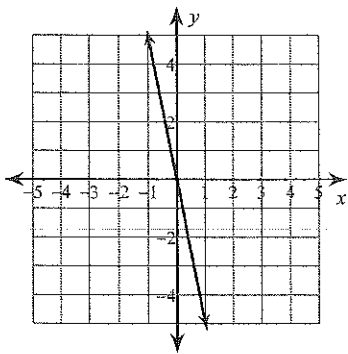


Recommended Assignment #2

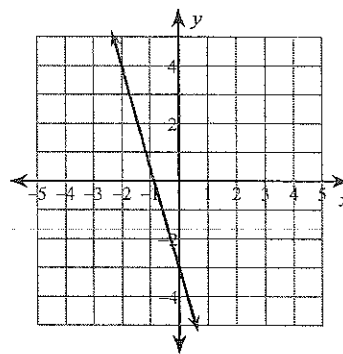
Hour _____

Linear, Proportional, Neither, or Both? Why?

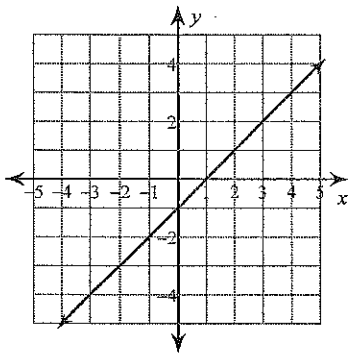
1)



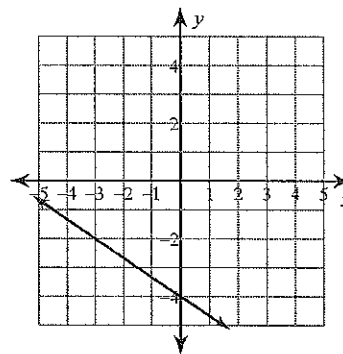
2)



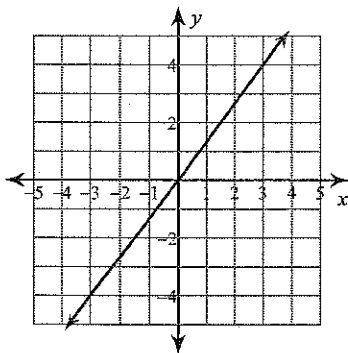
3)



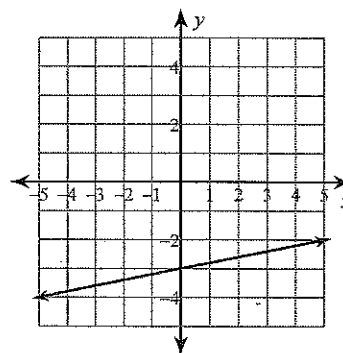
4)



5)



6)



$$7) y = x^2 - 2x + 4$$

$$8) y = 2x^2 + 4x + 3$$

$$9) y = x^2$$

$$10) y = -2x^2$$

$$11) y = -4x - 4$$

$$12) y = \frac{7}{5}x - 2$$

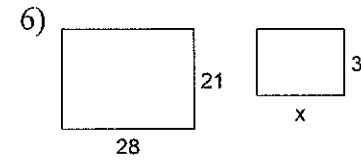
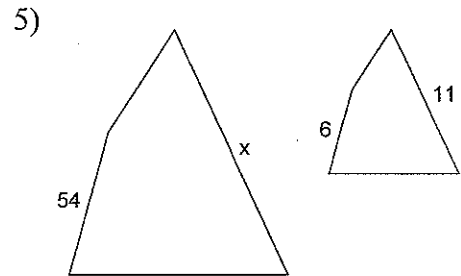
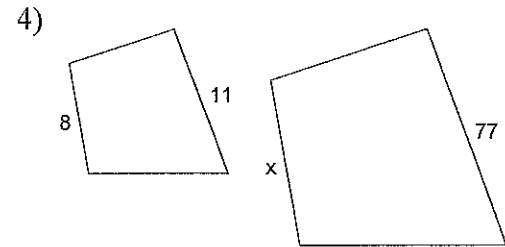
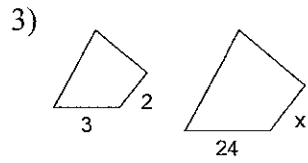
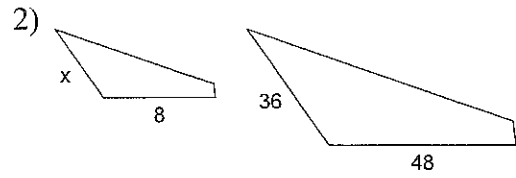
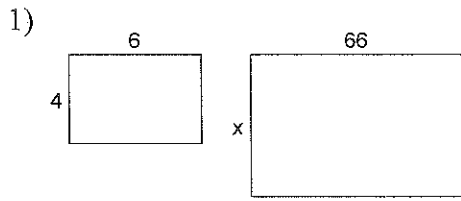
$$13) y = 5x$$

$$14) y = \frac{5}{3}x + 4$$

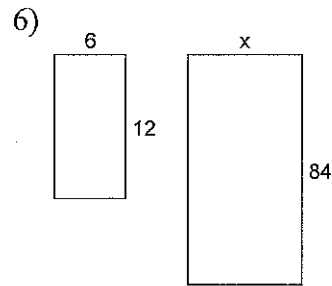
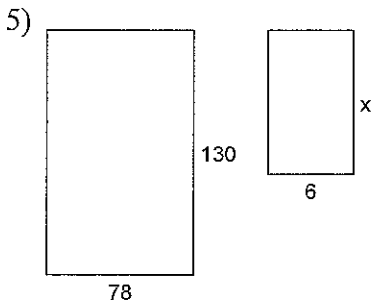
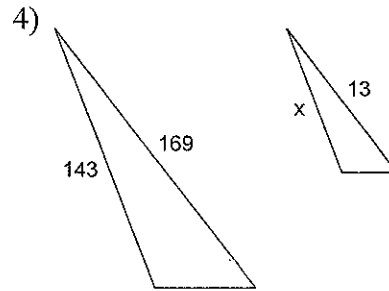
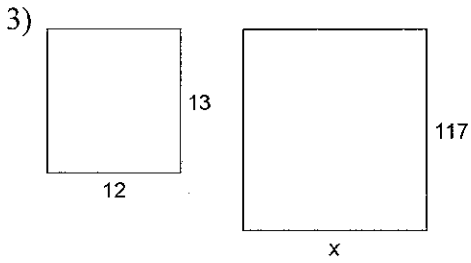
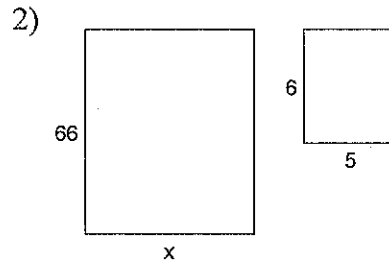
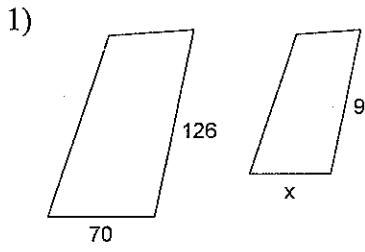
$$15) y = -\frac{3}{4}x$$

$$16) y = x + 1$$

Each shape is similar. Write and solve a proportion to find the unknown length.



