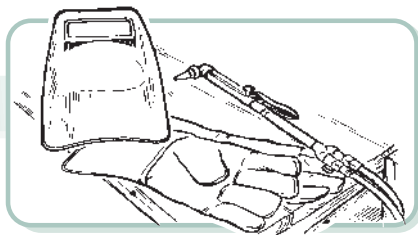


Lesson

6



Graphing Solutions ($>$, $<$, $=$)

The solution to an equation or an inequality is the number or numbers the variable represents.

Equations: Usually the variable represents only one number.

$$x = 7$$



7 is the only number which can make this sentence true: $7 = 7$

Graph the solution on a number line by making a small *dot* on the number 7.



Inequalities: Usually the variable represents many numbers.

$$x < 7$$



Any number less than 7 makes this sentence true. Some numbers that make the sentence true are 4, 2.5, -5 , -300 .

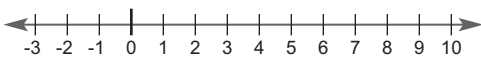
We graph the possible answers on a number line by drawing a small *circle* on the number 7 and then drawing a line with an arrow pointing in the direction of the numbers less than 7. The circle and line show us that the possible answers include every negative and positive number up to, but not including, the number 7. ($7 < 7$ is not true.)



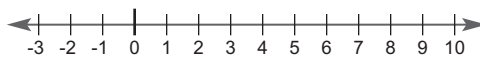
Notice the difference between the *dot* and the *circle* on the numberline.

Graph the solutions.

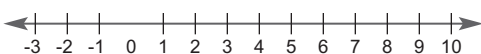
1. a. $x > 4$



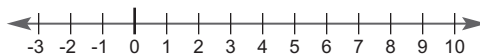
b. $x < 1$



2. a. $x = 2$



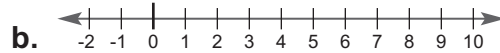
b. $x > -1$



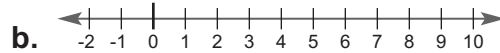
Lesson 6

Solve each equation or inequality. Graph the solutions.

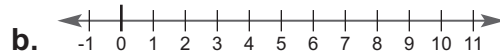
3. a. $x - 3 < 4$



4. a. $x + 3 > 4$



5. a. $x + 3 = 12$



We Remember

Find the commission.

6. A salesperson receives 10% commission on sales of \$7,285.00. _____

Find the total cost.

7. \$13.85 with 7% sales tax = _____

Use a compass and a straightedge to construct $\overline{LM} \cong \overline{JK}$.

8. A horizontal line segment with endpoints labeled J and K.

Simplify the expressions.

9. a. $5x + 5 - 5x - 2$ b. $8(m + 9)$ c. $5^2 =$ _____ d. $5(6 + 2) - \frac{9}{3}$

+ ÷ x Skill Builders

Annex zeros to complete. ☒

10. a. $0.725 \overline{)517.65}$ b. $\begin{array}{r} 9 \text{ hr } 15 \text{ min} \\ - 2 \text{ hr } 45 \text{ min} \\ \hline \end{array}$ c. $5 \overline{)28'6''}$



11. The church school asked Ernest to teach 3 high school boys a basic welding course. Ernest has agreed to teach 18 weekly classes. Each class will consist of 15 minutes classroom time and 1 hour of shop time. He also estimates he will need 20 minutes preparation time per week. In 18 weeks, how many hours will he have devoted to this class?

Solve the logic problem.

- ☆ 12. Arrange 17 dots in 4 straight lines with 5 dots in each line.

Write the equivalent percents.

13. a. $\frac{3}{5} = \underline{\hspace{2cm}}$ b. $\frac{3}{10} = \underline{\hspace{2cm}}$ c. $\frac{4}{5} = \underline{\hspace{2cm}}$ d. $\frac{9}{10} = \underline{\hspace{2cm}}$

Change to adding the opposite. Combine integers.

14. a. $-10 - (-10) = \underline{\hspace{2cm}}$ b. $6 - (+11) = \underline{\hspace{2cm}}$ c. $13 - (-15) = \underline{\hspace{2cm}}$

Copy and solve.

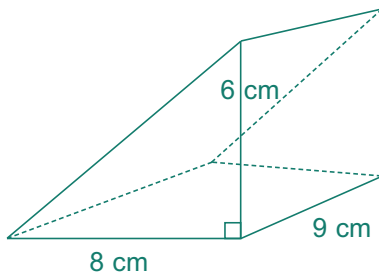
15. $98.2 - 9.67 = \underline{\hspace{2cm}}$
 16. $8.5 + 53.67 + 0.004 = \underline{\hspace{2cm}}$

Lesson 6

Mastery Drill

17. The three angles of a triangle measure a total of _____°.
18. The formula for finding the area of a parallelogram is _____.
19. a. 1 century = _____ years b. 1 decade = _____ years
20. a. The *congruent* symbol is _____. b. The *similar* symbol is _____.
21. a. To subtract integers, _____ the opposite. b. The decimal for $\frac{3}{4}$ is _____.

