HOMEWORK & EXTRA PRACTICE SCENARIOS

Algebra 1 Series

Book 2 Homework Guide

A NOTE TO PARENTS AND TEACHERS:

Each book in the Summit Math Algebra 1 Series has 2 parts. The first half of the book is the Guided Discovery Scenarios. The second half of the book is the Homework & Extra Practice Scenarios. Each section has a separate Answer Key. If the Answer Key does not provide enough guidance, you can access more information about how to solve each scenario using the resources listed below.

1. ***GUIDED DISCOVERY SCENARIOS***

   If you would like to get step-by-step guidance for the Guided Discovery Scenarios in each Algebra 1 book, you can subscribe to the Algebra 1 Videos for $9/month or $60/year ($5/mo.). With a subscription, you can access videos for every book in the Series. The videos show you how to solve each scenario in the Guided Discovery Scenarios section of the Algebra 1 books. You can find out more about these videos at www.summitmathbooks.com/algebra-1-videos.

2. ***HOMEWORK & EXTRA PRACTICE SCENARIOS***

   If you would like to get step-by-step guidance for the Homework & Extra Practice Scenarios in the book, you can use this Homework Guide. It provides more detailed guidance for solving the Homework & Extra Practice Scenarios in Book 2 of the Algebra 1 Series. Some scenarios are not included. If you would like something included in this Homework Guide, please email the author and explain which scenario(s) you would like to see included or which scenario(s) you would like more guidance for in this Homework Guide.

ANSWER KEY

1b.
The horizontal axis is "hours after 8:00am" and 1:00pm is 5 hours after 8:00am. Move to the right on the horizontal axis and stop at 5, halfway between 4 and 6. Move up on the graph until you see the point. It is halfway between 68 and 72, so it represents a temperature of 70°F.

9.
The equation is $M = 7.5d$. If d = days, then after 10 days, $d = 10$, so $M = 7.5(10)$. When you multiply 7.5 and 10, you get $M = 75$, which represents $75.

10a.
Replace d with 8.
$M = 25 + \frac{5}{2}(8) \rightarrow M = 25 + 20 \rightarrow M = 45$

10b.
Replace d with 0.
$M = 25 + \frac{5}{2}(0) \rightarrow M = 25 + 0 \rightarrow M = 25$

11a.
Replace x with −2.
$y = 60 - 2(-2) \rightarrow y = 60 + 4 \rightarrow y = 64$

11b.
Replace x with 0.
$y = 60 - 2(0) \rightarrow y = 60 - 0 \rightarrow y = 60$

11c.
Replace y with 100.
$100 = 60 - 2x$ → subtract 60 from both sides
$40 = -2x$ → divide both sides by −2
$-20 = x$

12.
When x is −1, y is $3 - (-1)$, which is $3 + 1$, so $y = 4$. The ordered pair is (−1, 4).
When x is 0, y is $3 - 0$, so $y = 3$. The ordered pair is (0, 3).
When x is 1, y is $3 - 1$, so $y = 2$. The ordered pair is (1, 2)
When x is 2, y is $3 - 2$, so $y = 1$. The ordered pair is (2, 1)

14.
To find ordered pairs that fit in the graph that is provided, replace x with small integers like −1, 0, 1, 2.
When $x = -1$, $y = \frac{1}{2}(-1) - 2 \rightarrow -\frac{1}{2} - 2 \rightarrow -2\frac{1}{2}$
When $x = 0$, $y = \frac{1}{2}(0) - 2 \rightarrow 0 - 2 \rightarrow -2$
When $x = 1$, $y = \frac{1}{2}(1) - 2 \rightarrow \frac{1}{2} - 2 \rightarrow -1\frac{1}{2}$
When $x = 2$, $y = \frac{1}{2}(2) - 2 \rightarrow 1 - 2 \rightarrow -1$
To graph "one thousand more points," draw a line through the points. The line represents an infinite number of points.

15.
To find ordered pairs that fit in the graph, replace x with small integers like −1, 0, 1.
When $x = -1$, the equation is $6(-1) + 6y = 18 \rightarrow -6 + 6y = 18 \rightarrow 6y = 24 \rightarrow y = 4$
When $x = 0$, the equation is $6(0) + 6y = 18 \rightarrow 0 + 6y = 18 \rightarrow 6y = 18 \rightarrow y = 3$
When $x = 1$, the equation is $6(1) + 6y = 18 \rightarrow 6 + 6y = 18 \rightarrow 6y = 12 \rightarrow y = 2$

16.
You can guess if the point is on the line by looking at the graph, but this method will not work for you if you can't see the point on the graph or if the point is close to the line but not exactly on the line. To find out if the point is exactly on the line, replace the variables in the equation with the numbers in the ordered pair.

a. $6(2.5) + 6(0.5) = 18 \rightarrow 15 + 3 = 18 \rightarrow 18 = 18 \rightarrow$ This <u>is</u> true, so (2.5, 0.5) <u>is</u> on the line formed by the equation $6x + 6y = 18$.

b. $6(-1.1) + 6(4.2) = 18 \rightarrow -6.6 + 25.2 = 18 \rightarrow 18.6 = 18 \rightarrow$ This is <u>not</u> true, so (−1.1, 4.2) is <u>not</u> on the line.

17.
$6(1350) + 6(-1347) = 18 \rightarrow 8100 + -8082 = 18 \rightarrow 18 = 18 \rightarrow$ This <u>is</u> true, so (1350, −1347) <u>is</u> on the line formed by the equation $6x + 6y = 18$.