Each pair of figures is similar. Find the scale factor. Find the missing side using the scale factor.



Evaluate each expression.

1) $8 - 3\frac{1}{8}$

2) $\frac{3}{2} + \frac{12}{7}$

3) $3\frac{1}{2} + \frac{2}{3}$

4) $\frac{8}{5} - \frac{1}{5}$

5) $3\frac{6}{7} - \frac{3}{4}$

6) $\frac{1}{6} + \frac{7}{8}$

Find each product.

7) $2 \cdot \frac{12}{7}$

8) $1\frac{3}{4} \cdot \frac{5}{3}$

Find each quotient.

9) $4\frac{1}{10} \div 10$

10) $\frac{6}{5} \div \frac{5}{4}$

Evaluate each expression.

11) $(-7) - 6$

12) $2 + (-6)$

13) $(-2) - (-7)$

14) $(-4) + 2$

15) $6 - (-2)$

16) $6 - 2$

17) $(-5) - (-2)$

18) $(-1) + 6$

19) $3 + (-2)$

20) $(-8) - (-7)$

Find each product.

21) -2×-7

22) 3×-6

23) -6×-8

24) -3×9

Find each quotient.

25) $60 \div 10$

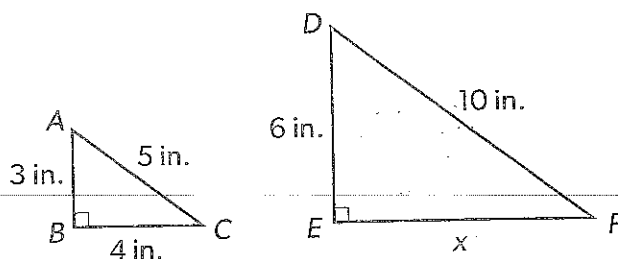
26) $32 \div -8$

27) $-70 \div 7$

28) $28 \div -4$

Using Proportions to Find Lengths of Sides

Think of a small square and a large square, or a small circle and a large circle — these figures have the same shape, but are different in size. If two figures have the same shape, their **corresponding angles** are equal in measure. Also, the **corresponding sides** of the two figures are proportional. The lengths of **proportional sides** form equal ratios.



$\triangle ABC$ and $\triangle DEF$ are the same shape. What is the length of \overline{EF} ?

- Write a proportion.

$$\frac{AB}{DE} = \frac{BC}{EF}$$

$$\frac{3}{6} = \frac{4}{x}$$

- Cross multiply to solve for x .

$$3 \cdot x = 6 \cdot 4$$

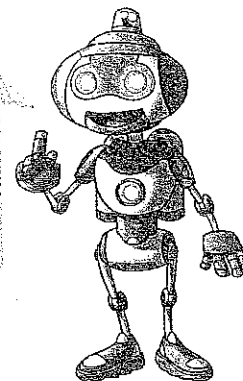
$$3x = 24$$

$$\frac{3x}{3} = \frac{24}{3}$$

$$x = 8$$

The length of \overline{EF} is 8 inches.

I get it! If $\triangle ABC$ and $\triangle DEF$ have the same shape, then I know that the corresponding angles have the same measure and that the corresponding sides are proportional!



What is the scale factor?

What to Know

corresponding angles
angles of two figures that are in the same relative positions

$\angle M$ and $\angle X$

$\angle N$ and $\angle Y$

$\angle O$ and $\angle Z$

corresponding sides
sides of two figures that are in the same relative positions

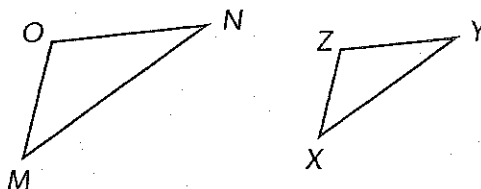
MN and XY

NO and YZ

OM and ZX

proportional sides
corresponding sides with lengths that form equal ratios

$$\frac{MN}{XY} = \frac{NO}{YZ} = \frac{OM}{ZX}$$

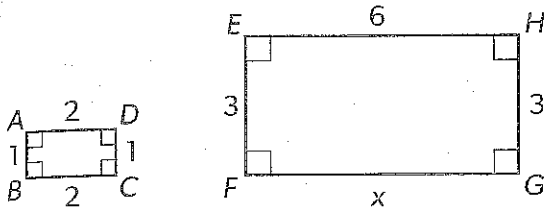


DISCUSS

How can you show that the three pairs of corresponding sides of two triangles are proportional sides?

You can use proportions to find missing side lengths.

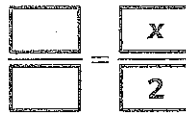
Rectangles $ABCD$ and $EFGH$ have the same shape. What is the length of \overline{FG} ?



Since the figures have the same shape, I could have written a proportion by using any two pairs of corresponding sides!

1 Write a proportion.

$$\frac{EF}{AB} = \frac{FG}{BC}$$

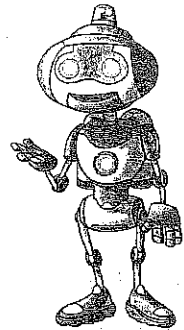


2 Cross multiply to solve for x .

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

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

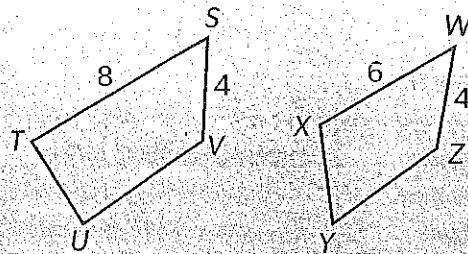
The length of \overline{FG} is _____.



What is the scale factor?

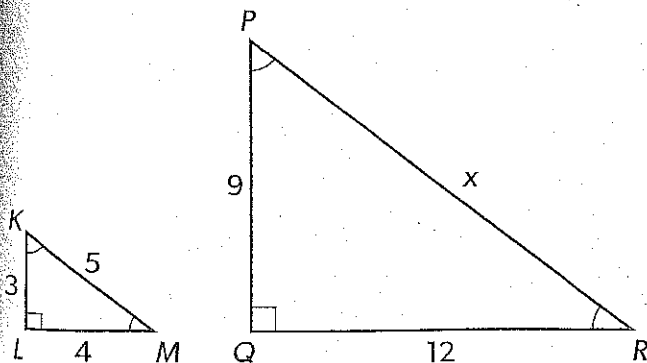
156

Alyssa says that quadrilaterals $STUV$ and $WXYZ$ have the same shape. Is she correct? Explain.



PRACTICE

Two triangles have the same shape. Write and solve a proportion to find the unknown side length.



$$\frac{QR}{LM} = \frac{PR}{KM}$$



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

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

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

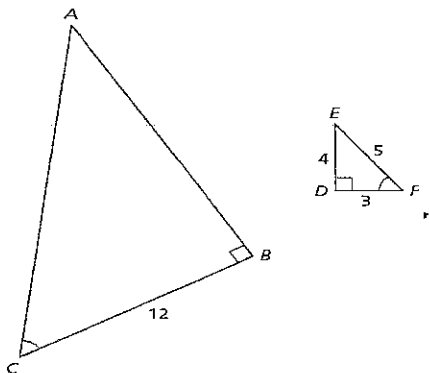
The length of \overline{PR} is _____.

