

Algebra 1: 3.2 Skills Packet  
Standard Form of Linear Equations

Name Answer Key Period     

Write the equation for each.

standard form:  $Ax + By = C$ , where  $A, B,$  and  $C$  are constants and  $A$  and  $B$  are not both zero. Used to find the  $x$ - and  $y$ -intercepts.  
slope-intercept form:  $y = mx + b$  or  $f(x) = mx + b$   
slope  $\uparrow$   $\uparrow$   $y$ -intercept

Define variables and write an expression to represent each situation. 5 minutes

1. A farmer's market sells apples for \$0.75 per pound and oranges for \$0.89 per pound. Write an expression to represent the total amount the farmer's market can earn selling apples and oranges.  
Let  $a =$  pounds of apples sold and  $o =$  pounds of oranges sold  
 $0.75a + 0.89o$
2. A photo printing website sells 8 x 10 prints for \$4.99 and 3 x 5 prints for \$1.99. Write an expression to represent the total amount the website can earn selling 8 x 10 and 3 x 5 prints.  
Let  $x =$  # of 8x10 prints sold and  $y =$  # of 3x5 prints sold  
 $4.99x + 1.99y$
3. A movie theater sells tickets for matinee showings for \$7.00 and evening showings for \$10.50. Write an expression that represents the total amount the theater can earn selling tickets.  
Let  $m =$  # of matinee tickets sold and  $e =$  # of evening tickets sold  
 $7.00m + 10.50e$
4. A bakery sells muffins for \$1.25 each and scones for \$1.75 each. Write an expression that represents the total amount the bakery can earn selling muffins and scones.  
Let  $m =$  # of muffins sold and  $s =$  # of scones sold  
 $1.25m + 1.75s$
5. A florist sells daisies for \$8.99 a dozen and roses for \$15.99 a dozen. Write an expression that represents the total amount the florist can earn selling daisies and roses.  
Let  $d =$  dozens of daisies sold and  $r =$  dozens of roses sold  
 $8.99d + 15.99r$

6. The hockey booster club is selling winter hats for \$12 each and sweatshirts for \$26 each. Write an expression that represents the total amount the booster club can earn selling hats and sweatshirts.

Let  $h$  = # of hats sold and  $s$  = # of sweatshirts sold

$$12h + 26s$$

Define variables and write an equation to represent each situation. 5 minutes

7. A florist sells carnations for \$10.99 a dozen and lilies for \$12.99 a dozen. During a weekend sale, the florist's goal is to earn \$650. Write an equation that represents the total amount the florist would like to earn selling carnations and lilies during the weekend sale.

"I Do"  
Let  $c$  = dozens of carnations sold and  $L$  = dozens of lilies sold

$$10.99c + 12.99L = 650$$

8. A bakery sells bagels for \$0.85 each and muffins for \$1.10 each. The bakery hopes to earn \$400 each day from these sales. Write an equation that represents the total amount the bakery would like to earn selling bagels and muffins each day.

Let  $b$  = # of bagels sold and  $m$  = # of muffins sold

$$0.85b + 1.10m = 400$$

9. A farmer's market sells oranges for \$0.79 per pound and peaches for \$1.05 per pound. The farmer's market hopes to earn \$325 each day from these sales. Write an equation to represent the total amount the farmer's market would like to earn selling oranges and peaches each day.

Let  $o$  = pounds of oranges sold and  $p$  = pounds of peaches sold

$$0.79o + 1.05p = 325$$

10. The high school soccer booster club sells tickets to the varsity matches for \$4 for students and \$8 for adults. The booster club hopes to earn \$200 at each match. Write an equation to represent the total amount the booster club would like to earn from ticket sales at each match.

Let  $s$  = # of student tickets sold and  $a$  = # of adult tickets sold

$$4s + 8a = 200$$

11. An electronics store sells DVDs for \$15.99 and Blu-ray discs for \$22.99. The store hopes to earn \$2000 each week from these sales. Write an equation to represent the total amount the store would like to earn each week.