Use the formula to find the volume.



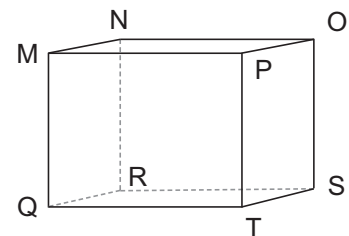
22. _____

Convert. Round to the nearest whole number.

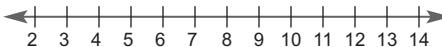
23. 75 miles $\approx$ _____ km
24. 38 km $\approx$ _____ miles

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

25. a. MQ _____ b. R _____
26. a. QRST _____ b. POST _____

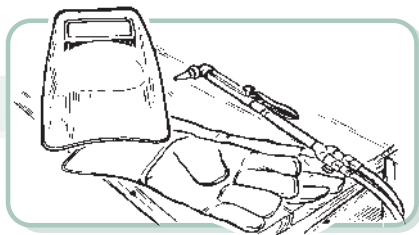


Solve the inequality. Graph the solution.

27. a. $x - 11 > 1$ b. 

Lesson

7



Percents in Story Problems: Dealing With the Remainder

When you find what percent one number is of another, the answer is not always a whole percent.

10 of the 60 students had an A average in math. What percent of the students had an A average?

Use the percent proportion: $\frac{\text{is}}{\text{of}} = \frac{\%}{100}$

Replace with numbers from the problem and a variable: $\frac{10}{60} = \frac{n}{100}$

Solve the proportion: $10 \times 100 \div 60 = 16.\overline{6}\%$

$16.\overline{6}$ rounded to the nearest whole percent is 17%. This is the best answer to the given problem. But there are other ways to deal with the remainder of the percent.

$16.\overline{6}$ rounded to the nearest tenth of a percent is 16.7%.

$16.\overline{6}$ rounded to the nearest hundredth of a percent is 16.67%.

We could also change the remainder to a fraction instead of a decimal.

$$10 \times 100 \div 60 = 16\frac{2}{3}\%.$$

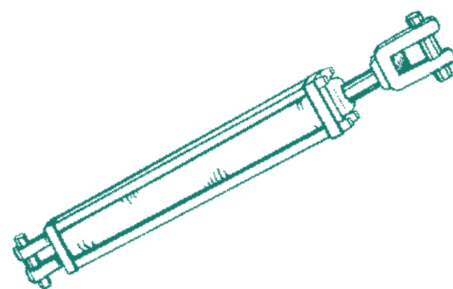


Find the percents. Round your answers to the nearest whole percent.

1. 14 is what percent of 24? _____
2. 32 is what percent of 60? _____
3. 5 is what percent of 7? _____
4. 26 is what percent of 45? _____



5. Ernest is planning to use a hydraulic cylinder on a log splitter that has a maximum pressure rating of 3,000 psi (pounds per square inch). The control valve can be set to limit the pressure to 2,750 psi. The control valve setting is what percent of the maximum pressure rating of the cylinder? Round the answer to the nearest whole percent. _____



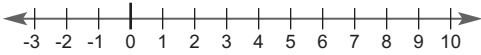
Lesson 7



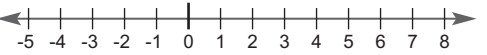
We Remember

Graph the solutions.

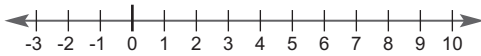
6. a. $x < -1$



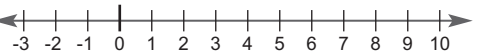
b. $x = -3$



7. a. $x > -2$



b. $x < 5$



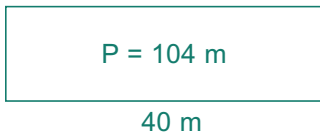
Solve the inequalities.

8. a. $x + 32 < 42$

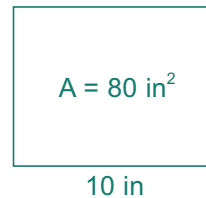
b. $x - 28 > 15$

c. $x - 23 < 11$

Use the perimeter or area formula to find the missing dimension for each figure.



9. a. The width is _____.



b. The width is _____.

Substitute 9 for n . Simplify the expressions.

10. a. $3n$

b. $\frac{n}{3}$

Solve. Write remainders as fractions.

11. a. $9x + 11 = 45$

b. $8x - 7 = 52$

c. $29 = 6x - 12$

— $\div$ $\times$ Skill Builders —

Write repeating
decimals with a bar.