What is the scale factor?

Scale Factor & Missing Side lengths & Ratios

Short Answer

1. These triangles are similar.



a. What are the lengths of sides AC and AB ?

side AC = _____ side AB = _____

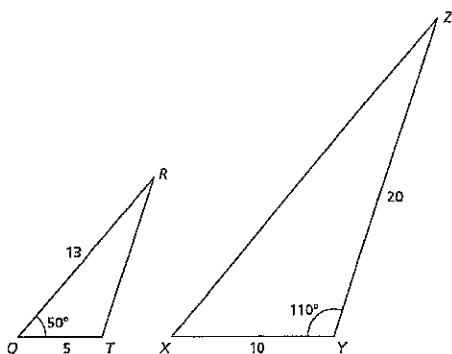
b. What is the scale factor from triangle DEF to triangle ABC ? _____

c. What is the scale factor from triangle ABC to triangle DEF ? _____

d. How many times greater is the perimeter of triangle ABC compared to the perimeter of triangle DEF ? * _____

e. How many times greater is the area of triangle ABC compared to the area of triangle DEF ? * _____

2. The two triangles are similar. Find the missing measurements.



a. side TR = _____

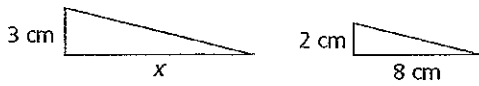
b. side XZ = _____

c. angle T = _____

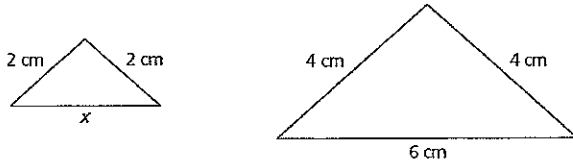
d. angle Z = _____

3. Find the missing values in each pair of similar figures below.

a.



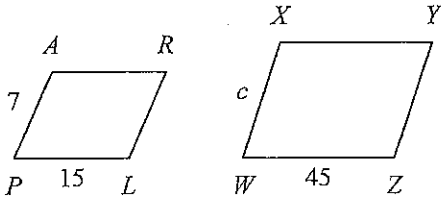
b.



Multiple Choice

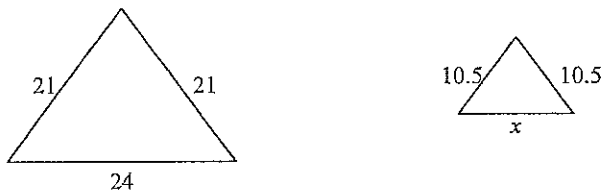
Identify the choice that best completes the statement or answers the question.

_____ 4. Parallelogram $PARL \sim$ parallelogram $WXYZ$. Find the value of c .



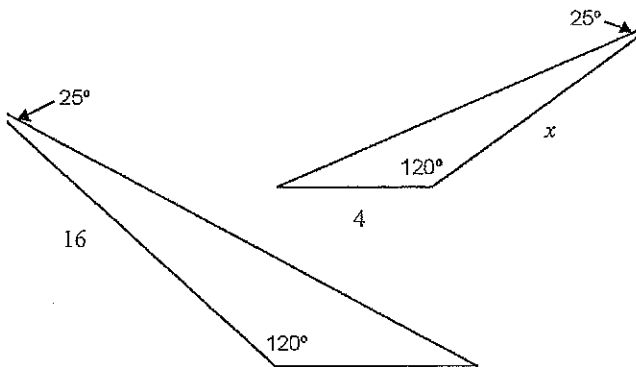
- a. 45 b. 21 c. 3 d. 22

_____ 5.



- a. 14 b. 12.5 c. 13.5 d. 12

_____ 6.



- a. $9\frac{1}{3}$ b. 14 c. $8\frac{2}{3}$ d. $10\frac{2}{3}$

LESSON

Reteach

5-5 Similar Figures (continued)

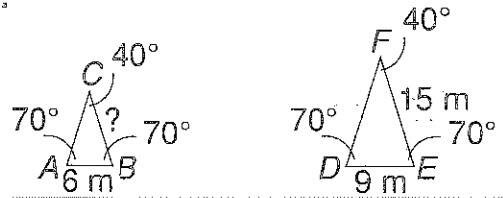
Use the scale factor to find a missing dimension.

scale factor = $\frac{6}{9}$ or $\frac{2}{3}$

Since \overline{EF} corresponds to \overline{BC} ,

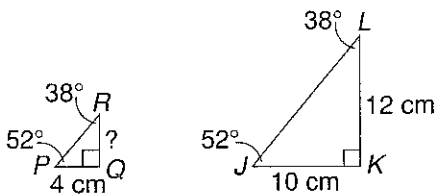
multiply EF by the scale factor to find BC .

$BC = \frac{2}{3} (15) = 10 \text{ m}$



Complete to find each missing dimension.

2.

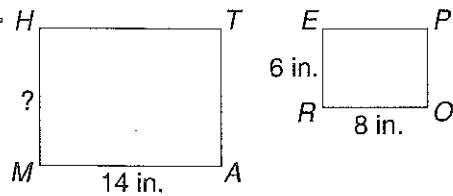


scale factor $\frac{PQ}{JK} = \frac{4}{10}$ or $\frac{2}{5}$

$RQ = \text{scale factor} \cdot (KL)$

$RQ = \frac{2}{5} \times 12$ or 4.8 cm

3.



scale factor = $\frac{MA}{RO} = \frac{14}{8}$ or $\frac{7}{4}$

$MH = \text{scale factor} \cdot (RE)$

$MH = \frac{7}{4} \times 6$ or 10.5 in.

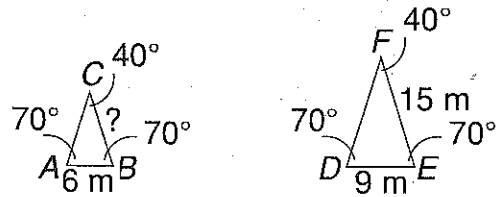
Use a proportion to find a missing dimension.
Corresponding sides are in proportion.

$$\frac{AB}{DE} = \frac{BC}{EF}$$

$$\frac{6}{9} = \frac{BC}{15}$$

$$9(BC) = 90$$

$$BC = 10 \text{ m}$$



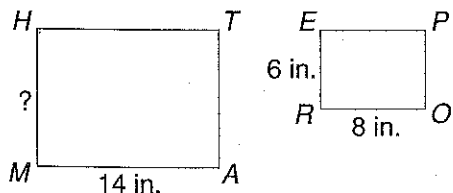
Complete to find the missing dimension.

4. $\frac{MH}{RE} = \frac{14}{8}$

$\frac{MH}{6} = \frac{14}{8}$

$8(MH) = 14 \cdot 6$

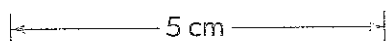
$MH = 10.5 \text{ in.}$



Scale Drawings

A scale drawing represents an actual object. The scale compares the actual size of an object and the size of its drawing.