Let  $d = \#$  of DVDs sold and  $b = \#$  of Blu-ray discs sold

$$15.99d + 22.99b = 2000$$

12. Ling is selling jewelry at a craft fair. She sells earrings for \$5 each and bracelets for \$7 each. She hopes to earn \$300 during the fair. Write an equation to represent the total amount Ling would like to earn during the fair.

Let  $e = \#$  of earrings sold and  $b = \#$  of bracelets sold

$$5e + 7b = 300$$

The basketball booster club runs the concession stand during a weekend tournament. They sell hamburgers for \$2.50 each and hot dogs for \$1.50 each. They hope to earn \$900 during the tournament. The equation  $2.50b + 1.50h = 900$  represents the total amount the booster club hopes to earn. Use this equation to determine each unknown value. 10 min.

- "I do" 13. If the booster club sells 315 hamburgers during the tournament, how many hot dogs must they sell to reach their goal?

$$b = 315$$

$$2.50(315) + 1.50h = 900$$

$$787.50 + 1.50h = 900$$

$$1.50h = 112.50$$

$$h = 75$$

The booster club must sell 75 hot dogs.

14. If the booster club sells 420 hot dogs during the tournament, how many hamburgers must they sell to reach their goal?

$$h = 420$$

$$2.50b + 1.50(420) = 900$$

$$2.50b + 630 = 900$$

$$2.50b = 270$$

$$b = 108$$

The booster club must sell 108 hamburgers.

15. If the booster club sells 0 hot dogs during the tournament, how many hamburgers must they sell to reach their goal?

$$h = 0$$

$$2.50b + 1.50(0) = 900$$

$$2.50b + 0 = 900$$

$$2.50b = 900$$

$$b = 360$$

The booster club must sell 360 hamburgers.

16. If the booster club sells 0 hamburgers during the tournament, how many hot dogs must they sell to reach their goal?

$$b = 0$$

$$2.50(0) + 1.50h = 900$$

$$0 + 1.50h = 900$$

$$1.50h = 900$$

$$h = 600$$

The booster club must sell 600 hot dogs.

17. If the booster club sells 281 hamburgers during the tournament, how many hot dogs must they sell to reach their goal?

$$b = 281$$

$$2.50(281) + 1.50h = 900$$

$$702.50 + 1.50h = 900$$

$$1.50h = 197.50$$

$$h \approx 132$$

The booster club must sell 132 hot dogs.

18. If the booster club sells 168 hot dogs during the tournament, how many hamburgers must they sell to reach their goal?

$$h = 168$$

$$2.50b + 1.50(168) = 900$$

$$2.50b + 252 = 900$$

$$2.50b = 648$$

$$b \approx 260$$

The booster club must sell 260 hamburgers.

Determine the x-intercept and the y-intercept of each equation. 10 min.

19.  $20x + 8y = 240$

Let  $x = 0$

$$20(0) + 8y = 240$$

$$0 + 8y = 240$$

$$8y = 240$$

$$y = 30$$

The y-intercept is  $(0, 30)$ . The x-intercept is  $(12, 0)$ .