25.
Make a T-chart. Pick 3 or 4 x-values and find the y-value that goes with it. For example, you could replace x with −1, 0, 1 and 2.
If $x = -1$, then $y = -0.5(-1) + 4 \rightarrow y = 0.5 + 4 \rightarrow y = 4.5 \rightarrow$ Plot the point (−1, 4.5).
If $x = 0$, then $y = -0.5(0) + 4 \rightarrow y = 0 + 4 \rightarrow y = 4 \rightarrow$ Plot the point (0, 4).
If $x = 1$, then $y = -0.5(1) + 4 \rightarrow y = -0.5 + 4 \rightarrow y = 3.5 \rightarrow$ Plot the point (1, 3.5).
If $x = 2$, then $y = -0.5(2) + 4 \rightarrow y = -1 + 4 \rightarrow y = 3 \rightarrow$ Plot the point (2, 3).

26.
Make a T-chart. Pick 3 or 4 x-values and find the y-value that goes with it. For example, you could replace x with −1, 0, 1 and 2.
If $x = -1$, then $30(-1) - 10y = 50 \rightarrow -30 - 10y = 50 \rightarrow -10y = 80 \rightarrow y = -8 \rightarrow$ Plot the point (−1, −8).
If $x = 0$, then $30(0) - 10y = 50 \rightarrow 0 - 10y = 50 \rightarrow -10y = 50 \rightarrow y = -5 \rightarrow$ Plot the point (0, −5).
If $x = 1$, then $30(1) - 10y = 50 \rightarrow 30 - 10y = 50 \rightarrow -10y = 20 \rightarrow y = -2 \rightarrow$ Plot the point (1, −2).
If $x = 2$, then $30(2) - 10y = 50 \rightarrow 60 - 10y = 50 \rightarrow -10y = -10 \rightarrow y = 1 \rightarrow$ Plot the point (2, 1).

29.

When you plug in 0 for x, the y-value is −6, so the y-intercept is (0, −6). When you plug in 0 for y, the x-value is 2, so the x-intercept is (2, 0).

35.

To find each x-intercept, replace y with 0 and solve for x. To find each y-intercept, replace x with 0 and solve for y.

36.

To find the x-intercept, replace y with 0 and solve for x. $2x + 5(0) = -10 \rightarrow 2x = -10 \rightarrow x = -5 \rightarrow$ Plot the point (−5, 0).
To find the y-intercept, replace x with 0 and solve for y. $2(0) + 5y = -10 \rightarrow 5y = -10 \rightarrow y = -2 \rightarrow$ Plot the point (0, −2).
To find one more point, pick a specific x-value (or y-value), plug it into the equation, and solve for the other variable. For example, you could replace x with 1. If $x = 1$, the equation is $2(1) + 5y = -10$ $\rightarrow 2 + 5y = -10 \rightarrow 5y = -12 \rightarrow y = -2.4 \rightarrow$ Plot the point by estimating the location of (1, −2.4).

40.

To find the x-intercept, replace y with 0 and solve for x. $-12x + 4(0) = 102 \rightarrow -12x = 102 \rightarrow x = -8.5$
To find the y-intercept, replace x with 0 and solve for y. $-12(0) + 4y = 102 \rightarrow 4y = 102 \rightarrow y = 25.5$

43.

250 miles − 228 miles = 22 miles. You traveled 22 miles in 20 minutes. One hour is 60 minutes. If you travel 22 miles every 20 minutes, you will travel 66 miles every 60 minutes. Thus, the speed of the car is 66 miles per hour.

46b.

Tank #1 decreases by 50 liters in 10 minutes. 50 divided by 10 is 5, so the rate is 5 liters per minute.
Tank #2 decreases by 50 liters in about 6.25 minutes. 50 divided by 6.25 is 8, so the rate is 8 liters per minute.

47. The slope is a ratio (a fraction). It is the vertical change divided by the horizontal change. As a fraction, it is the rise over the run.

A note about fractions: a fraction is usually considered to be in simplified form when the top and bottom values are both integers and those integers do not have an factors in common.

47a.

To simplify the fraction $\frac{0.5}{1}$, you can multiply the top and bottom values by 2, which makes the fraction $\frac{1}{2}$.

47b.

To simplify the fraction $\frac{0.6}{0.9}$, you can multiply the top and bottom values by 10, which makes the fraction $\frac{6}{9}$. Next, divide the top and bottom values by 3 to get $\frac{2}{3}$.

49.

To find the rise, subtract the y-values of the 2 ordered pairs: 16 − 2 = 14
To find the run, subtract the x-values of the 2 ordered pairs: 24 − 10 = 14

50.
The graph shows that the bathtub contains 24 gallons after 8 minutes and 39 gallons after 13 minutes. 39 gallons minus 24 gallons is 15 gallons. 13 minutes minus 8 minutes is 5 minutes. The amount of water increases by 15 gallons in 5 minutes. That is a rate of 3 gallons per minute.

51a.
To move from (3, 2) to (7, 1), you can move down 1 unit and then right 4 units. If you put those movements in a fraction, the slope of the line is $\frac{-1}{4}$, which can be written as $-\frac{1}{4}$.

To move from (−5, 4) to (3, 2), you can move down 2 units and then right 8 units. If you put those movements in a fraction, the slope of the line is $\frac{-2}{8}$. This fraction can be simplified and written as $-\frac{1}{4}$.

To move from (−5, 4) to (7, 1), you can move down 3 units and then right 12 units. If you put those movements in a fraction, the slope of the line is $\frac{-3}{12}$. This fraction can be simplified and written as $-\frac{1}{4}$.