What is the length of the actual skateboard?



Scale: 1 cm = 15 cm

- Find the length of the skateboard in the scale drawing. The length of the skateboard in the drawing is 5 cm.
- Write and solve a proportion.

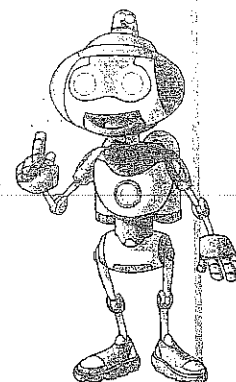
The scale is the ratio $\frac{\text{actual measure}}{\text{drawing measure}}$.

$$\frac{x}{5} = \frac{15}{1}$$

$$x = 15 \times 5$$

$$x = 75$$

The actual length of the skateboard is 75 centimeters.



I get it! I can use the scale to write one ratio of a proportion.



scale

how much the actual object has been reduced or enlarged in a scale drawing

scale drawing

a representation of an object that is proportional to the actual object



A scale drawing of an ant is 4 cm long. It has a scale of 1 cm = 0.5 cm. Explain how you would find the actual length of the ant.

LESSON LINK

PLUG IN

Finding equivalent ratios helps you to write proportions.

$$\frac{2}{3} = \frac{x}{15}$$

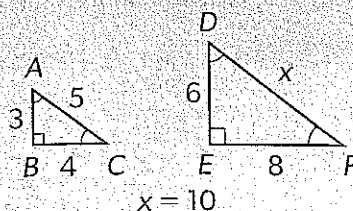
$$2 \cdot 15 = 3 \cdot x$$

$$30 = 3x$$

$$10 = x$$

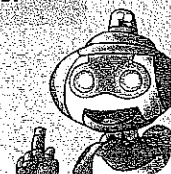
POWER UP

Use ratios of corresponding sides of figures that have the same shape to solve problems.



GO!

I see! I can use what I know about proportions and figures that have the same shape to solve problems about scale drawings.



WORK TOGETHER

You can sketch a scale drawing by finding the proportions of corresponding sides of figures that have the same shape.

- Write proportions to find the length and width of the scale drawing.
- The sketch shows the scale drawing of the room.

The actual dimensions of a room are 40 feet by 20 feet. Sketch a scale drawing of the room with a scale of 1 cm = 4 feet.

Scale drawing length:

$$\frac{1 \text{ cm}}{4 \text{ ft}} = \frac{l}{40}$$

$$1 \cdot 40 = 4 \cdot l$$

$$40 = 4l$$

$$10 = l$$

Scale drawing width:

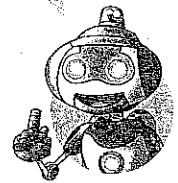
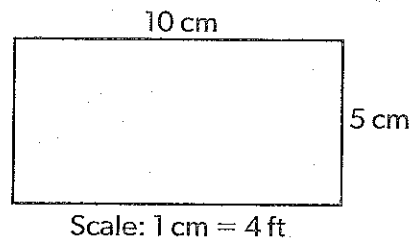
$$\frac{1 \text{ cm}}{4 \text{ ft}} = \frac{w}{20}$$

$$1 \cdot 20 = 4 \cdot w$$

$$20 = 4w$$

$$5 = w$$

I get it! I use the scale and the actual length and width to find the length and width of a scale drawing.



A You can find the actual measures of an object from a scale drawing.



Christopher makes a scale drawing of his favorite car. The car is 15 cm long and 8 cm high. If the scale is 1 cm = 0.75 ft, what are the measurements of the actual car?

- 1 List the measures of the length and height of the scale drawing.

Length of scale drawing: _____

Height of scale drawing: _____

- 2 Write proportions to find the actual length and height of the car.

Length of actual car:

$$\frac{\boxed{} \text{ cm}}{\boxed{} \text{ ft}} = \frac{\boxed{} \text{ cm}}{\boxed{} \text{ ft}}$$

$$\frac{}{} = \frac{}{}$$

$$ = $$

The length of the actual car is _____ ft.

Height of actual car:

$$\frac{\boxed{} \text{ cm}}{\boxed{} \text{ ft}} = \frac{\boxed{} \text{ cm}}{\boxed{} \text{ ft}}$$

$$\frac{}{} = \frac{}{}$$

$$ = $$

The height of the actual car is _____ ft.



Suppose the scale for the scale drawing is 1 cm = 1 ft. Without computing, what are the length and width of the actual car?

Write and solve a proportion to find the length of the actual object.

Scale: 1 in. = 3 ft

Length on a scale drawing: 6 in.

$$\frac{\boxed{} \text{ in.}}{\boxed{} \text{ ft}} = \frac{\boxed{} \text{ in.}}{\boxed{} \text{ ft}}$$

The actual length is _____ feet.

Scale: 5 cm = 15 km

Length on a scale drawing: 7 cm

$$\frac{\boxed{} \text{ cm}}{\boxed{} \text{ km}} = \frac{\boxed{} \text{ cm}}{\boxed{} \text{ km}}$$

The actual length is _____ kilometers.



A room has a length of 35 feet and a width of 25 feet. Make a scale drawing of the room with the scale 1 cm = 5 ft.

Length of scale drawing:

$$\frac{\boxed{1} \text{ cm}}{\boxed{5} \text{ ft}} = \frac{\boxed{l} \text{ cm}}{\boxed{} \text{ ft}}$$

Solve for l .

Width of scale drawing:

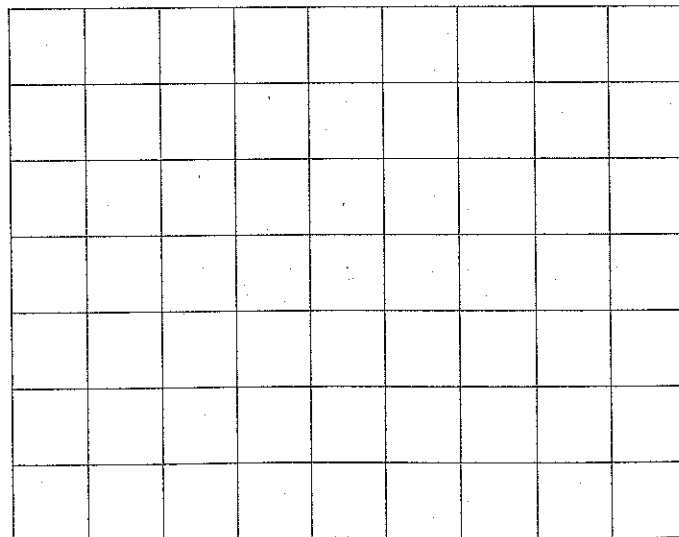
$$\frac{\boxed{} \text{ cm}}{\boxed{} \text{ ft}} = \frac{\boxed{} \text{ cm}}{\boxed{} \text{ ft}}$$

Solve for w .

REMEMBER
Write a proportion using the ratios of scale measure to actual measure.

The length of the scale drawing is _____ centimeters.

The width of the scale drawing is _____ centimeters.



solve.

