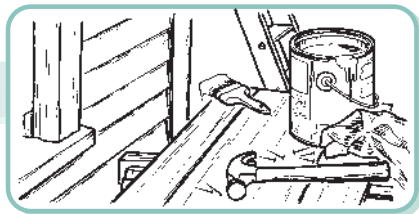
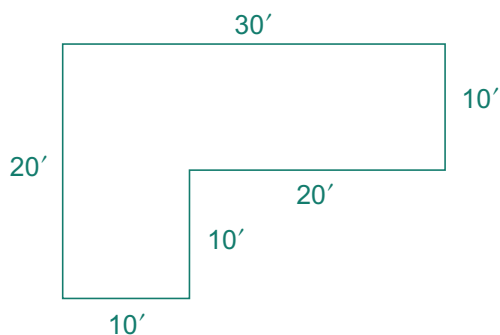


Lesson 12

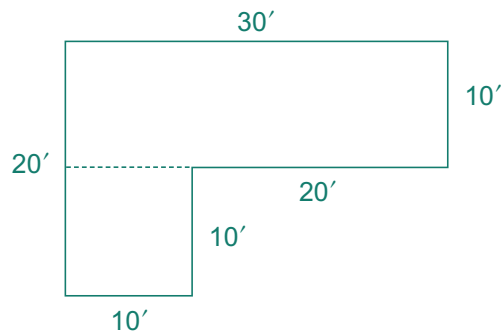
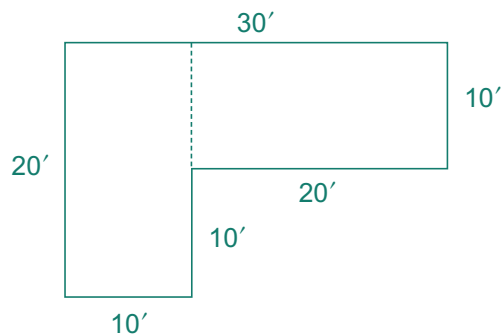


Finding the Areas of Irregular Shapes

What is the area covered by this irregular figure? For this kind of problem, divide the irregular area into several regular shapes. Find each area separately, then add the areas together.



This figure could be divided several different ways.



The left rectangle is $20' \times 10'$.

The right rectangle is $20' \times 10'$.

$$A = lw$$

$$A = 20 \times 10$$

$$A = 200 \text{ ft}^2$$

The second rectangle has the same dimensions and the same area as the first one, so the total area is $200 \times 2 = 400 \text{ ft}^2$.

The top rectangle is $30' \times 10'$.

The bottom rectangle is $10' \times 10'$.

$$A = lw$$

$$A = 30 \times 10$$

$$A = 300 \text{ ft}^2$$

$$A = lw$$

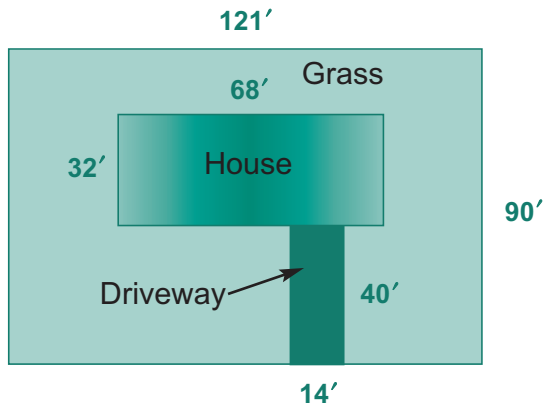
$$A = 10 \times 10$$

$$A = 100 \text{ ft}^2$$

Add the totals of the two rectangles.

$$300 + 100 = 400 \text{ ft}^2$$

Lesson 12



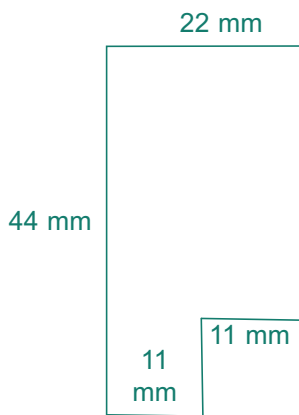
Macorkel Construction built a house with a driveway on a quarter-acre lot, and seeded the rest with grass. How many square feet had to be seeded?

