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## LINEAR APPLICATIONS

1. Wade purchased three videos and one music CD. The CD cost Wade \$12.99. If he paid the same amount for each video and spent a total of \$42.96, how much did each video cost?
  
2. At the market, Xiang bought a bunch of bananas for \$0.35 per pound and a frozen pizza for \$4.99. The total for Xiang's purchase was \$6.04 without tax. How many pounds of bananas did Xiang buy?
  
3. Yamir went to the store to buy gardening supplies. A bag of dirt was \$3.99 and tulips cost 75 cents per bulb. He bought one bag of dirt and some tulip bulbs and spent a total of \$12.24 without tax. How many bulbs did Yamir buy?
  
4. Zoe is comparing two local yoga programs. Yoga-Weigh charges \$90 dollars a month and a registration fee of \$35. Essence of Yoga charges \$80 per month with a \$75 registration fee. After how many months will the two schools charge the same amount?

**Exercise #5:** While on vacation, Talisha won a lot of tickets at two arcades on the boardwalk she was visiting. The first arcade charges \$1 to cash in the tickets and gives you 12 cents back on each ticket won, while the second arcade gives you 10 cents back on each ticket and no fee to cash in. In order for Talisha to make an equal profit from each arcade, how many tickets must she have won?

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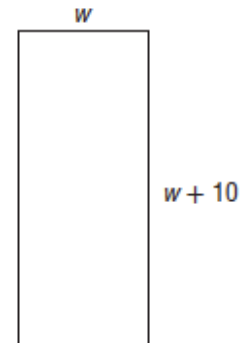
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6.

A phone company charges a flat rate of \$10 per month for services and \$0.50 per minute for long-distance calls. Which equation will show the total monthly phone bill,  $b$ , as it depends on the amount of time spent,  $t$ , on long-distance calls?

7.

**GEOMETRY** The length of a rectangle is 10 units longer than its width. If the total perimeter of the rectangle is 44 units, what is the width?



8.

**AIRPLANES** The Citation Sovereign is a small jet that can carry up to 2650 pounds. The number of passengers  $p$  and the number of suitcases  $c$  that the airplane can carry are estimated by the equation  $180p + 60c = 2650$ . If 10 people board the aircraft, how many suitcases can the airplane carry?

9.

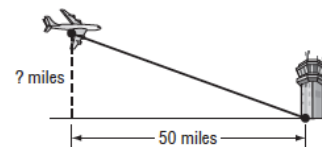
**SAVINGS** Jason started with  $d$  dollars in his piggy bank. One week later, Jason doubled the amount in his piggy bank. Another week later, Jason was able to add \$20 to his piggy bank. At this point, the piggy bank had \$50 in it. What is  $d$ ?

10.

**AGES** Robert's father is 5 years older than 3 times Robert's age. Let Robert's age be denoted by  $R$  and let Robert's father's age be denoted by  $F$ . Write an equation that relates Robert's age and his father's age.

11.

**AVIATION** An airplane descends along a straight-line path with a slope of  $-0.1$  to land at an airport. Use the information in the diagram to determine the initial height of the airplane.



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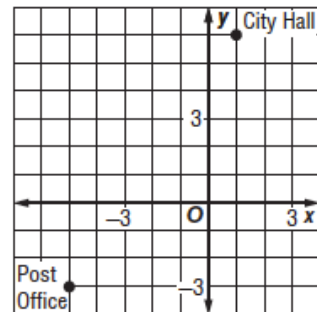
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12.

**CHARITY** By midnight, a charity had collected 83 shirts. Every hour after that, it collected 20 more shirts. Let  $h$  be the number of hours since midnight and  $n$  be the number of shirts. Write a linear equation in slope-intercept form that relates the number of shirts collected and the number of hours since midnight.

13.

**MAPS** The post office and city hall are marked on a coordinate plane. Write the equation of the line in slope-intercept form that passes through these two points.



14.

**HIKING** Tim began a hike near Big Bear Lake, California at the base of the mountain that is 7000 feet above sea level. He is hiking at a steady rate of 5 more feet above sea level per minute. Let  $A$  be his altitude above sea level in feet and let  $t$  be the number of minutes he has been hiking. Write an equation in slope-intercept form that represents how many feet above sea level Tim has hiked.

15.

Mrs. Doubtfire is planning to place a fence around her backyard. The fencing costs \$1.95 per yard. She buys  $f$  yards of fencing and pays \$3.50 in tax. If the total cost of the fencing is \$81.50, write an equation to represent the situation.

16.

A rainwater collection tank is nearly full at a level of 120 in. The water will be used at a rate that lowers the level 6 in. per day. Which equation can be used to determine the time it will take (in days) to lower the level to 3 in.?