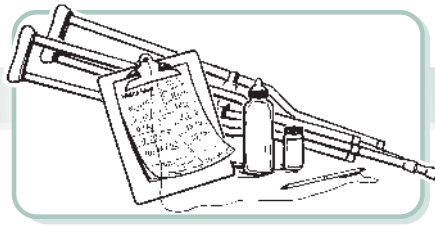


Lesson 1



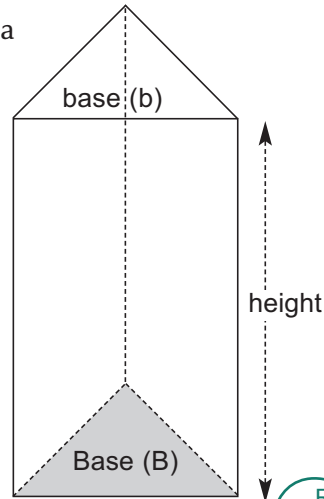
Formula for the Volume of a Triangular Prism

The formula for finding the area of a triangular prism is $V = Bh$.

The letter B stands for the *area of the base*, which is a triangle.

The letter h stands for *height*. The height of a prism may be vertical or horizontal. It is always the distance between the two bases.

You know the formula for finding the area of a triangle is $A = \frac{1}{2}bh$. Put $\frac{1}{2}bh$ in place of B in the formula. Substitute the correct number for each variable in the formula and solve the equation. Study the example.



Remember, capital B stands for an area. The small b stands for the line segment which is the base of a polygon.

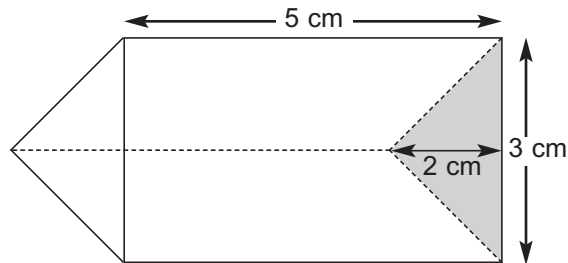
- 1 $V = Bh$
 $V = (\frac{1}{2}bh)h$
 $V = (\frac{1}{2} \times 3 \times 2)h$
 $V = 3 \times h$

First, find B. (the area of the triangle).

Now find the volume of the prism.

- 2 $V = 3 \times 5$
 $V = 15$

The volume of the prism is 15 cm^3 .



Study the example for finding the volume of this triangular prism.

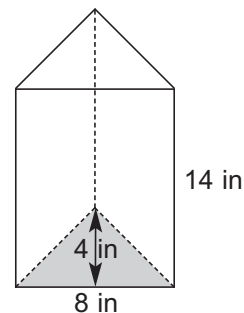
$$V = Bh$$

$$V = (\frac{1}{2}bh)h$$

$$V = (\frac{1}{2} \times 8 \times 4)14$$

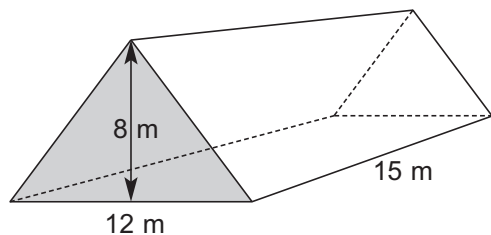
$$V = 16 \times 14$$

$$V = 224 \text{ in}^3$$

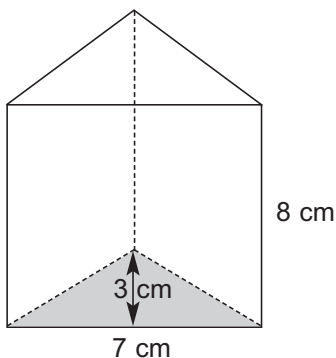


Use the formula to solve the problem.

1. An A-frame chalet is built like a triangular prism. The chalet is 12 meters wide and 15 meters long. From the floor to the top ridge of the roof, it is 8 meters high. How many cubic meters of air can the chalet hold? _____



Use the formula to find the volume of the triangular prism.



2. _____



We Remember

Write the equivalent fractions.

3. a. $33\frac{1}{3}\%$ = _____ b. $83\frac{1}{3}\%$ = _____ c. $66\frac{2}{3}\%$ = _____ d. $16\frac{2}{3}\%$ = _____

Substitute 6 for n in problems a and b. Simplify the expressions.