51b.
To move from (2, 1) to (4, 4), you can move up 3 unit and then right 2 units. If you put those movements in a fraction, the slope of the line is $\frac{3}{2}$.

To move from (−2, −5) to (2, 1), you can move up 6 units and then right 4 units. If you put those movements in a fraction, the slope of the line is $\frac{6}{4}$. This fraction can be simplified and written as $\frac{3}{2}$.

To move from (−2, −5) to (4, 4), you can move up 9 units and then right 6 units. If you put those movements in a fraction, the slope of the line is $\frac{9}{6}$. This fraction can be simplified and written as $\frac{3}{2}$.

52.
Dashed line:
To move from (2, 4) to (6, −2), you can move down 6 units and then right 4 units. If you put those movements in a fraction, the slope of the line is $\frac{-6}{6}$. This fraction can be simplified and written as $-\frac{3}{2}$.

Solid line:
To move from (−1, −2) to (5, 2), you can move up 4 units and then right 6 units. If you put those movements in a fraction, the slope of the line is $\frac{6}{9}$. This fraction can be simplified and written as $\frac{2}{3}$.

53a.
To draw more points start at the marked point of (−2, 5) and think of the slope of 2 as $\frac{2}{1}$. Move up 2 units and then right 1 unit. This will take you off of the graph provided, but you can estimate the location of the point at (−1, 7). To plot points that fit in the graph, think of the slope of 2 as $\frac{-2}{-1}$. Move down 2 units and then left 1 unit. Plot a point. Once again, move down 2 units and then left 1 unit. Plot another point. Repeat to plot more points and then draw a line through the points to show that there are infinitely many more points on this line with a slope of 2, including ordered pairs that contain fractions and/or decimals.

53b.

To draw more points start at the marked point of (1, −6) and think of the slope of −3 as $\frac{-3}{1}$. Move down 3 units and then right 1 unit. This will take you off of the graph provided, but you can estimate the location of the point at (2, −9). To plot points that fit in the graph, think of the slope of −3 as $\frac{3}{-1}$. Move up 3 units and then left 1 unit. Plot a point. Once again, move up 3 units and then left 1 unit. Plot another point. Repeat to plot more points and then draw a line through the points to show that there are infinitely many more points on this line with a slope of −3, including ordered pairs that contain fractions and/or decimals.

61a.

If you pick any two points on the dashed line, the horizontal change between the points will be 0 so the slope of the line will be a nonzero number divided by 0, which is an undefined number. Thus, the slope of the dashed line is referred to as undefined.

61b.

If you pick any two points on the solid line, the vertical change between the points will be 0 so the slope of the line will be 0 divided by a nonzero number, which is equal to 0. Thus, the slope of the solid line is referred to as 0.

63.

$$\frac{\frac{16}{3}}{4} \rightarrow \frac{16}{3} \div 4 \rightarrow \frac{16}{3} \cdot \frac{1}{4} \rightarrow \frac{16}{12} \rightarrow \frac{4}{3}$$

73.

These are steps you could follow to isolate *y* and put the equation in the form *y* = A*x* + B.

$-7x + 2y = 14$ add 7*x* on both sides

$2y = 14 + 7x$ divide both sides by 2

$\frac{2y}{2} = \frac{14 + 7x}{2}$ simplify the fractions on both sides

$y = 7 + \frac{7}{2}x$ rewrite the equation in the form *y* = A*x* + B

$y = \frac{7}{2}x + 7$

74.

These are steps you could follow to isolate *y* and put the equation in the form *y* = A*x* + B.

$18x + 27y = 54$ subtract 18*x* on both sides

$27y = 54 - 18x$ divide both sides by 27

$\frac{27y}{27} = \frac{54 - 18x}{27}$ simplify the fractions on both sides

$y = 2 - \frac{2}{3}x$ rewrite the equation in the form *y* = A*x* + B

$y = -\frac{2}{3}x + 2$

78.

You can see the y-intercept in the equation if you rewrite the equation in the form $y = Ax + B$.

$-7x + 2y = 14$ add $7x$ on both sides

$2y = 14 + 7x$ divide both sides by 2

$\frac{2y}{2} = \frac{14 + 7x}{2}$ simplify the fractions on both sides

$y = 7 + \frac{7}{2}x$ rewrite the equation in the form $y = Ax + B$

$y = \frac{7}{2}x + 7$

85c.

The slope of the line is −4. As a fraction, it is $\frac{-4}{1}$ or $\frac{4}{-1}$. If you see the slope as $\frac{4}{-1}$, you can plot more points by moving up 4 and then left 1. If you start at the point (−1, 6) and move up 4 and left 1, you get to (−2, 10). Repeat this movement to get to (−3, 14), (−4, 18) and finally (−5, 22).

86b.

The slope of the line is $\frac{3}{4}$. As a fraction, it is $\frac{3}{4}$ or $\frac{-3}{-4}$. If you see the slope as $\frac{-3}{-4}$, you can plot more points by moving down 3 and then left 4. If you split these movements in half, the slope ratio is down 1.5 and then left 2. If you start at (2, 1) and go down 1.5 and then left 2, you get to the y-intercept, which is (0, −0.5).

86c.

The slope of the line is $\frac{3}{4}$. To get to another point on the line, you can move up 3 and then right 4. If you write the slope as $\frac{\frac{3}{4}}{1}$, you can see the slope in a different way. To get to another point on the line, you can move up $\frac{3}{4}$ and then right 1. Start at the point (2, 1). If you move up $\frac{3}{4}$ and then right 1, you get to the point $\left(3, 1\frac{3}{4}\right)$.

