Assignment

Write

Define the term *literal equation* in your own words.

Remember

Literal equations can be rewritten using properties of equality to allow you to solve for one specific variable.

Practice

1. In the USA, the shoe sizes for men are approximated by the equation $3f - s = 24$, where f represents the length of the foot in inches and s represents the shoe size.
   a. The average man's foot is 11.5 inches long. What is the average man's shoe size?
   b. Use the function to determine the x- and y-intercept. State the meaning of each in terms of this problem situation.
   c. Which form can most easily be used to determine the slope of this equation? Determine the slope of this equation and describe what it means in terms of the problem situation.
2. The boxes that shoes come in are often used in other capacities once the shopper has bought the shoes. Sometimes the boxes are used to hold other items, so it is helpful to know the volume of the box.
   a. Write the equation to solve for the volume of the shoe box.
   b. If the area of the base of the box is 112 square inches and the height is 3.5 inches, what is the volume of the box?
   c. Rewrite the equation to solve for width. Show your work.
   d. A box has a volume of 456 cubic inches, with a length of 1 foot and a height of 4 inches. Determine the width of the box.
3. Solve each equation for the specified variable.
   a. $V = \frac{1}{3}Bh$ for B
   b. $I = prt$ for r
   c. $\frac{x + y}{3} = 6$ for y
   d. $A + B + C = 180$ for C

Stretch

A simple pendulum is made of a long string and a small metal sphere. The period of oscillation can be found by the formula $T = 2\pi\sqrt{\left(\frac{L}{g}\right)}$, where g is the acceleration due to gravity, and L is the length of the string. Solve the formula for g, the acceleration due to gravity.

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Review

1. The Peters Creek restaurant has an all-you-can eat shrimp deal. Currently, the cost of the deal is 50 cents per shrimp, with free soft drinks. The cost for the shrimp deal is modeled by the function $c(x) = 0.50x$, where x represents the number of shrimp eaten. A new manager decides to change the cost of the deal to 25 cents per shrimp, but a \$5.00 charge for soft drinks. Let $p(x)$ be the function that represents the new cost for the all-you-can-eat shrimp deal.
   a. Sketch the graph of $c(x)$ and $p(x)$ on the same coordinate plane.
   b. Complete the table of corresponding points on $p(x)$.
   c. Write an equation for $p(x)$ in terms of $c(x)$. Describe the transformation performed on $c(x)$ to produce $p(x)$.
   d. Write the equation for the function $p(x)$ in general form.

x	$p(x)$
0	
10	
40	
60	
70	
90	

2. Solve the equation. Write the properties that justify each step.
$$-\frac{2}{3}x(-9x + 24) = 2x - 4$$
3. Determine if the equation has one solution, no solution, or infinite solutions.
$$3\left(2 + \frac{2}{3}x\right) = 5 + 2(x + 1)$$
4. The table shows the relationship between y and x. Write an equation that represents the relationship between the variables.

x	y
−3	2
−1	6
1	10
3	14
6	20

5. A clothing store decides to give out bonus points that can be used for future purchases. If a customer applies for a bonus card they are automatically given 50 bonus points. After that, they get 25 bonus points for every \$1.00 that they spend. Write an equation that shows the number of bonus points, b, that a customer will earn for x dollars that they spend.

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