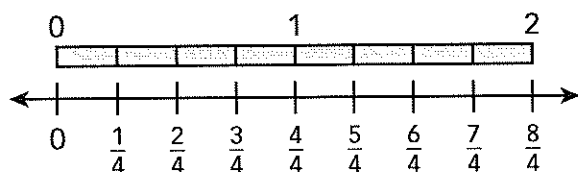
Prerequisite: How do number lines show the relationships among numbers?



Study the example showing how to label fractions on a number line. Then solve problems 1 and 2.

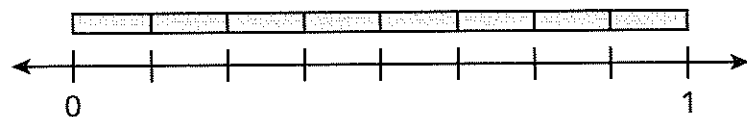
Example

The rectangles show equal parts between 0 and 1 and between 1 and 2 on the number line.



There are 4 equal parts between each pair of whole numbers. Each part shows $\frac{1}{4}$. You can count by fourths on the number line.

- 1** Look at the section between 0 and 1 on the number line.



- How many equal parts are there? _____
- What fraction does each part show? _____
- Label the number line with fractions.

- 2** Look at the number line in problem 1. What happens to the numbers as you move from left to right on the number line? From right to left?

Solve.

Use the number lines to solve problems 3–8.

- 3** Which is at a greater number, point *A* or point *B*?
Explain how you know.

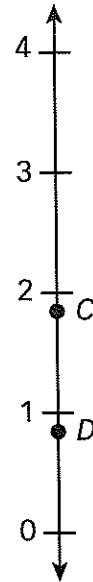
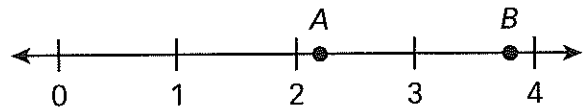
- 4** Which is farther from 0, point *A* or point *B*? _____

- 5** Which is at a lesser number, point *C* or point *D*?
Explain how you know.

- 6** Which is closer to 0, point *C* or point *D*? _____

- 7** Explain how a point's distance from 0 relates to the value of the number that it represents.

- 8** Describe how the two number lines are alike and different.



Name and Locate Points on a Coordinate Plane

Study the example problem that shows how to name ordered pairs on a coordinate plane. Then solve problems 1–9.

Example

Each point is named with an x -coordinate and a y -coordinate.

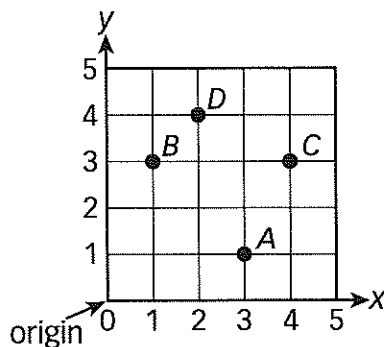
The ordered pair for the origin is $(0, 0)$.

The x -coordinate tells how many units from the origin the point is on the x -axis. It is the first number in the ordered pair.

The y -coordinate tells how many units from the origin the point is on the y -axis. It is the second number in the ordered pair.

The ordered pair for point A is $(3, 1)$.

$\downarrow \quad \downarrow$
 (x, y)



- 1 Point B is _____ unit(s) to the right of the origin and _____ unit(s) up from the origin.

The ordered pair for point B is (_____, _____).

- 2 Point C is _____ unit(s) to the right of the origin and _____ unit(s) up from the origin.

The ordered pair for point C is (_____, _____).

- 3 Write the ordered pair for point D. Explain how you got your answer.

- 4 Find the ordered pair $(2, 3)$ on the coordinate plane. Mark and label this point "E."

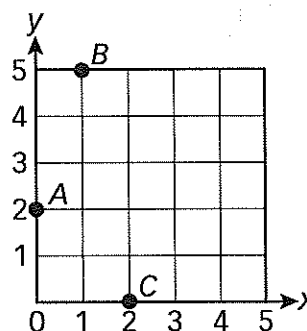
Vocabulary**coordinate plane**

a space formed by two perpendicular number lines called axes.

ordered pair a pair of numbers, or coordinates, (x, y) describing the location of a point on the coordinate plane.