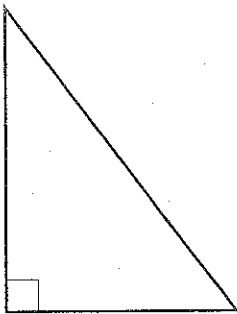
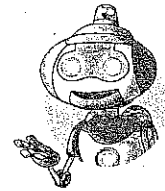
- 4 A road is 9 inches long on a road map. If the scale on the map is 1 inch = 6 miles, what is the actual length of the road?

_____ miles

I know! I can use the scale to write a ratio!

- 5 The scale drawing shows a logo design for a scoreboard. What will be the perimeter of the actual logo? Use a ruler to measure the drawing.

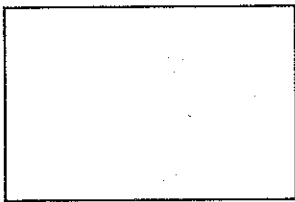
_____ cm



Scale: 1 cm = 20 cm

- 6 The scale drawing shows a rectangular garden. Mike plans to build a fence around it. How many feet of fencing does he need to go around the garden? Use a ruler to measure the drawing.

_____ feet



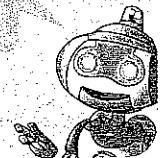
Scale: 1 in. = 10 ft

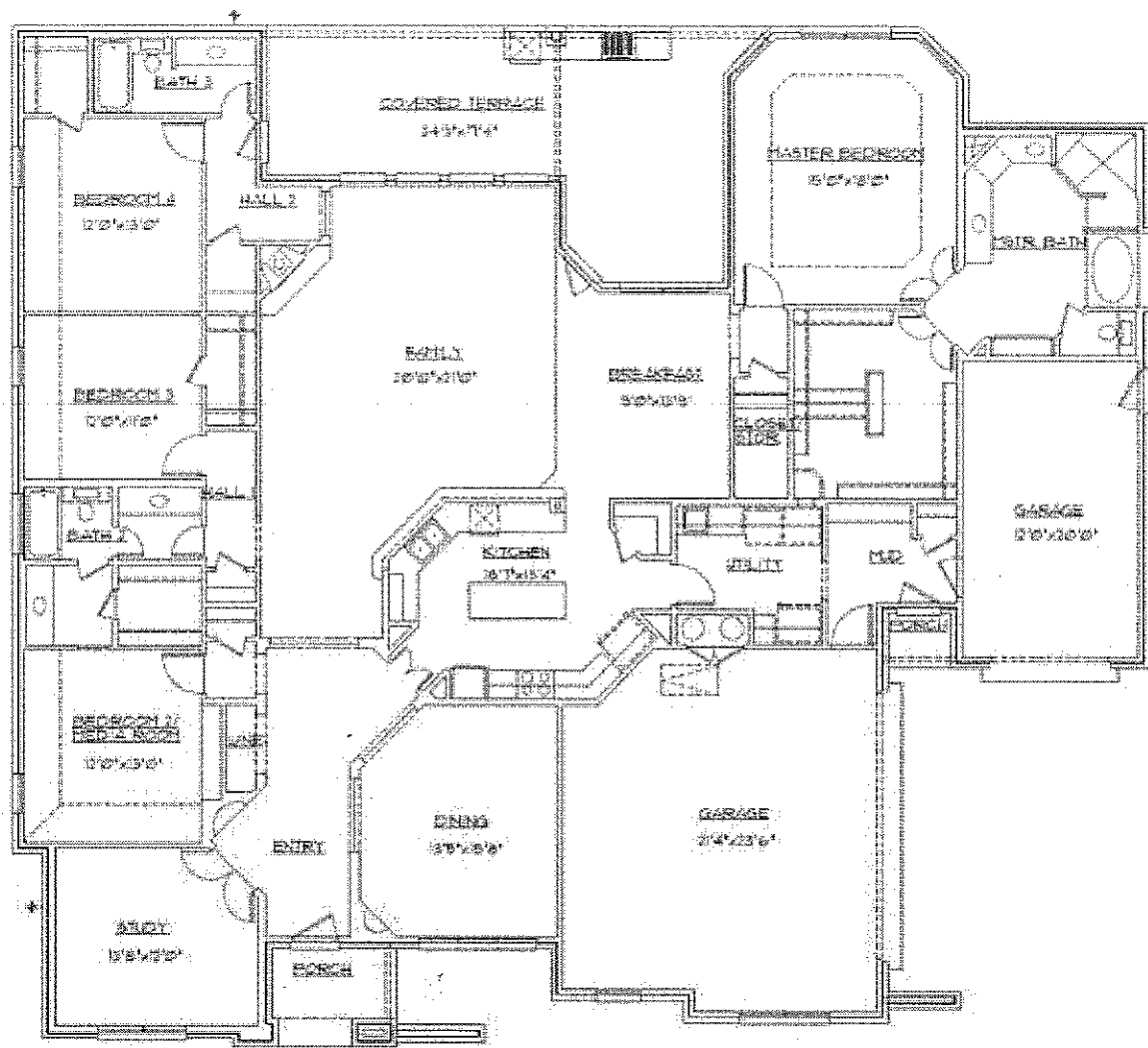
Writing a proportion can help me to understand a problem with scale drawings better.