Let  $y = 0$

$$20x + 8(0) = 240$$

$$20x + 0 = 240$$

$$20x = 240$$

$$x = 12$$

20.  $15x + 3y = 270$

Let  $x = 0$

$$15(0) + 3y = 270$$

$$0 + 3y = 270$$

$$3y = 270$$

$$y = 90 \quad (0, 90)$$

21.  $y = 8x + 168$

Let  $x = 0$

$$y = 8(0) + 168$$

$$y = 0 + 168$$

$$y = 168 \quad (0, 168)$$

y-intercept

Let  $y = 0$

$$15x + 3(0) = 270$$

$$15x + 0 = 270$$

$$15x = 270$$

$$x = 18 \quad (18, 0)$$

x-intercept

Let  $y = 0$

$$0 = 8x + 168$$

$$-8x = 168$$

$$x = -21 \quad (-21, 0)$$

x-intercept

22.  $y = -4x + 52$

Let  $x = 0$

$$y = -4(0) + 52$$

$$y = 0 + 52$$

$$y = 52 \quad (0, 52)$$

y-intercept

Let  $y = 0$

$$0 = -4x + 52$$

$$4x = 52$$

$$x = 13 \quad (13, 0)$$

x-intercept

23.  $14x + 25y = 342$

Let  $x = 0$

$$14(0) + 25y = 342$$

$$0 + 25y = 342$$

$$25y = 342$$

$$y = 13.68 \quad (0, 13.68)$$

y-intercept

Let  $y = 0$

$$14x + 25(0) = 342$$

$$14x + 0 = 342$$

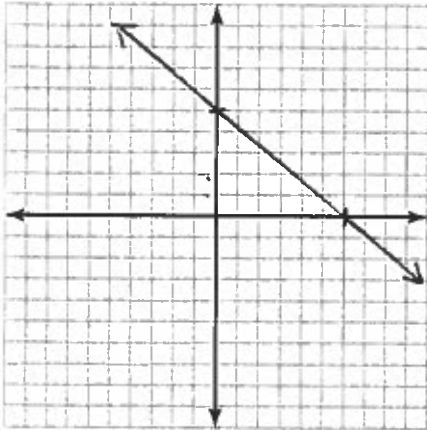
$$14x = 342$$

$$x \approx 24.43 \quad (24.43, 0)$$

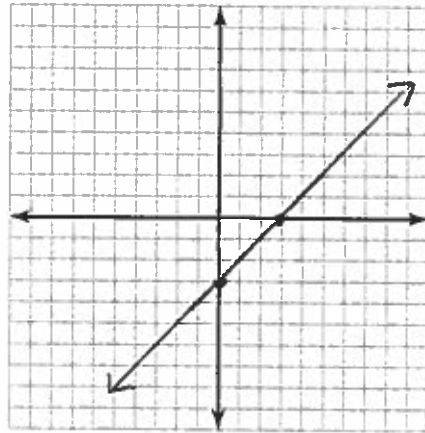
x-intercept

Determine the x-intercept and y-intercept. Then graph each equation. 10 min.

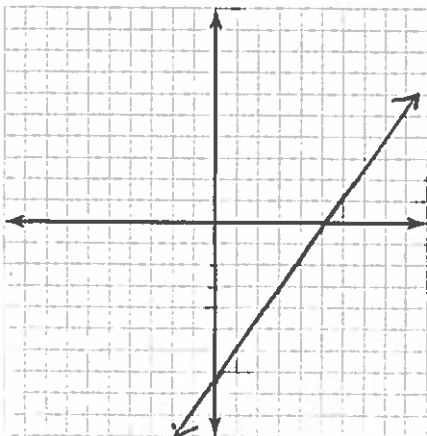
"I Do" 24.  $5x + 6y = 30$   
 $5x + 6(0) = 30$      $5(0) + 6y = 30$   
 $5x = 30$                  $6y = 30$   
 $x = 6$                      $y = 5$   
 $(6, 0)$                      $(0, 5)$



25.  $12x - 9y = 36$   
 $12x - 9(0) = 36$      $12(0) - 9y = 36$   
 $12x = 36$                  $-9y = 36$   
 $x = 3$                      $y = -4$   
 $(3, 0)$                      $(0, -4)$



26.  $2y = 3x - 15$   
 $2(0) = 3x - 15$      $2y = 3(0) - 15$   
 $0 = 3x - 15$          $2y = -15$   
 $15 = 3x$                  $y = -7.5$   
 $5 = x$                      $y = -7.5$   
 $(5, 0)$                      $(0, -7.5)$



27.  $6x + 12y = 57$   
 $6x + 12(0) = 57$      $6(0) + 12y = 57$   
 $6x = 57$                  $12y = 57$   
 $x = 9.5$                  $y = 4.75$   
 $(9.5, 0)$                  $(0, 4.75)$