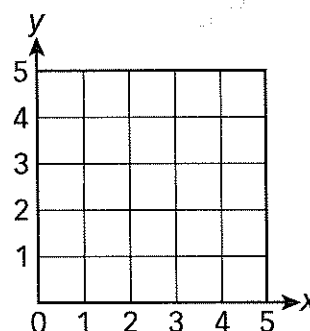
Solve.

Point	A	B	C	D	E	F
x				3	4	5
y				4	4	2



- 5 In the table, write the ordered pairs for points A, B, and C on the coordinate plane above.
- 6 Find and label points D, E, and F on the coordinate plane to represent the ordered pairs in the table.
- 7 Choose a point on the coordinate plane above. Describe its location compared to the origin.

Point	R	S	T
x	1	3	4
y	4	0	2



- 8 Find and label points R, S, and T on the coordinate plane to represent the ordered pairs in the table.
- 9 Describe the location of point T compared to point S on the coordinate plane.

Read and Write

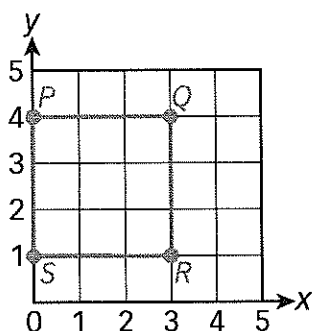
Study the example. Underline two parts that you think make it a particularly good answer and a helpful example.

Example

Find the ordered pair $(0, 4)$ on the coordinate plane. Label the point P . Use point P as a corner, then draw a square. Label the other corners with letters. List the coordinate pairs for all corners.

Explain how you solved the problem and how you know that you drew a square.

Show your work. Use pictures, words, or numbers to explain.



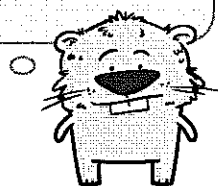
Coordinate pairs:
 $P(0, 4)$ $Q(3, 4)$ $R(3, 1)$ $S(0, 1)$

I started at the origin and moved 4 units up. I labeled it point $P(0, 4)$. Then I drew a vertical segment from point P 3 units down the y-axis. Then I drew a horizontal segment starting at point P . Since all sides of a square are equal, I made this segment 3 units long. Opposite sides of a square are parallel. So, I drew segments parallel to the horizontal and vertical segments, each 3 units away.

I labeled the points at the corners of the square P , Q , R , and S . Then I found the distance of each point from the origin and wrote the coordinate pairs. I know the shape is a square because it has 4 equal sides and 4 right angles. All of the sides are 3 units long, and the angles are formed by the perpendicular lines in the coordinate plane, and I know perpendicular lines form right angles.

Where does the example...

- label each point with a letter?
- connect points to draw a square?
- tell how you solved the problem?
- explain why the shape is a square?

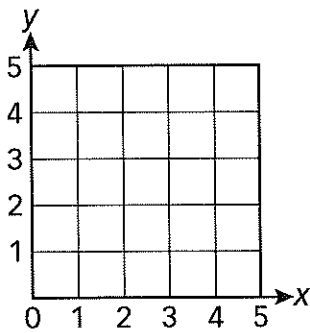


Solve the problem. Use what you learned from the example.

Find the ordered pair (1, 3) on the coordinate plane. Label it point A. Use point A as a corner, then draw a right triangle. Label the other corners with letters. List the coordinate pairs for all corners.

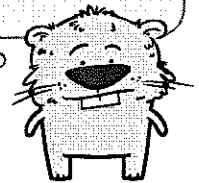
Explain how you solved the problem and how you know that you drew a right triangle.

Show your work. Use models, words, and numbers to explain your answer.



Did you ...

- label each point with a letter?
- connect points to draw a triangle?
- tell how you solved the problem?
- explain why the shape is a right triangle?



Graph Points in the Coordinate Plane

Name: _____

Identify Ordered Pairs

Study the example showing how to name a point on a coordinate plane. Then solve problems 1–3.