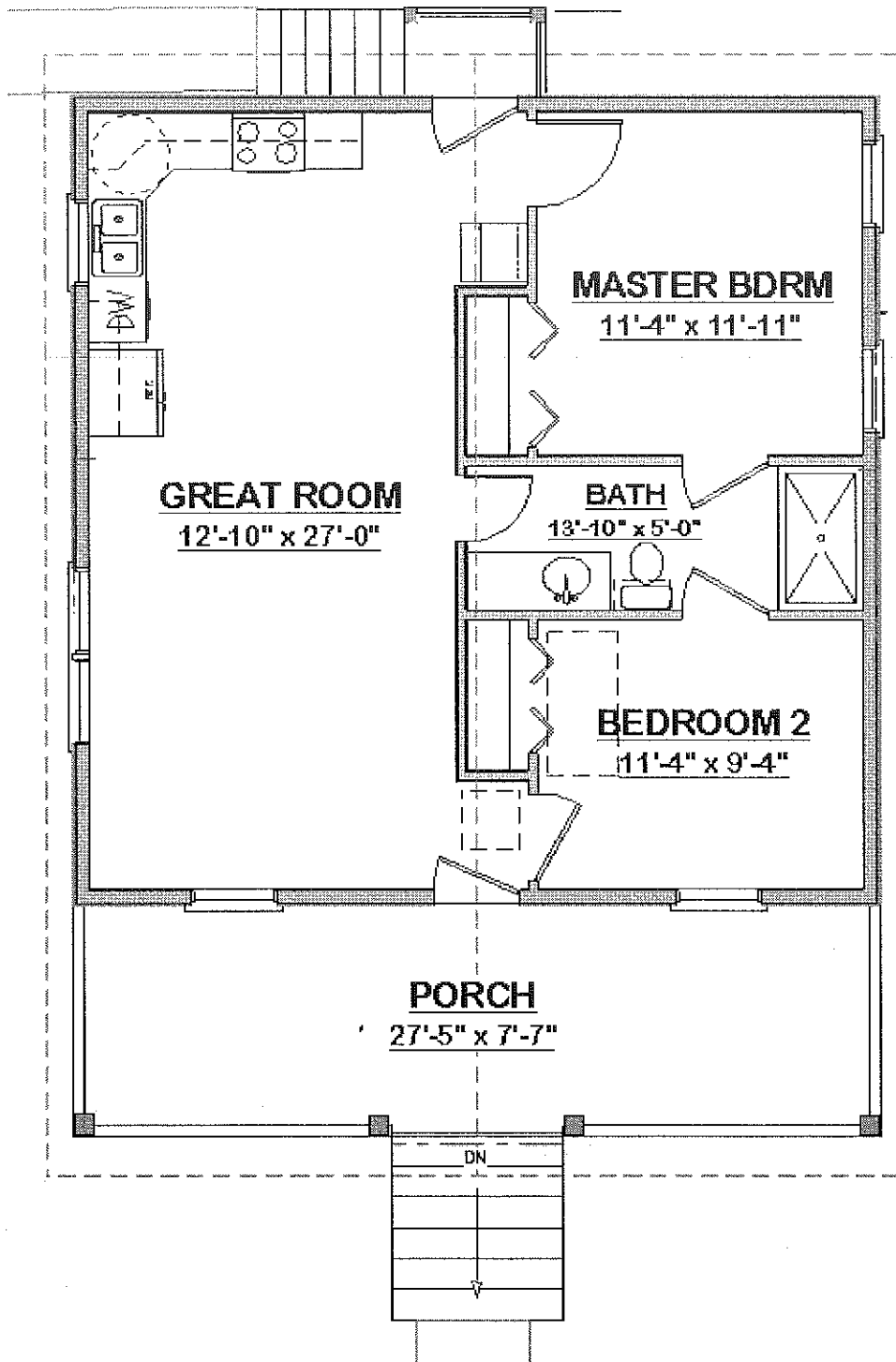
Make Sense of Problems

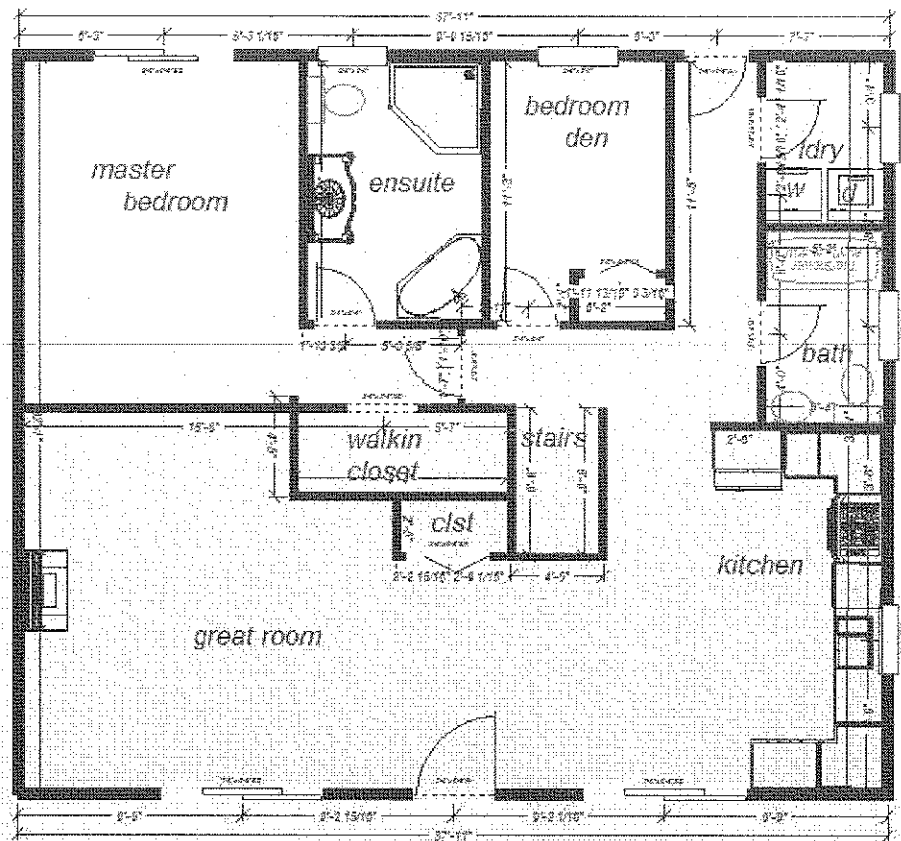
Sarah and Matt both make scale drawings of the classroom. Sarah makes the scale of her drawing 2 cm = 1 ft. Matt makes the scale of his drawing 3 cm = 1.5 ft. How will the sizes of their scale drawings compare? Explain.