4. a. $9n$ b. $\frac{n}{3}$ c. $(9x)4$ d. $7^3 =$ _____

Lesson 1

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Round to the nearest tenth.

$2\frac{5}{6}$

$1\frac{4}{5}$

$\frac{5}{6}$

5. a. $241 \overline{)270}$

b. $-1\frac{7}{8}$

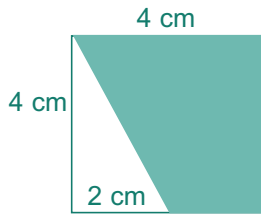
c. $+1\frac{1}{15}$

6. a. $\begin{array}{r} 4' 9'' \\ 4' 11'' \\ + 6' 9'' \\ \hline \end{array}$

b. $\begin{array}{r} 2' 3'' \\ - 1' 9'' \\ \hline \end{array}$

c. $\begin{array}{r} 3' 3'' \\ \times \quad 7 \\ \hline \end{array}$

Find the area of the shaded part. Show your work.



7. _____



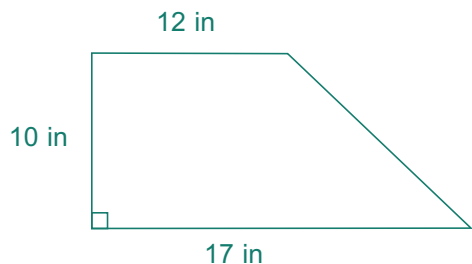
Check using digit sums. Put an x after each wrong product.

8. a. $\begin{array}{r} 804 \text{ } \bigcirc \\ \times 273 \text{ } \bigcirc \square \\ \hline 218,492 \square \end{array}$

b. $\begin{array}{r} 9,975 \text{ } \bigcirc \\ \times \quad 76 \text{ } \bigcirc \square \\ \hline 758,100 \square \end{array}$

c. $\begin{array}{r} 714 \text{ } \bigcirc \\ \times 37 \text{ } \bigcirc \square \\ \hline 26,398 \square \end{array}$

Use the formula to find the area of the trapezoid.



9. _____

Simplify.

10. a. $8^3 =$ _____

b. $6^3 =$ _____

c. $16^2 =$ _____

Write the equivalent percents.

11. a. $\frac{1}{2} =$ _____

b. $\frac{3}{5} =$ _____

c. $\frac{1}{10} =$ _____

d. $\frac{9}{10} =$ _____



Use a calculator to change these fractions to decimals. Notice the pattern in the decimals.

12. a. $\frac{1}{7} =$ _____

b. $\frac{2}{7} =$ _____

c. $\frac{3}{7} =$ _____

13. a. $\frac{4}{7} =$ _____

b. $\frac{5}{7} =$ _____

c. $\frac{6}{7} =$ _____

14. a. $\frac{7}{7} =$ _____

b. $\frac{8}{7} =$ _____

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

15. a. $\frac{10}{7} =$ _____

b. $\frac{11}{7} =$ _____

c. $\frac{12}{7} =$ _____

16. a. $\frac{13}{7} =$ _____

b. $\frac{14}{7} =$ _____

c. $\frac{15}{7} =$ _____

The six digits keep repeating themselves in the pattern. These are actually repeating decimals, but you have to divide many times before the pattern is noticeable.

☆ 17. Try dividing the fractions above without a calculator until you can see the repeating digit pattern.

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

18. a. $5\frac{1}{2}\% =$ _____ $=$ _____

b. $11\frac{2}{5}\% =$ _____ $=$ _____

Solve.

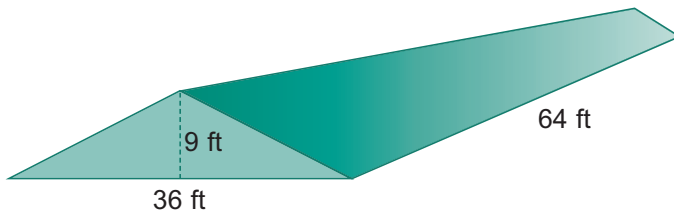
19. What is $11\frac{2}{5}\%$ of 120? _____