87.

The y-intercept is (0, −3). The slope of the line is $-\frac{2}{5}$ so you can start at the y-intercept, move down 2 and right 5, and plot the point (5, −5). You can also start at the y-intercept and move up 2 and left 5 to get to the point (−5, −1).

88.

The y-intercept is (0, 4). The slope of the line is $-\frac{2}{3}$ so you can start at the y-intercept, move down 2 and right 3, and plot the point (3, 2). You can also start at the y-intercept and move up 2 and left 3 to get to the point (−3, 6). Now that you have 3 points plotted, draw a line through the points to show that there are infinitely many more points on this line, including points with coordinates that contain fractions and/or decimals.

90.

The equation is in Standard Form. Convert the equation to Slope-Intercept Form.

$-x + 3y = 6$ add x on both sides

$3y = 6 + x$ divide both sides by 3

$\frac{3y}{3} = \frac{6 + x}{3}$ simplify the fractions on both sides

$y = 2 + \frac{1}{3}x$ rewrite the equation in the form $y = mx + b$

$y = \frac{1}{3}x + 2$

After you convert the equation to Slope-Intercept Form, you can see that the y-intercept is (0, 2) and the slope is $\frac{1}{3}$.

91.

The equation is in Standard Form. Convert the equation to Slope-Intercept Form.

$-4x + 3y = 6$ add $4x$ on both sides

$3y = 6 + 4x$ divide both sides by 3

$\frac{3y}{3} = \frac{6 + 4x}{3}$ simplify the fractions on both sides

$y = 2 + \frac{4}{3}x$ rewrite the equation in the form $y = mx + b$

$y = \frac{4}{3}x + 2$

After you convert the equation to Slope-Intercept Form, you can see that the y-intercept is (0, 2) and the slope is $\frac{4}{3}$.

92a.

$-7x - 3y = 9$ add $7x$ on both sides

$-3y = 9 + 7x$ divide both sides by -3

$\frac{-3y}{-3} = \frac{9 + 7x}{-3}$ simplify the fractions on both sides

$y = -3 - \frac{7}{3}x$ rewrite the equation in the form $y = mx + b$

$y = -\frac{7}{3}x - 3$

92b.

$9x + 4y = -12$ subtract $9x$ on both sides

$4y = -12 - 9x$ divide both sides by 4

$\frac{4y}{4} = \frac{-12 - 9x}{4}$ simplify the fractions on both sides

$y = -3 - \frac{9}{4}x$ rewrite the equation in the form $y = mx + b$

$y = -\frac{9}{4}x - 3$

92c.

$5x - 5y = 30$	subtract 5x on both sides
$-5y = 30 - 5x$	divide both sides by −5
$\frac{-5y}{-5} = \frac{30 - 5x}{-5}$	simplify the fractions on both sides
$y = -6 + x$	rewrite the equation in the form $y = mx + b$
$y = x - 6$	

94c.

To clear the fractions, multiply both sides by the smallest common denominator, which is 15. The common denominator is the smallest multiple that 3 and 5 have in common. The multiples of 3 are 3, 6, 9, 12 ,15, ... The multiples of 5 are 5, 10, 15, ... If you write out the multiples of 3 and 5, the first multiple that appears in both lists is 15.

$15 \cdot \left(\frac{1}{5}x + y\right) = \left(\frac{2}{3}\right) \cdot 15 \rightarrow 5x + 15y = 10$

95a.

To clear the fractions, multiply both sides by the smallest common denominator, which is 2.

$2 \cdot \left(\frac{1}{2}x + y\right) = (4) \cdot 2 \rightarrow x + 2y = 8$

95b.

To clear the fractions, multiply both sides by the smallest common denominator, which is 5.

$5 \cdot \left(-\frac{3}{5}x + y\right) = (9) \cdot 5 \rightarrow -3x + 5y = 45$

95c.

To clear the fractions, multiply both sides by the smallest common denominator, which is 9.

$9 \cdot \left(\frac{2}{9}x - y\right) = (-3) \cdot 9 \rightarrow 2x - 9y = -27$

96b.

$2x - 7y = 14$	subtract 2x on both sides
$-7y = 14 - 2x$	divide both sides by −7
$\frac{-7y}{-7} = \frac{14 - 2x}{-7}$	simplify the fractions on both sides
$y = -2 + \frac{2}{7}x$	rewrite the equation in the form $y = mx + b$
$y = \frac{2}{7}x - 2$	

97.

Convert each equation to Slope-Intercept Form.

$3x - 4y = 12 \rightarrow -4y = 12 - 3x \rightarrow \frac{-4y}{-4} = \frac{12 - 3x}{-4} \rightarrow y = -3 + \frac{3}{4}x \rightarrow y = \frac{3}{4}x - 3$

$8y - 6x = -24 \rightarrow 8y = -24 + 6x \rightarrow \frac{8y}{8} = \frac{-24 + 6x}{8} \rightarrow y = -3 + \frac{6}{8}x \rightarrow y = \frac{3}{4}x - 3$

Even though the two equations look different in Standard Form, they both represent the same line.

98.

Convert each equation to Slope-Intercept Form.

$4y + 2x = 8 \rightarrow 4y = 8 - 2x \rightarrow \frac{4y}{4} = \frac{8 - 2x}{4} \rightarrow y = 2 - \frac{1}{2}x \rightarrow y = -\frac{1}{2}x + 2$

$2x - y = -5 \rightarrow -y = -5 - 2x \rightarrow \frac{-y}{-1} = \frac{-5 - 2x}{-1} \rightarrow y = 5 + 2x \rightarrow y = 2x + 5$

They equations represent two lines that have opposite reciprocal slopes so the lines are perpendicular when you graph them. They intersect at 90° angles.