For this problem, find the area of the house plus the driveway. Then subtract that amount from the area of the lot.

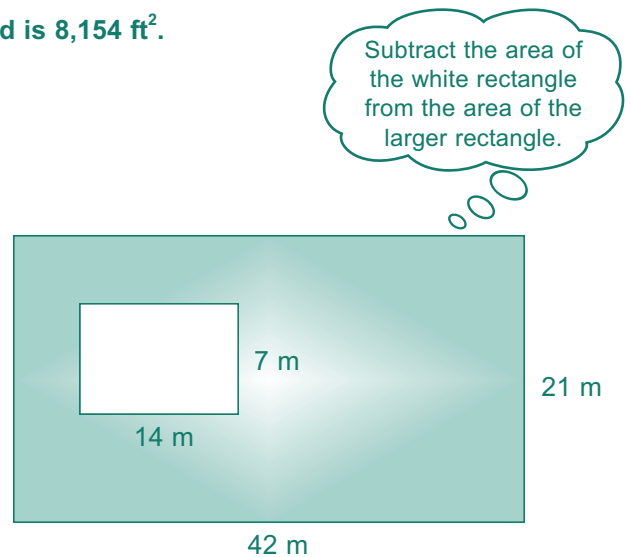
Area of House	Area of Driveway	Area of Irregular part	Area of Lot	Seeded Part
$A = lw$	$A = lw$	2,176	$A = lw$	10,890
$A = 68 \times 32$	$A = 40 \times 14$	$+ \begin{array}{r} 560 \\ \hline 2,736 \end{array}$	$A = 121 \times 90$	$\begin{array}{r} 10,890 \\ - 2,736 \\ \hline 8,154 \end{array}$
$A = 2,176$	$A = 560$		$A = 10,890$	

The area to be seeded is 8,154 ft².

Find the areas. Show your work.



1. a. _____



b. area of shaded part _____



We Remember

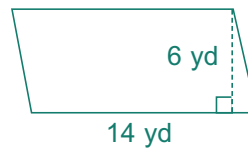
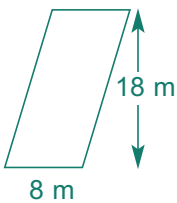
Check using digit sums. Put an x after each wrong product.

2. a.
$$\begin{array}{r} 314 \bigcirc \\ \times 57 \bigcirc \square \\ \hline 2198 \\ 16100 \\ \hline 18,298 \square \end{array}$$

b.
$$\begin{array}{r} 732 \bigcirc \\ \times 167 \bigcirc \square \\ \hline 5124 \\ 43920 \\ 73200 \\ \hline 122,244 \square \end{array}$$

☆ If a product in either problem above is wrong, check each partial product and x the wrong ones.

Use the formula to find the area of each parallelogram.



3. a. _____

b. _____

Combine integers.

4. a. $-15 + (-6) =$ _____

b. $-8 + (-9) =$ _____

c. $9 + (-8) =$ _____

5. a. $6 + 10 =$ _____

b. $-10 + 19 =$ _____

c. $-9 + 11 =$ _____

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6. The formula for finding the area of a rectangle is _____.

7. The formula for finding the area of a trapezoid is _____.

8. The formula for finding the circumference of a circle is _____.

9. a. A quadrilateral has _____ sides.

b. $1 \text{ yard}^3 =$ _____ feet^3

10. a. The fraction we use for π is _____.


b. The decimal we use for π is _____.

Lesson 12

Complete the tally chart.