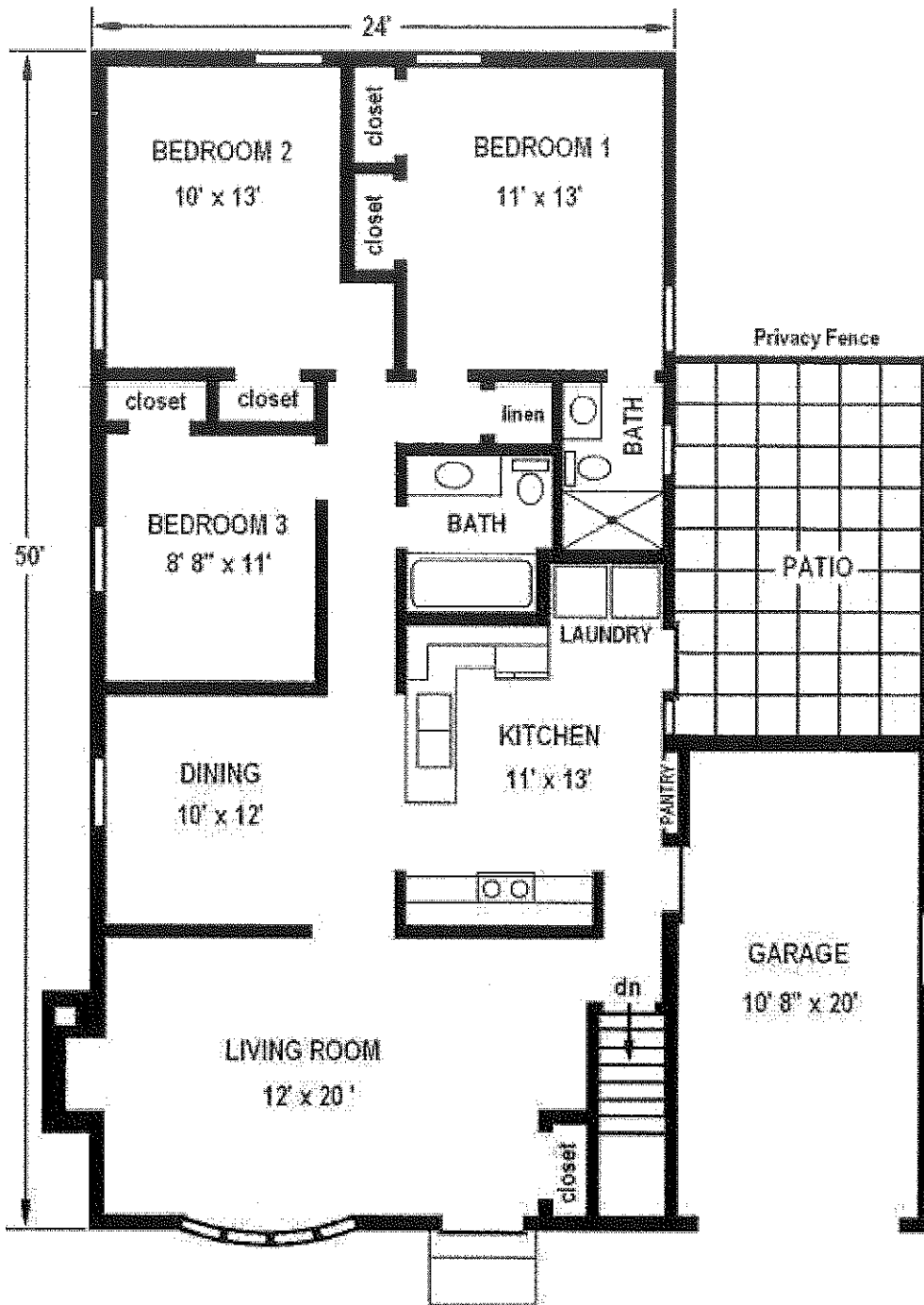


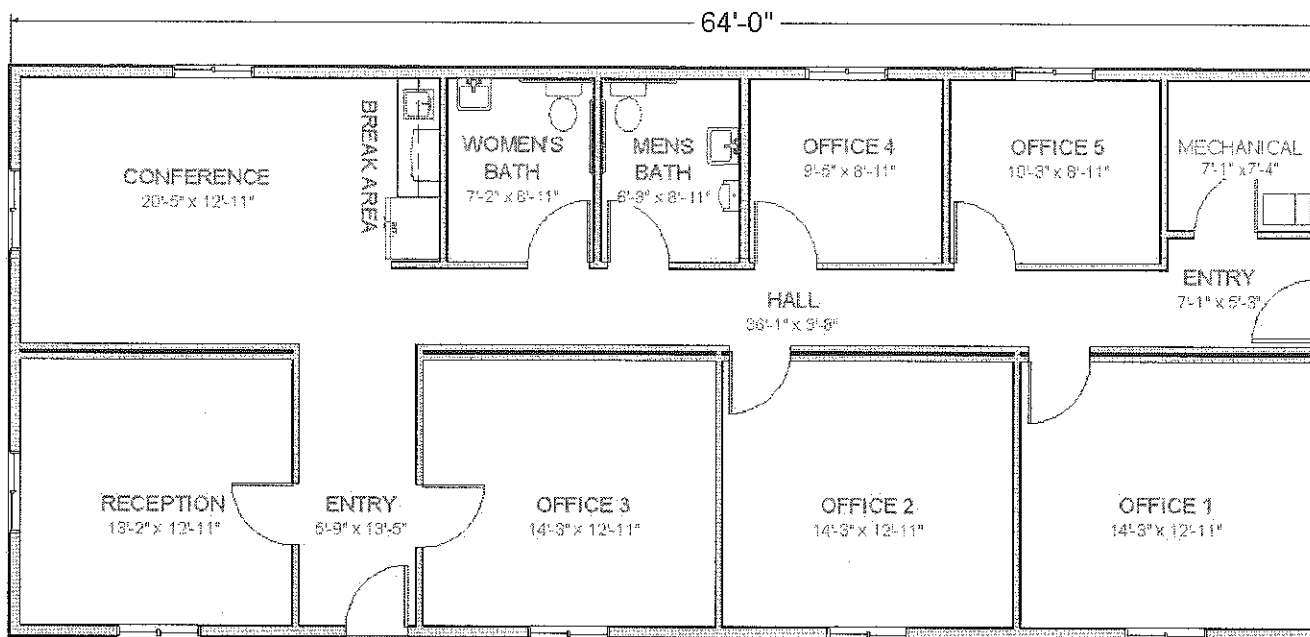


VAIL - FLOOR PLAN









Name _____

Computing with Fractions

Date _____ Period _____

Evaluate each expression.

1) $\frac{12}{7} - \frac{8}{5}$

2) $\frac{1}{2} + \frac{4}{3}$

3) $\frac{2}{3} - \frac{1}{2}$

4) $2\frac{1}{3} + 2\frac{4}{7}$

Find each product.

5) $3\frac{1}{5} \times 3\frac{1}{6}$

6) $\frac{4}{5} \times \frac{3}{2}$

7) $2\frac{1}{3} \times 2\frac{5}{6}$

Find each quotient.

8) $1\frac{2}{3} \div 5$

9) $\frac{7}{8} \div 4\frac{2}{7}$

10) $4\frac{5}{6} \div 2\frac{3}{7}$

QUILT A quilt measures $4\frac{2}{3}$ feet by 6 feet. What is the area of the quilt?

CHAIN Duane bought $68\frac{3}{4}$ inches of chain for an art project. How many 15-inch chains can he make from it?

REAL WORLD FRACTION PROBLEMS

Name: _____

Hr: _____

JUICE A cooler contains $13\frac{1}{2}$ cups of fruit juice. How many pints of fruit juice does the cooler contain?

READING Use the *draw a diagram* strategy to solve. Elvin read $\frac{3}{7}$ of the pages in his book. He has 56 pages left to read. How many pages has he read already?



RECIPE A recipe make $5\frac{1}{2}$ dozen cookies. Marquis needs to make $3\frac{3}{4}$ times this amount. How many dozens of cookies will he make?

AGE Mrs. Franks is $54\frac{2}{3}$ years old. Her grandson is $3\frac{1}{3}$ years old. How many times older is Mrs. Franks than her grandson?

Rem. Word Fraction
Problems

Name: _____

Hr: _____

Addition:

Positive: Money you have

Negative: Money you owe

$$14 + (-17) = -3$$

I have \$14. I owe someone \$17. I don't have enough to pay. I still owe \$3, which is a negative thing.