100.

In the equation y = mx + b, replace m with the slope, which is $\frac{1}{3}$. Now the equation is $y = \frac{1}{3}x$ + b. Since the point (6, 2) is on the line, replace x and y with those values. Now the equation is $2 = \frac{1}{3}(6)$ + b. After you multiply $\frac{1}{3}$ and 6, the equation is 2 = 2 + b. Subtract 2 on both sides to find that b = 0. Since b is the y-value of the y-intercept, the y-intercept is (0, 0).

101.

In the equation y = mx + b, replace m with −3. Now the equation is $y = -3x$ + b. Since the point (90, 84) is on the line, replace x and y with those values to make the equation 84 = −3(90) + b. After you multiply −3 and 90, the equation is 84 = −270 + b. Add 270 on both sides to get b = 354. The y-intercept is (0, 354).

104a.

To write the equation in Slope-Intercept Form, y = mx + b, you need the slope and the y-intercept. To find the slope, you need to know the rise and the run. The rise is the difference between the y-values. The run is the difference between the x-values. You can also refer to the slope formula below:

$m = \frac{y_2 - y_1}{x_2 - x_1} \rightarrow m = \frac{10 - 8}{10 - 6} \rightarrow m = \frac{2}{4} \rightarrow m = \frac{1}{2}$

The slope is $\frac{1}{2}$, so you can write the equation as $y = \frac{1}{2}x + b$. Pick one of the points on the line, replace x and y with those values and solve for b. If you use the point (6, 8), the equation is:

$8 = \frac{1}{2}(6) + b$

You can multiply $\frac{1}{2}$ and 6 to get 3, which makes the equation 8 = 3 + b, so b = 5. Now you know that the y-intercept is 5. In Slope-Intercept Form, the equation is $y = \frac{1}{2}x + 5$.

104b.

To write the equation in Slope-Intercept Form, y = mx + b, you need the slope and the y-intercept. To find the slope, you need to know the rise and the run. The rise is the difference between the y-values. The run is the difference between the x-values. You can also refer to the slope formula below:

$m = \frac{y_2 - y_1}{x_2 - x_1} \rightarrow m = \frac{5 - (-11)}{-5 - 3} \rightarrow m = \frac{16}{-8} \rightarrow m = -2$

The slope is −2, so you can write the equation as $y = -2x + b$. Pick one of the points on the line, replace x and y with those values and solve for b. If you use the point (3, −11), the equation is:

$-11 = -2(3) + b$.

You can multiply – 2 and 3 to get −6, which makes the equation −11 = −6 + b, so b = −5. Now you know that the y-intercept is −5. In Slope-Intercept Form, the equation is $y = -2x - 5$.

105a.
80 seconds − 44 seconds = 36 seconds. 801 MB − 720 MB = 81 MB. A total of 81 MB are transferred in 36 seconds. As a rate, that is 81 MB per 36 seconds. As a unit rate, that is 2.25 MB per 1 second.

105b.
To find the original file size, work backwards from 44 seconds. There are 801 MB that need to be transferred after 44 seconds. The file is being transferred at a rate of 2.25 MB/sec. If you multiply 2.25 by 44, you can see that 99 MB will be transferred in 44 seconds. If you work backwards from 801 MB, you can add 99 MB to 801 MB to get 900 MB. The original file size was 900 MB.

105c.
After 80 seconds, there are 720 MB left to transfer. The transfer rate is 2.25 MB/sec. 720 divided by 2.25 is 320. It will take 320 seconds to transfer the rest of the file. 80 seconds + 320 seconds = 400 seconds. It will take 400 seconds to transfer the entire file.

106.
To write the equation in Slope-Intercept Form, $y = mx + b$, you need the slope and the y-intercept. To find the slope, you need to know the rise and the run. The rise is the difference between the y-values. The run is the difference between the x-values. You can also refer to the slope formula below:
$m = \frac{y_2 - y_1}{x_2 - x_1} \rightarrow m = \frac{765 - 846}{60 - 24} \rightarrow m = \frac{-81}{36} \rightarrow m = -2.25$
The slope is −2.25, so you can write the equation as $y = -2.25x + b$. Pick one of the points on the line, replace x and y with those values and solve for b. If you use the point (60, 765), the equation is:
$765 = -2.25(60) + b$
You can multiply −2.25 and 60 to get −135, which makes the equation 765 = −135 + b, so b = 900. Now you know that the y-intercept is 900. In Slope-Intercept Form, the equation is $y = -2.25x + 900$.

107.
To find the x-intercept, replace y with 0 and solve for x.
$0 = -2.25x + 900 \rightarrow -900 = -2.25x \rightarrow 400 = x$
The x-intercept is (400,0). This equation has the same rate (slope) as the file transfer scenario. If you let the equation represent that scenario, then the x-intercept is how much time has passed when there are 0 MB left to be transferred. To say this another way, the x-intercept of this equation represents how many seconds it takes to transfer the entire file.