After completing the rough plumbing on an addition that included a kitchen and a half bath, Melvin listed the following plumbing fittings he had used. Tally them for him.

3" 90	$\frac{1}{2}$ " 90	$1\frac{1}{2}$ " 90
3" coupling	3" 90	$1\frac{1}{2}$ " 90
3" 90	3" bowl flange	$1\frac{1}{2}$ " 90
3" × 3" tee	$1\frac{1}{2}$ " 90	$1\frac{1}{2}$ " 45
3" 90	$1\frac{1}{2}$ " 90	$1\frac{1}{2}$ " 45
3" 90	$\frac{1}{2}$ " 90	3" × $1\frac{1}{2}$ " tee
$\frac{1}{2}$ " 90	$\frac{1}{2}$ " 90	3" 90
$\frac{1}{2}$ " 90	$1\frac{1}{2}$ " tee	$1\frac{1}{2}$ " 90
$\frac{1}{2}$ " tee	$1\frac{1}{2}$ " 45	$\frac{1}{2}$ " 90
3" × 3" tee	$1\frac{1}{2}$ " 90	$\frac{1}{2}$ " 90
3" × $1\frac{1}{2}$ " tee	$1\frac{1}{2}$ " tee	$\frac{1}{2}$ " 90
$\frac{1}{2}$ " tee	$\frac{1}{2}$ " tee	$\frac{1}{2}$ " tee
$\frac{1}{2}$ " 90	$\frac{1}{2}$ " 90	$\frac{1}{2}$ " tee



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A plumbing tee is sized by two numbers. The first number is the size of the run pipe that goes in one end of the tee and out the other. The second number is the size of the tap that comes off the side. Therefore, a 3" × 3" tee has a 3" tap coming off the side of a 3" run and a 3" × $1\frac{1}{2}$ " tee has a $1\frac{1}{2}$ " tap coming off a 3" run.

11.

Type of fitting	Tally	Total
3" 90		
3" coupling		
3" × 3" tee		
$\frac{1}{2}$ " 90		
$\frac{1}{2}$ " tee		
3" × $1\frac{1}{2}$ " tee		
3" bowl flange		
$1\frac{1}{2}$ " 90		
$1\frac{1}{2}$ " tee		
$1\frac{1}{2}$ " 45		

Solve, using proportions if needed. Write any remainder as a fraction in simplest form.

12. a. 4 cups = _____ fluid ounces

b. 9 tablespoons = _____ fluid ounces

— \div \times Skill Builders —

Write the remainder with R .

Round to the nearest hundredth.

13. a. $49 \overline{)3,017}$

b. $1.7 \overline{)6}$

$$\begin{array}{r} 595 \\ \times 193 \\ \hline \end{array}$$

Change the mixed number percents to decimal percents, then to decimals.

14. a. $6\frac{3}{10}\% = \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$

b. $12\frac{3}{5}\% = \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$

Solve.

15. What is $6\frac{3}{10}\%$ of 240? $\underline{\hspace{2cm}}$

Solve and check. Follow the example shown.

16. a. $\frac{x}{11} = 2$

b.

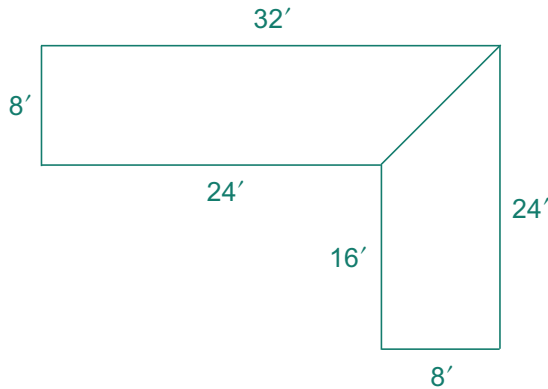
c. $\frac{x}{4} = 8$

d.