Subtraction:

Same as adding the opposite.

$$14 - (-17) = 31$$

$$14 + 17 = 31$$

First number + opposite of second number

Opposite of a positive: negative

Opposite of a negative: positive

#	Opposite
3	-3
-12	12

Addition:

Positive: Money you have

Negative: Money you owe

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-12	12

Multiplication:

Positive \times Positive = Positive

$$4 \times 3 = 12$$

Positive \times Negative = Negative

$$4 \times (-3) = -12$$

Negative \times Negative = Positive

$$(-4) \times (-3) = 12$$

Negative \times Positive = Negative

$$(-4) \times 3 = -12$$

Division:

Positive \div Positive = Positive

$$12 \div 4 = 3$$

Positive \div Negative = Negative

$$12 \div (-4) = -3$$

Negative \div Negative = Positive

$$(-12) \div (-4) = 3$$

Negative \div Positive = Negative

$$(-12) \div 4 = -3$$

Multiplication:

Positive \times Positive = Positive

$$4 \times 3 = 12$$

Positive \times Negative = Negative

$$4 \times (-3) = -12$$

Negative \times Negative = Positive

$$(-4) \times (-3) = 12$$

Negative \times Positive = Negative

$$(-4) \times 3 = -12$$

Division:

Positive \div Positive = Positive

$$12 \div 4 = 3$$

Positive \div Negative = Negative

$$12 \div (-4) = -3$$

Negative \div Negative = Positive

$$(-12) \div (-4) = 3$$

Negative \div Positive = Negative

$$(-12) \div 4 = -3$$

Lesson 1 Reteach

Integers and Graphing

An **integer** is a number from the set $\{\dots, -4, -3, -2, -1, 0, 1, 2, 3, 4, \dots\}$. Integers greater than 0 are **positive integers**. Integers less than 0 are **negative integers**. Always use the negative sign ($-$) to indicate a negative number.

Example 1

Write an integer for each situation.

a. 16 feet under the ground

Because it is *under* the ground, the integer is -16 .

b. a gain of 5 hours

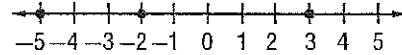
Because it is a *gain*, the integer is 5.

To graph an integer on a number line, draw a point on the number line at its location. A set of integers is written using braces, such as $\{-5, -2, 3\}$.

Example 2

Graph the set of integers $\{-5, -2, 3\}$ on a number line.

Draw a number line. Draw a dot at the location of -5 , of -2 , and of 3.



Exercises

Write an integer for each situation.

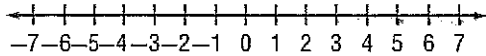
1. a profit of \$60

2. a decrease of 10°

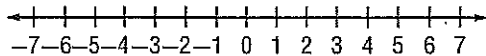
3. a loss of 3 yards

4. a gain of 12 ounces

5. Graph the set $\{-6, 5, -4\}$ on a number line.



6. Graph the set $\{-5, 1, -3\}$ on a number line.



Lesson 1 Skills Practice

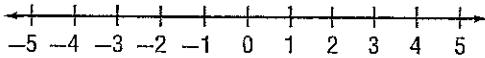
Integers and Graphing

Write an integer for each situation.

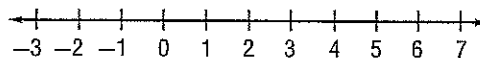
- | | |
|-------------------------------|------------------------------|
| 1. a \$5 discount | 2. a growth of 2 centimeters |
| 3. rise of 1,000 feet | 4. loss of 6 pounds |
| 5. price drop of \$12 | 6. pay raise of \$1 per hour |
| 7. loss of \$5 | 8. decrease of 11° |
| 9. increase of 13 centimeters | 10. gain of 6 yards |

Graph each set of integers on a number line.

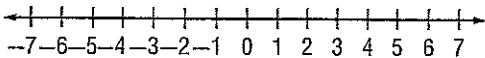
11. $\{-2, 0, 4\}$



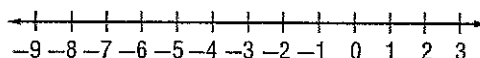
12. $\{7, -3, -1\}$



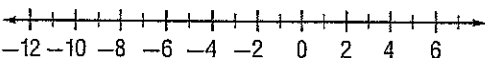
13. $\{5, -5, -6, 2\}$



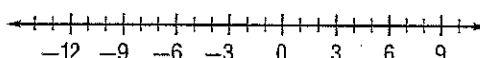
14. $\{-8, -7, -4, 1\}$



15. $\{-11, -7, 3, 6\}$



16. $\{-10, -8, -14, 8\}$



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Find each sum.

11. $10 + (-5) =$ _____

12. $(-3) + (-9) =$ _____

13. $8 + (-11) =$ _____

14. $(-13) + 15 =$ _____

Find each difference.

15. $17 - 12 =$ _____

16. $3 - 7 =$ _____

17. $-14 - 7 =$ _____

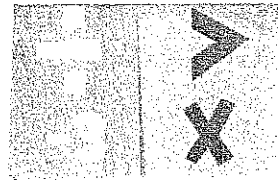
18. $5 - (-4) =$ _____

19. $-13 - (-3) =$ _____

20. $15 - 25 =$ _____

Solve each problem.

21. One February day in Parshall, North Dakota, the high temperature is 10°F . If the temperature drops 12°F by midnight, what will be the temperature at midnight?
- _____
22. On a game show, negative scores are possible. A contestant answered the first question incorrectly and lost 500 points. The same contestant answered the next question correctly and earned 100 points. What was the contestant's score after the first two questions?
- _____
23. In four downs, a football team gained 7 yards, lost 10 yards, gained 8 yards, and lost 3 yards. What was the total gain or loss?
- _____
24. A proton has a positive electrical charge (+1). An electron has a negative electrical charge (-1). If an atom is electrically neutral, its total charge will be 0. If a helium atom consists of exactly two protons and two electrons, is it electrically neutral? Explain.
- _____



Independent Practice

1. What is the distributive property of addition over multiplication for integers?

2. How do you determine which sign to give the quotient of two integers?

Find each product.

3. $5 \times 6 =$ _____

4. $(-2) \times (-1) =$ _____

5. $(3)(-9) =$ _____

6. $(-4)(2) =$ _____

7. $(-12) \times (-4) =$ _____

8. $75 \times (-10) =$ _____

Find each quotient.

9. $\frac{21}{7} =$ _____

10. $\frac{-12}{3} =$ _____

11. $(-121) \div (-11) =$ _____

12. $28 \div (-4) =$ _____

13. $-30 \div 2 =$ _____

14. $(-108) \div (-12) =$ _____

Solve the problem.

15. Maggie has overdraft privileges at her bank. She has \$0 in her account when she writes 5 checks for \$20 each. What is the new balance in her account?

Ask Yourself
If the signs of the integers are different, will the answer be positive or negative?

Find each product or quotient.

16. $(-15)(42) =$ _____

17. $-320 \div (-2) =$ _____

18. $-12 \times (-13) =$ _____

19. $-\frac{54}{3} =$ _____

20. $(-2)(5)(4) =$ _____

21. $(-1)(-1)(-1) =$ _____

Use the distributive property to multiply.

22. $2(z - 3) =$ _____

23. $-3(4 + x) =$ _____

24. $(k + 4)(-2) =$ _____

25. $-5(2k - 7) =$ _____

Solve each problem.26. How can $-(m - n)$ be written as a sum?
_____27. A submarine begins at the water's surface. It then descends 250 feet below sea level before stopping. It then descends 250 feet again, and 250 feet a third time. Write an integer to represent the submarine's depth after the third descent.
_____28. The total change in the outside temperature from 6:00 P.M. to 10 P.M. is represented as -12°F . If the temperature changes by the same number of degrees each hour, how would you represent the change in temperature each hour?
_____29. Each time a game-show contestant answers a question incorrectly, 10 points are deducted from his or her score. Negative scores are possible. If a contestant answers the first 4 questions on the show incorrectly, what will his or her score be?