108.
Pick 2 points on the line. The easier points to use are the two points with only positive values: (3, 3) and (8,2). To write the equation in Slope-Intercept Form, $y = mx + b$, you need the slope and the y-intercept. To find the slope, you need to know the rise and the run. The rise is the difference between the y-values. The run is the difference between the x-values. You can also refer to the slope formula below:
$m = \frac{y_2 - y_1}{x_2 - x_1} \rightarrow m = \frac{2 - 3}{8 - 3} \rightarrow m = \frac{-1}{5} \rightarrow m = -\frac{1}{5}$
The slope is $-\frac{1}{5}$, so you can write the equation as $y = -\frac{1}{5}x + b$. Pick one of the points on the line, replace x and y with those values and solve for b. If you use the point (3, 3), the equation is:
$3 = -\frac{1}{5}(3) + b$
You can multiply $-\frac{1}{5}$ and 3 to get $-\frac{3}{5}$, which makes the equation $3 = -\frac{3}{5} + b$. Add $\frac{3}{5}$ to both sides of the equation to isolate b. If you write b as a mixed number, then $b = 3\frac{3}{5}$. The y-intercept is $3\frac{3}{5}$. In Slope-Intercept Form, the equation is $y = -\frac{3}{5}x + 3\frac{3}{5}$. If you use convert these values to decimals, the equation is $y = -0.6x + 3.6$.

109.

When the variables are y and x, a line's equation can be written as $y = mx + b$. In this scenario, though, the vertical axis is labeled with the variable L and the horizontal axis is labeled with the variable h. The equation for this line will have the form $L = mh + b$. To find the equation of the line, pick two points. For example, two points on this line are (0, 5) and (2, 4.2). To find the slope, you need to know the rise and the run. The rise is the difference between the L-values. The run is the difference between the h-values. You can also refer to the slope formula below:

$m = \frac{L_2 - L_1}{h_2 - h_1} \rightarrow m = \frac{4.2 - 5}{2 - 0} \rightarrow m = \frac{-0.8}{2} \rightarrow m = -0.4$

The slope is −0.4, so you can write the equation as $L = -0.4h + b$. To find the L-intercept, you can replace h and L with values from a point on the line, but in this graph, you can see the L-intercept. The point (0, 5) would be called the y-intercept if the vertical axis of this graph was a y-axis. Since the vertical axis is the L-axis, then (0, 5) is the L-intercept of the line. When you replace b with 5, you can write the equation of the line as $L = -0.4h + 5$.

111.

When the variables are y and x, a line's equation can be written as $y = mx + b$. In this scenario, though, the vertical axis is labeled with the variable D and the horizontal axis is labeled with the variable h. The equation for this line will have the form $D = mh + b$. To find the equation of the line, pick two points. For example, two points on this line are (0, 40) and (2, 160). To find the slope, you need to know the rise and the run. The rise is the difference between the D-values. The run is the difference between the h-values. You can also refer to the slope formula below:

$m = \frac{D_2 - D_1}{h_2 - h_1} \rightarrow m = \frac{160 - 40}{2 - 0} \rightarrow m = \frac{120}{2} \rightarrow m = 60$

The slope is 60, so you can write the equation as $D = 60h + b$. To find the D-intercept, you can replace h and D with values from a point on the line, but in this graph, you can see the D-intercept. The point (0, 40) would be called the y-intercept if the vertical axis of this graph was a y-axis. Since the vertical axis is the D-axis, then (0, 40) is the D-intercept of the line. When you replace b with 40, you can write the equation of the line as $D = 60h + 40$.

113.

When the variables are y and x, a line's equation can be written as $y = mx + b$. In this scenario, though, the vertical axis is labeled with the variable W and the horizontal axis is labeled with the variable h. The equation for this line will have the form $W = mh + b$. To find the equation of the line, pick two points. For example, two points on this line are (16, 8) and (24, 6). To find the slope, you need to know the rise and the run. The rise is the difference between the W-values. The run is the difference between the h-values. You can also refer to the slope formula below:

$m = \frac{W_2 - W_1}{h_2 - h_1} \rightarrow m = \frac{6 - 8}{24 - 16} \rightarrow m = \frac{-2}{8} \rightarrow m = -\frac{1}{4}$ or −0.25

The slope is −0.25, so you can write the equation as $W = -0.25h + b$. To find the W-intercept, you can replace h and W with values from a point on the line. If you use the point (16, 8), the equation is:

$8 = -0.25(16) + b$

You can multiply −0.25 and 16 to get −4, which makes the equation $8 = -4 + b$. Add 4 to both sides of the equation to isolate b. Since b = 12, the W-intercept of the line is 12. In Slope-Intercept Form, the equation is $W = -0.25h + 12$.

115a.

Two points on the solid line are (−4, 7) and (0, −3). You can use the slope formula to find the slope:

$m = \frac{y_2 - y_1}{x_2 - x_1} \rightarrow m = \frac{-3 - 7}{0 - (-4)} \rightarrow m = \frac{-10}{4} \rightarrow m = -\frac{5}{2}$

The y-intercept is visible on the graph. It is (0, −3). The equation of the line is $y = -\frac{5}{2}x - 3$.

115b.
Two points on the dashed line are (−5, 2) and (5, 6). You can use the slope formula to find the slope:
$m = \frac{y_2 - y_1}{x_2 - x_1} \rightarrow m = \frac{6 - 2}{5 - (-5)} \rightarrow m = \frac{4}{10} \rightarrow m = \frac{2}{5}$
The *y*-intercept is visible on the graph. It is (0, 4). The equation of the line is $y = \frac{2}{5}x + 4$.