Lesson 1

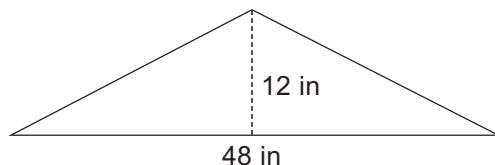
Mastery Drill

- 20. a. 1 decade = _____ years b. 1 century = _____ years
- 21. a. The repeating decimal for $\frac{2}{3}$ is _____ . b. The decimal for $\frac{3}{4}$ is _____ .
- 22. a. The repeating decimal for $\frac{1}{6}$ is _____ . b. The repeating decimal for $\frac{1}{3}$ is _____ .
- 23. a. The decimal for $\frac{1}{2}$ is _____ . b. The repeating decimal for $\frac{5}{6}$ is _____ .
- 24. a. To subtract integers, _____ the opposite. b. A right triangle has one _____° angle.
- 25. The formula for finding the area of a parallelogram is _____ .
- 26. The formula for finding the volume of a rectangular prism is _____ .
- 27. The formula for finding the circumference of a circle is _____ .

28. Kenneth added power ventilation fans to the attic of one of the buildings to keep room temperatures more comfortable in the summer. He calculated the volume of the attic which is shaped like a triangular prism 36 feet wide, 64 feet long, and 9 feet high. How many cubic feet of air does the attic contain? _____



29. Kenneth figured the square inches of existing vents to see if he would need to add more vents when he installed the new fans. One triangular vent had a base of 48 inches and a height of 12 inches. The inside of the vent was covered with insect screen that cut the useable vent area in half. How many useable square inches did this vent have?





Changing Fractional Percents to Decimals Without Rounding

You have learned to change a percent to a decimal when the percent includes a fraction.

$$3\frac{1}{2}\% = 3.5\% = 0.035$$

Sometimes the percent is a fraction less than one percent. For instance, $\frac{1}{4}\%$ means only one-fourth of 1%. To change fractional percents to decimals, first change the fraction to a decimal. $\frac{1}{4}\%$ is the same as 0.25%. Move the decimal point two places to the left and drop the percent sign. The decimal is now 0.0025.

Look at a few more examples:

$$\frac{1}{2}\% = 0.5\% = 0.005$$

$$\frac{3}{4}\% = 0.75\% = 0.0075$$

$$\frac{1}{5}\% = 0.2\% = 0.002$$

You can use the decimal form of a fractional percent to solve problems such as the following:

What is $\frac{3}{4}\%$ of 450?

(Think: $\frac{3}{4}\% = 0.75\% = 0.0075$)

$$\begin{array}{r} 450 \\ \times 0.0075 \\ \hline 3.3750 = 3.375 \end{array}$$

$\frac{3}{4}\%$ of 450 equals 3.375

Change the fractional percents to decimal percents, then to decimals.

1. a. $\frac{1}{2}\% = \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$

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

2. a. $\frac{1}{10}\% = \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$

b. $\frac{1}{4}\% = \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$

Solve. The first one is done for you.

3. a. What is $\frac{1}{2}\%$ of 86? 0.43

$$\begin{array}{r} 86 \\ \times 0.005 \\ \hline 0.430 \end{array}$$

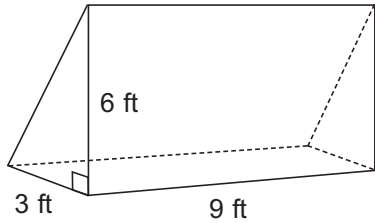
b. What is $\frac{2}{5}\%$ of 95?

Lesson 2



We Remember

Use the formula to find the volume of the triangular prism.



4. _____

Solve and check.

5. a. $\frac{x}{7} = 5$

b.



c. $\frac{y}{5} = 9$

d.



Find the prime factors and the GCF.

6. a. Factors of 96 = _____

b. Factors of 80 = _____

c. GCF = _____

7. a. Factors of 81 = _____

b. Factors of 135 = _____

c. GCF = _____

Find the total cost.

8. \$7.49 with 6% sales tax = _____

9. \$23.45 with 7% sales tax = _____

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10. a. 1 liter = _____ cubic centimeters b. 1 cubic meter = _____ liters
11. a. The repeating decimal for $\frac{5}{6}$ is _____. b. The repeating decimal for $\frac{1}{6}$ is _____.
 12. a. The repeating decimal for $\frac{2}{3}$ is _____. b. The repeating decimal for $\frac{1}{3}$ is _____.
 13. a. 1 cubic centimeter = _____ milliliter b. The decimal for $\frac{1}{4}$ is _____.
 14. a. To subtract integers, _____ the opposite. b. A quadrilateral has _____ sides.
 15. a. *Kilo* means _____. b. *Deci* means _____. c. *Milli* means _____.
 16. The formula for finding the area of a trapezoid is _____.
 17. The formula for finding the volume of a triangular prism is _____.
 18. In the formula $V = Bh$, the capital B stands for the _____ of the _____.