Lessons 12, 13



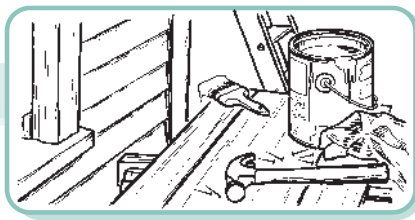
17. After Macorkel Construction replaced the roof on a wrap-around porch, the customer decided to have them replace the floor boards as well. What is the square footage of the porch floor plan? _____



18. Melvin needed to prime and paint the floor. Primer covers 300 square feet per gallon and paint covers 400 square feet per gallon. What quantities of primer and paint should he buy? Round up to the next gallon. _____ primer
_____ paint

Lesson

13



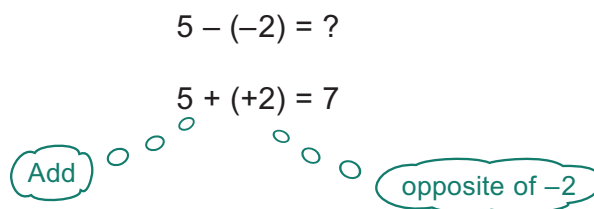
Subtracting Negative Integers

In your early school years, you memorized the subtraction facts such as $8 - 2 = 6$ and $9 - 7 = 2$. However, you subtracted only positive, not negative, numbers. How can you subtract a negative number in a problem such as $5 - (-2) = ?$ The solution lies in thinking about subtraction in a different way. Look at the following two problems:

$$7 - 3 = 4$$

$$7 + (-3) = 4$$

Both problems give us the same answer. This shows us that instead of thinking *subtract* when we see a minus sign, we can think *add the opposite*.



In this way we can find the difference between any positive and negative numbers:

Subtraction: $8 - (+3) = ?$ Add the opposite: $8 + (-3) = \underline{5}$	Subtraction: $-8 - (+3) = ?$ Add the opposite: $-8 + (-3) = \underline{-11}$
Subtraction: $8 - (-3) = ?$ Add the opposite: $8 + (+3) = \underline{11}$	Subtraction: $-8 - (-3) = ?$ Add the opposite: $-8 + (+3) = \underline{-5}$

Change each subtraction to adding the opposite. Then combine integers as usual. The first one shows you how.

1. a. $10 - (+7)$

$\underline{10 + (-7) = 3}$

b. $13 - (-9)$

c. $-7 - (+6)$

2. a. $-2 - (-15)$

b. $9 - (+6)$

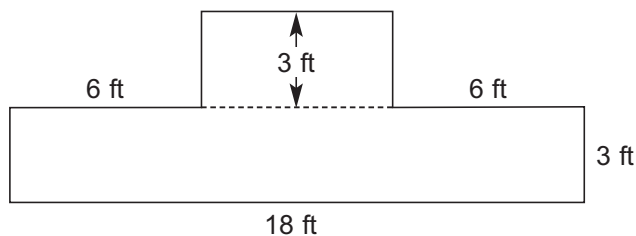
c. $7 - (-11)$



We Remember

Find the area of the irregular shape.

3. _____



Lesson 13

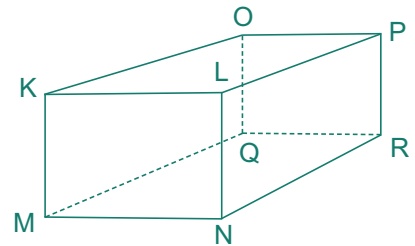
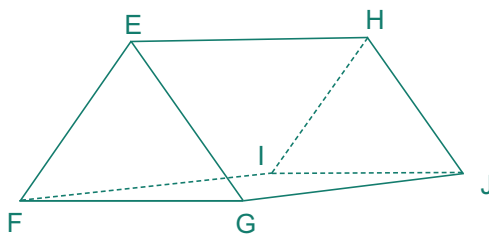


4. On one remodeling project, Macorkel Construction worked $182\frac{1}{2}$ hours. Their labor rate is \$42.00 per hour. What was the cost of their labor? Check your answer using digit sums.