117a.
The two marked points on the solid line are (−3, −4) and (2, −1). You can use the slope formula to find the slope:
$m = \frac{y_2 - y_1}{x_2 - x_1} \rightarrow m = \frac{-1 - (-4)}{2 - (-3)} \rightarrow m = \frac{3}{5}$
The two marked points on the dashed line are (−1, 5) and (4, −5). You can use the slope formula to find the slope:
$m = \frac{y_2 - y_1}{x_2 - x_1} \rightarrow m = \frac{-5 - (5)}{4 - (-1)} \rightarrow m = \frac{-10}{6} \rightarrow m = -\frac{5}{3}$

117b.
The two marked points on the solid line are (−4, −4) and (2, 4). You can use the slope formula to find the slope:
$m = \frac{y_2 - y_1}{x_2 - x_1} \rightarrow m = \frac{4 - (-4)}{2 - (-4)} \rightarrow m = \frac{8}{6} \rightarrow m = \frac{4}{3}$
The two marked points on the dashed line are (−5, 2) and (3, −4). You can use the slope formula to find the slope:
$m = \frac{y_2 - y_1}{x_2 - x_1} \rightarrow m = \frac{-4 - (2)}{3 - (-5)} \rightarrow m = \frac{-6}{8} \rightarrow m = -\frac{3}{4}$

121.
Note: parallel lines have the same slope.

124a.
When the variables are *y* and *x*, a line's equation can be written as *y* = m*x* + b. In this scenario, though, the vertical axis is labeled with the variable *P* and the horizontal axis is labeled with the variable *x*. The equation for this line will have the form *P* = m*x* + b. To find the equation of the line, pick two points. For example, two points on this line are (−9, 11) and (−6, 9). To find the slope, you need to know the rise and the run. The rise is the difference between the *P*-values. The run is the difference between the *x*-values. You can also refer to the slope formula below:
$m = \frac{P_2 - P_1}{x_2 - x_1} \rightarrow m = \frac{9 - 11}{-6 - (-9)} \rightarrow m = \frac{-2}{3} \rightarrow m = -\frac{2}{3}$
The slope is $-\frac{2}{3}$, so you can write the equation as $P = -\frac{2}{3}x + b$. To find the *P*-intercept, you can replace *x* and *P* with values from a point on the line. If you use the point (−9, 11), the equation is:
$11 = -\frac{2}{3}(-9) + b$
You can multiply $-\frac{2}{3}$ and −9 to get 6, which makes the equation 11 = 6 + b. Subtract 6 on both sides of the equation to isolate b. Since b = 5, the *P*-intercept of the line is 5. In Slope-Intercept Form, the equation is $W = -\frac{2}{3}x + 5$.

124b.
The find out if a point is located on a line, replace the 2 variables in the equation with the 2 values in the point. When you plug in the values from the point (33, −16), the equation is:
$-16 = -\frac{2}{3}(33) + 5 \rightarrow -16 = -22 + 5 \rightarrow -16 = -17$
Since −16 does not equal −17, the point (33, −16) is not located exactly on the line. However, since −16 is close to −17, the point is close to the line.

125a.

Your equation will show what the elevation of the plane is after the plane has been descending for *m* minutes. Your equation shows what the elevation is, what the elevation equals, so your equation will start out as *E* =.... Instead of *y* = ___*x* + ___, this equation will look like *E* = ___*m* + ___. You need 2 points to find the equation of a line. This scenario gives you the elevation of the plane at 2 different points in time. When *m* = 4 minutes, *E* = 28,000 feet. When *m* = 9 minutes, *E* = 15,500 feet. If you think of these as ordered pairs written in the form (*m*, *E*), then one point is (4, 28000) and another point is (9, 15500).

$\text{m} = \frac{E_2 - E_1}{m_2 - m_1} \rightarrow \text{m} = \frac{15{,}500 - 28{,}000}{9 - 4} \rightarrow \text{m} = \frac{-12{,}500}{5} \rightarrow \text{m} = -2{,}500$

For this scenario, the slope of the line is the rate at which the elevation is changing every minute. The plane's elevation decreases by 12,500 feet in 5 minutes. As a unit rate, that is a decrease of 2,500 feet per minute.

Now that you know the slope, you can write the equation as *E* = −2500*m* + b. In this scenario, b represents the *E*-intercept, the value of *E* when *m* = 0. In other words, b is the elevation of the plane at the moment it starts descending. To solve for b, pick one ordered pair and replace *m* and *E* in the equation with the values in that ordered pair. If you use the point (4, 28000), the equation is:

$28{,}000 = -2{,}500(4) + b$

You can multiply −2,500 and 4 to get −10,000, which makes the equation 28,000 = −10,000 + b. Add 10,000 on both sides of the equation to isolate b. Since b = 38,000, this is the *E*-intercept of the line that represents the airplane's constantly changing elevation as it descends. The plane is at an elevation of 38,000 feet at the moment is starts to descend. In Slope-Intercept Form, the equation is *E* = −2,500*m* + 38,000.

125b.

In the equation, replace *m* with 16.

$E = -2{,}500(16) + 38{,}000 \rightarrow E = -40{,}000 + 38{,}000 \rightarrow E = -2{,}000$

The equation shows that the elevation of the plane will be −2,000 feet after it has been descending for 16 minutes. If you assume that the ground has an elevation of 0 feet, then this equation indicates that the plane will be 2,000 feet under the ground. This is not reasonable, so you can conclude that the plane is not still descending at a constant rate after 16 minutes. As the plan gets closer to landing, at some point it's rate of descent will change and it's elevation will not be able to be represented by the equation *E* = −2,500*m* + 38,000.

126a.