Example

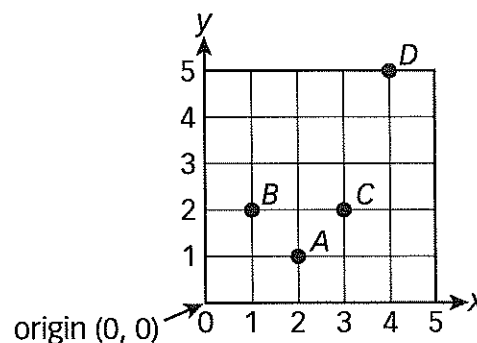
What is the ordered pair for point A?

The location of a point is named with an x -coordinate and a y -coordinate. The coordinates are written as an ordered pair, (x -coordinate, y -coordinate).

Start at the y -axis. Point A is 2 units to the right of the origin.

Start at the x -axis. Point A is 1 unit up from the origin.

The ordered pair for point A is (2, 1).



- 1 Starting at the y -axis, point B is _____ unit(s) to the right of the origin.

Starting at the x -axis, point B is _____ unit(s) up from the origin.

The ordered pair for point B is (_____, _____).

- 2 Write the ordered pairs.

point C (_____, _____) point D (_____, _____)

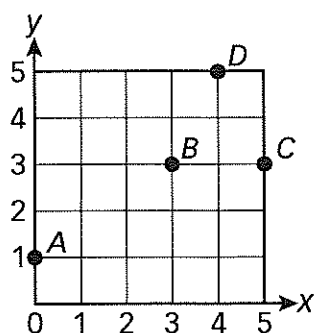
- 3 Explain how you found the ordered pair for point C or point D.

Vocabulary

x -coordinate a point's horizontal distance from the origin in units along the x -axis.

y -coordinate a point's vertical distance from the origin in units along the y -axis.

Use the coordinate plane to solve problems 4–6.



- 4 Complete the table to show the ordered pairs on the coordinate plane.

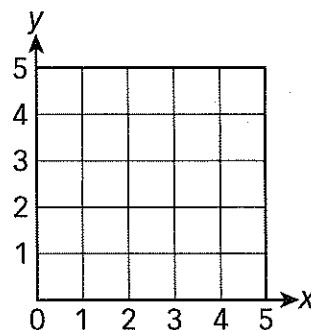
Point	A	B	C	D
x				
y				

- 5 Start at $(0, 0)$. Move 3 units right and 0 units up. Label this point E . Write the ordered pair for E .

E (_____, _____)

- 6 Find the ordered pair $(1, 5)$ on the coordinate plane above. Label it point F .

- 7 Choose 4 points and draw a rectangle on the coordinate plane to the right. Label the points with letters. Write the letters and ordered pairs you used to draw your rectangle.



Show Relationships on a Coordinate Plane

Study the example problem showing how to represent and use relationships between quantities. Then solve problems 1–7.

Example

Holly is playing a crane game at the arcade. With each quarter, she gets 2 tries to grab a stuffed animal with the crane. Holly wants to know how many tries she will get using different numbers of quarters.

Show the relationship between quarters and numbers of tries.

You can use equations. You can use a table.

$$1 \times 2 = 2 \text{ tries}$$

$$2 \times 2 = 4 \text{ tries}$$

$$3 \times 2 = 6 \text{ tries}$$

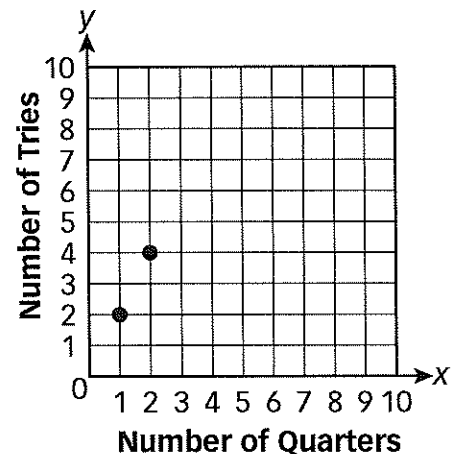
$$4 \times 2 = 8 \text{ tries}$$

$$5 \times 2 = 10 \text{ tries}$$

Number of Quarters	1	2	3	4	5
Number of Tries	2	4	6	8	10

- 1 Use the table in the example above. Finish plotting the ordered pairs from the table in the coordinate plane to the right.

- 2 What is the meaning of the ordered pair (3, 6)?