Change each subtraction to adding the opposite. Then combine integers.

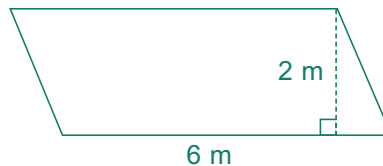
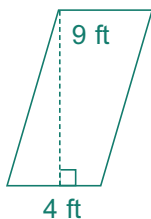
19. a. $-14 - (+16)$ b. $-7 - (+8)$ c. $-12 - (-15)$

Convert the metric units.

kilo	hecto	deca		deci	centi	milli
------	-------	------	--	------	-------	-------

20. a. 85 L = _____ mL b. 72 cm = _____ mm c. 520 g = _____ kg

Use the formula to find the area of each parallelogram.



21. a. _____ b. _____

Lesson 2



22. Maria wears a lift on her left shoe because her left leg did not grow at the same pace as her right leg. The sole on her right shoe is $\frac{3}{8}$ inch thick; the sole on her left shoe is $1\frac{1}{4}$ inches thick. What is the amount of lift that Maria wears on her left shoe? _____

Find the sale price.

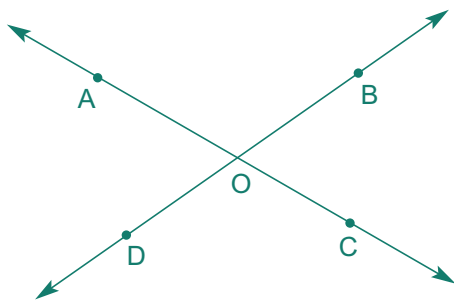
23. The regular price was \$43.50.
The sale is 14% off.

a. The sale price is _____.

The regular price was \$16.50.
The sale is 30% off.

b. The sale price is _____.

Do the exercises for the figure.



24. Measure the angles.

a. $\angle AOB$ _____ b. $\angle AOD$ _____

25. a. Name the angle opposite of $\angle AOB$. _____

b. Give its measurement without using a protractor. _____

26. The sum of the four angles is _____.

27. Name two straight angles from the figure. _____

— \div \times Skill Builders —

$\frac{7}{9}$

13

$\frac{2}{3}$

28. a. $1\frac{5}{9} \div 1\frac{3}{4} =$ _____

b. $-7\frac{3}{8}$

c. $+\frac{1}{6}$

Change the fractional percents to decimal percents, then to decimals.

29. a. $\frac{4}{5}\% = \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$

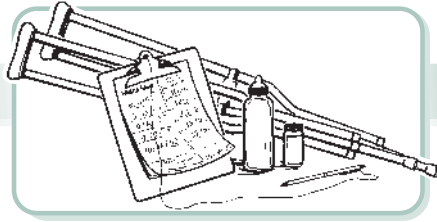
b. $\frac{7}{10}\% = \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$

Solve.

30. What is $\frac{4}{5}\%$ of 112? $\underline{\hspace{2cm}}$

Lesson

3



Multiplying Expressions That Include Variables

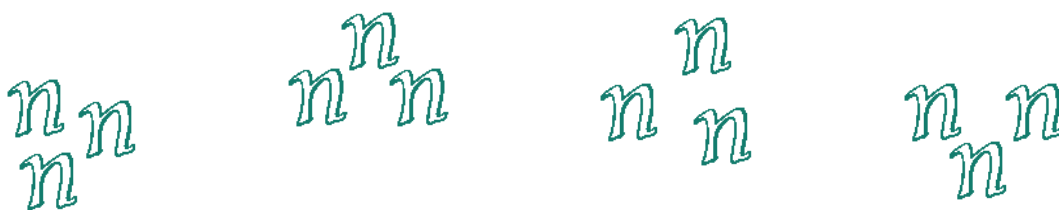
You have been adding variables to simplify expressions. You know that $3n + n + 5n = 9n$. Now you will learn to multiply variables. The first illustration uses apples to show this.

If there were 4 baskets with 3 apples in each basket, how many apples would there be altogether?



4 times 3 apples
12 apples

In the same way, if you multiply $4 \cdot 3n$, your total is $12n$.



$4 \cdot 3n$
 $12n$