Tell whether each part is a *face*, an *edge*, or a *vertex*.

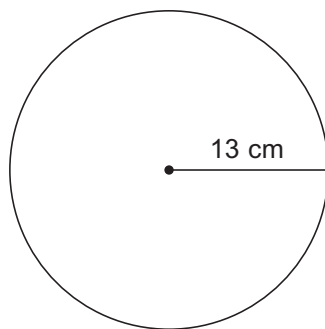
5. a. QR _____ b. M _____

6. a. KLPO _____ b. FGJI _____



Use the formula to find the area of the circle. Use 3.14 for π .

7. _____



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8. The abbreviation for greatest common factor is _____.

9. a. A half circle has _____°.

- b. A circle has _____°.

10. a. The decimal for $\frac{3}{4}$ is _____.

- b. The decimal for $\frac{1}{4}$ is _____.

11. a. 1 cup = _____ fluid ounces

- b. 1 fluid ounce = _____ tablespoons

12. a. $\sqrt{169} =$ _____ b. $\sqrt{121} =$ _____

- c. $12^2 =$ _____ d. $14^2 =$ _____

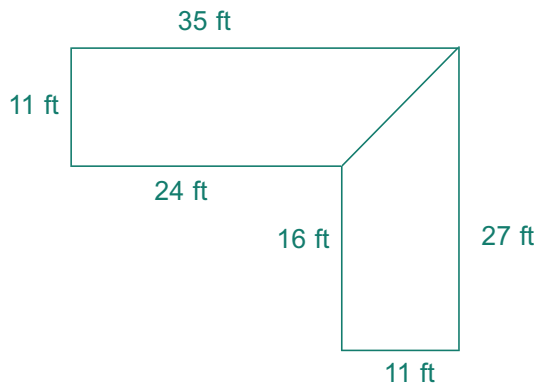
13. a. *Deci* means _____.

- b. *Kilo* means _____.

- c. *Milli* means _____.

- 14.** The Shuey twins helped their youth group pick up 20 bushels of dropped apples at a local orchard. The orchard donated the apples to a children's home. The dropped apples had about the same value as 12 bushels of top quality apples. If the orchard sells top quality apples at \$14.50 per bushel, what was the donated value of the apples? _____

- 15.** Macorkel Construction removed a rusted metal porch roof and replaced it with shingles. The porch wraps around the corner of the house, making the roof surface the shape of two trapezoids. How many square feet of shingles were needed for the porch roof? _____



- ☆ **16.** If each *square* of shingles covers 100 square feet, how many *squares* of shingles did Macorkel Construction need to purchase to finish the roof job? Give your answer in the nearest whole square.

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Roofing shingles and wall siding are sold by the *square*. Each *square* covers 100 square feet of roof or sidewall.

Lesson 13

Find the prime factors and the GCF of each pair of numbers.

17. a. Factors of 60 = _____

b. Factors of 84 = _____

c. GCF = _____

18. a. Factors of 99 = _____

b. Factors of 132 = _____

c. GCF = _____

Simplify the expressions.

19. a. $4x + 9x - 6x + x$

b. $3x + 8 - 6 - 2x$

☆ Solve the logic problem.

Four men with different occupations drive trucks of different colors. Using the clues, fill in the chart to find out which occupation each man has and what color of truck each drives.

Name	Occupation	Truck Color
Wayne	Farmer	Black
Bruce	Janitor	White
Paul	Banker	Blue
Jacob	Electrician	Gray

20.

Name				
Occupation				
Color of truck				

Clues.

- The driver of the white truck hired the driver of the gray truck to replace the wiring in his milking parlor.
- Wayne works for a school and Jacob wears a suit to work.
- Paul's truck is the opposite color of the banker's truck.