- 3 Describe a path from (1, 2) to (2, 4) and from (2, 4) to (3, 6). If you continue from point to point, what do you notice?

Solve.

Holly plays a different game at the arcade. It takes 2 tokens to play the game. She starts with 10 tokens.

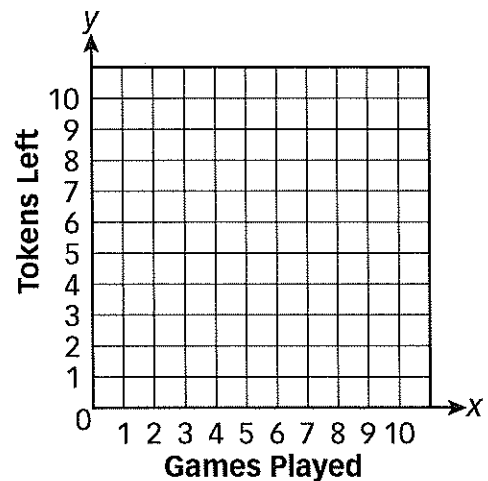
- 4 Write an equation that can be used to determine how many tokens she has left after playing the game each time. Fill in the blanks.

_____ tokens – (_____ tokens \times number of _____) = number of tokens left

- 5 Use the equation to complete the table.

Number of Games Played	1	2	3	4	5
Number of Tokens Left					

- 6 Plot the ordered pairs from the table on the coordinate plane. Choose a point on the coordinate plane and tell what it means.



- 7 Compare the table and coordinate plane from this problem with the problem on the previous page. How are they different?

Graph Measurement Problems on the Coordinate Plane

Study the example that shows how to solve a measurement problem with a shape on a coordinate plane. Then solve problems 1–6.

Example

The owner plans to add a new game room to the arcade. He draws a rectangle on the coordinate plane to represent the room. What is the area of the rectangle?

From point G to point A , go up 6 units.

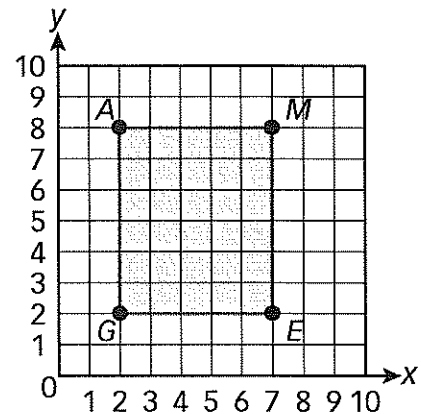
From point A to point M , go right 5 units.

Length of \overline{GA} is 6 units and length of \overline{AM} is 5 units.

Area of a rectangle = length \times width

Multiply the lengths of the sides to find the area of the rectangle: $6 \times 5 = 30$.

Area of rectangle $GAME = 30$ square units



- 1 Write ordered pairs for each point.

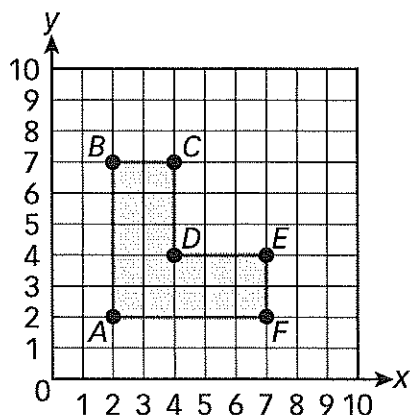
G (_____, _____) A (_____, _____) M (_____, _____) E (_____, _____)

- 2 Find the lengths of \overline{ME} and \overline{EG} . Explain how you can use the coordinates to find the distance between points M and E and between points E and G .

- 3 What is the perimeter of rectangle $GAME$? Tell how you found your answer.



Use the coordinate plane to solve problems 4 and 5.



- 4 Write the coordinates of points A, B, C, D, E, and F.