12. a.
$$\begin{array}{r} 39,127 \\ - 9,512 \\ \hline \end{array}$$

b.
$$1.1 \overline{)0.7}$$

c.
$$\begin{array}{r} 235 \\ 416 \\ 29 \\ 111 \\ + 24 \\ \hline \end{array}$$

Solve the geometry riddles.

I am a parallelogram.
I have four right angles.
My sides are not all congruent.

13. a. What am I? _____

I am a parallelogram.
I have four right angles.
My sides are congruent.

b. What am I? _____

Solve and check.

14. a. $9 + \frac{x}{3} = 14$



b.

c. $\frac{x}{8} - 8 = 2$



d.

Convert the metric units.

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

15. a. $4.7 \text{ L} = \text{_____ mL}$

b. $85 \text{ m} = \text{_____ km}$

c. $1,550 \text{ g} = \text{_____ kg}$

— ?... Mental Math —

16.
$$\begin{array}{ccccccc} & 12^2 & & & \times 6 & + 40 & \\ & & + 6 & & & & \times 5 \\ & & & \div 15 & & & \\ \hline \end{array} =$$

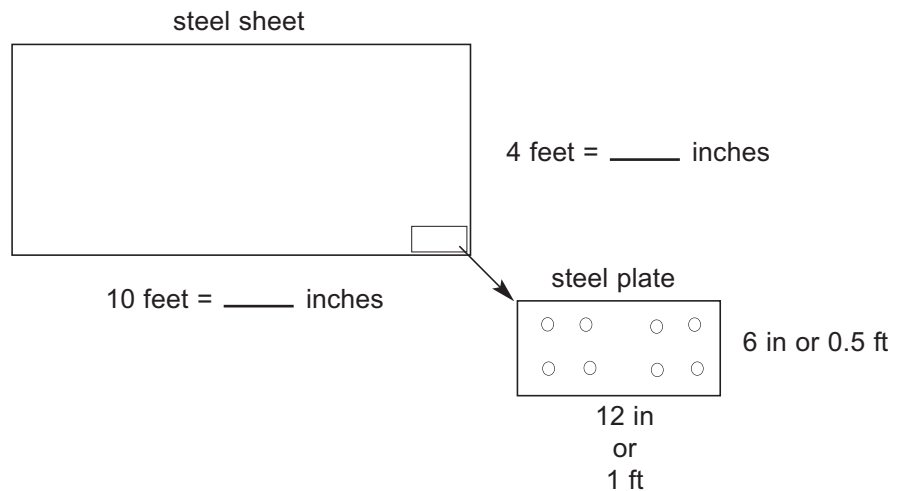
Lesson 7



17. D&E Metals has an order for 2,000 steel plates from Milo Construction, a timber-frame builder. The quarter-inch thick plates are 6 in wide, 12 in long, and have eight $\frac{5}{8}$ -inch holes punched in each one.

a. How many plates can be cut out of a sheet of steel 4 feet wide and 10 feet long? Use the diagram to help you.

b. How many steel sheets will be needed to fill this order?



Solve.

18. What is 26% of 50? _____

19. 14 is what percent of 50? _____

20. 63 is 84% of what number? _____

Change to decimal percents, then to decimals.

21. a. $9\frac{9}{10}\%$ = _____ = _____

b. $\frac{1}{4}\%$ = _____ = _____

Solve.

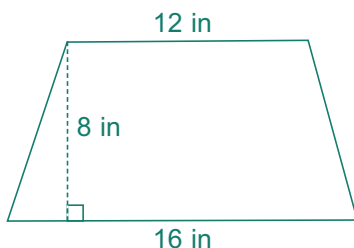
22. What is $9\frac{9}{10}\%$ of 36? _____

23. What is $\frac{1}{4}\%$ of 178? _____

Mastery Drill

24. The abbreviation for greatest common factor is _____.
25. The short version of the percent proportion is _____.
26. The formula for finding the volume of a triangular prism is _____.
27. a. 1 mile $\approx$ _____ kilometers b. 1 kilometer $\approx$ _____ mile
28. a. 1 liter = _____ cubic centimeters b. The fraction for $0.\overline{3}$ is _____.
29. a. The *similar* symbol is _____. b. The *congruent* symbol is _____.
30. a. $\frac{1}{3} =$ _____% b. $\frac{1}{6} =$ _____% c. $\frac{2}{3} =$ _____% d. $\frac{5}{6} =$ _____%

Use the formula to find the area of the trapezoid.



31. _____

Simplify the expressions.

32. a. $7(4 + 1) - 2 \cdot 4$ b. $16(x + 2)$

33. A landscaper dropped off a post-hole auger for D&E to repair the flighting that was damaged when it hit a large rock. Dale did the repair for \$95 and recommended that he use the proper grade 2 bolt in his auger power unit instead of a grade 5 bolt. The cost of a new auger would have been \$220. To the nearest whole percent, the repair cost was what percent of the cost of a new auger? _____