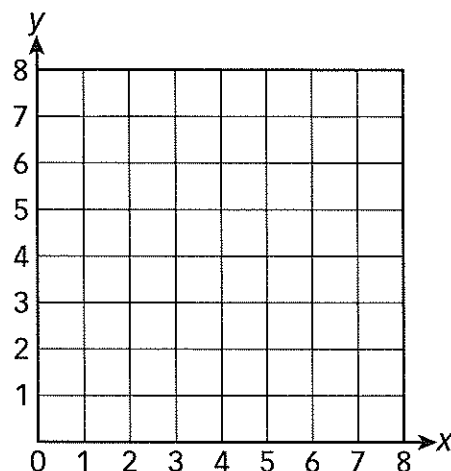
A (_____, _____) B (_____, _____)
 C (_____, _____) D (_____, _____)
 E (_____, _____) F (_____, _____)

- 5 What is the perimeter of shape ABCDEF?

Show your work.

Solution: _____

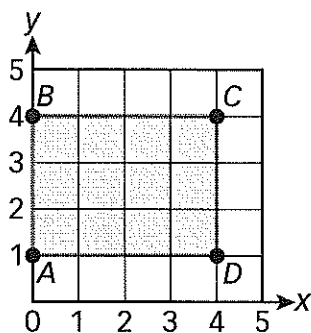
- 6 Draw a rectangle with an area of 12 square units in the coordinate plane to the right. Tell how you know the area is 12 square units.



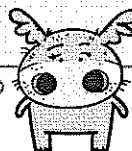
Graph Points in the Coordinate Plane

Solve the problems.

- 1 Look at rectangle $ABCD$. Tell whether each statement is *True* or *False*.



You can use $2(l + w)$ to find the perimeter of a rectangle.



- The coordinates of the vertices of the rectangle are $A(1, 0)$, $B(4, 0)$, $C(4, 4)$, and $D(1, 4)$.
- The coordinates of the vertices of the rectangle are $A(0, 1)$, $B(0, 4)$, $C(4, 4)$, and $D(4, 1)$.
- The area of rectangle $ABCD$ is 16 square units.
- The perimeter of rectangle $ABCD$ is 14 units.

☐ True ☐ False

☐ True ☐ False

☐ True ☐ False

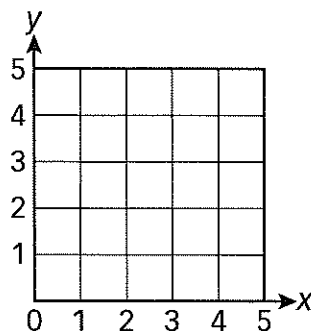
☐ True ☐ False

- 2 Plot the following points on the coordinate plane.

$K(2, 5)$

$L(0, 2)$

$M(4, 3)$



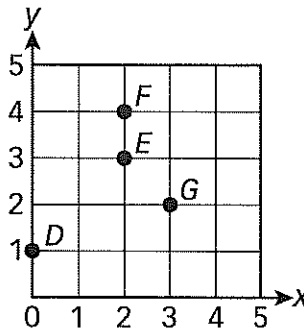
Which is the first number in an ordered pair? The x -coordinate? The y -coordinate?



Solve.

- 3 Use the coordinate plane to the right. Start at $(0, 1)$. Move 2 units right and 3 units up. Which point shows this location? Circle the letter of the correct answer.

- A Point D
- B Point E
- C Point F
- D Point G

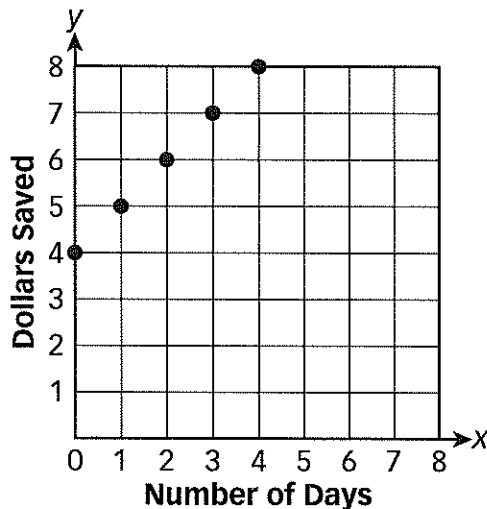


You can move right first or up first.



Maya chose **B** as the correct answer. How did Maya get that answer?

- 4 Look at the graph of Kent's savings. Kent starts with \$4. Each day he saves the money his dad gives him for helping around the house. How much money does Kent get from his dad each day? Tell how you know.



What pattern do you see on the graph?