$y - 4 = \frac{3}{4}(x - 2) \rightarrow y - 4 = \frac{3}{4}x - \frac{6}{4} \rightarrow y - 4 = \frac{3}{4}x - \frac{3}{2} \rightarrow y = \frac{3}{4}x - \frac{3}{2} + 4 \rightarrow y = \frac{3}{4}x - \frac{3}{2} + \frac{8}{2}$

$y = \frac{3}{4}x + \frac{5}{2}$

126b.

$y + 4 = -\frac{1}{2}(x - 10) \rightarrow y + 4 = -\frac{1}{2}x + 5 \rightarrow y = -\frac{1}{2}x + 5 - 4$

$y = -\frac{1}{2}x + 1$

127a.

1,800 photographs ÷ 60 seconds = 30 photographs per second

6,000 photographs ÷ 200 seconds = 30 photographs per second

Company A takes 30 photographs for every 1 second of film. If they take 12,000 photographs for a film, the length of film will be 12,000 ÷ 30 = 400 seconds long, which is 6 minutes and 40 seconds. 6 minutes is 360 seconds, so 400 seconds is 6 minutes plus an extra 40 seconds.

127b.
Use the equation $T = 0.04p$ and replace p with 15,000.
$T = 0.04(15{,}000) \rightarrow T = 600$ seconds, which is 10 minutes.

127c.
Company A uses 30 photographs per second
Company B uses 15,000 photographs for a film that is 600 seconds long.
15,000 photographs ÷ 600 seconds = 25 photographs per second

Company A uses 5 more photographs per second than Company B.

128a.
To write the equation in Slope-Intercept Form, $y = mx + b$, you need the slope and the y-intercept. To find the slope, you need to know the rise and the run. The rise is the difference between the y-values. The run is the difference between the x-values. You can also refer to the slope formula below:
$m = \frac{y_2 - y_1}{x_2 - x_1} \rightarrow m = \frac{-5 - 1}{-4 - 5} \rightarrow m = \frac{-6}{-9} \rightarrow m = \frac{2}{3}$
The slope is $\frac{2}{3}$, so you can write the equation as $y = \frac{2}{3}x + b$. Pick one of the points on the line, replace x and y with those values and solve for b. If you use the point (5, 1), the equation is:
$1 = \frac{2}{3}(5) + b$
You can multiply $\frac{2}{3}$ and 5 to get $\frac{10}{3}$, which makes the equation $1 = \frac{10}{3} + b$. Subtract $\frac{10}{3}$ to both sides of the equation to isolate b. $1 - \frac{10}{3}$ can be written as $\frac{3}{3} - \frac{10}{3}$, which is $-\frac{7}{3}$. If you write b as a mixed number, then $b = -2\frac{1}{3}$. The y-intercept is $-2\frac{1}{3}$. In Slope-Intercept Form, the equation is $y = \frac{2}{3}x - 2\frac{1}{3}$.

128b.
To graph the line, you can plot the two given points and draw a line through them. You can also graph the line by marking a point at the y-intercept of $\left(0, -2\frac{1}{3}\right)$ and then using the slope to plot more points. The slope is $\frac{2}{3}$, so you can start at the y-intercept and either move up 2 and then right 3, or move down 2 and then left 3.

131a.
All of the points on the solid line have a y-value of 5. For every point on the line, $y = 5$, so the equation of the line is $y = 5$.

131b.
All of the points on the dashed line have an x-value of −3. For every point on the line, $x = -3$, so the equation of the line is $x = -3$.

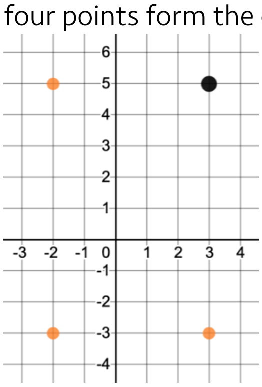
133a.
If you rotate the graph 180°, the y-intercept moves from (0, 4) to (0, −4), but the slope is unchanged.

133b.
If you extend the line in the original graph, you will see that its x-intercept is (6, 0). If you rotate the graph 90° to the right (clockwise), the positive side of the x-axis becomes the negative side of the y-axis. The line's original x-intercept at (6, 0) becomes the line's y-intercept at (0, −6). The original slope, the change in y over change x is $\frac{-2}{3}$. When you rotate the graph 90° to the right, the line now moves up and to the right and the x and y movements are switched. The slope of the new line is $\frac{3}{2}$. The equation of the new line is $y = \frac{2}{3}x - 6$.

133c.
If you rotate the original graph 90° to the left (counterclockwise), the positive side of the x-axis becomes the positive side of the y-axis. The line's original x-intercept at (6, 0) becomes the line's y-intercept at (0, 6). The original slope, the change in y over change x is $\frac{-2}{3}$. When you rotate the graph 90° to the left, the line now moves up and to the right and the x and y movements are switched. The slope of the new line is $\frac{3}{2}$. The equation of the new line is $y = \frac{2}{3}x + 6$.

134b.
If you drive 24 miles in 40 minutes, you can find your speed using the units of miles per minute. If you want to write the speed using the units of miles per hour, you need to write 40 minutes as two-thirds of one hour. Now the rate is 24 miles in $\frac{2}{3}$ hour. To convert that rate to miles per 1 hour, you can calculate $24 \div \frac{2}{3}$. To divide by a fraction, you can convert the division to multiplication and multiply by the reciprocal. $24 \cdot \frac{3}{2} \rightarrow \frac{72}{2} \rightarrow 36$. A speed of 24 miles every 40 minutes is 36 miles every hour.

135.
If you plot the first 3 points, you can see that there needs to be a fourth point at (3, 5) to make the four points form the corners of a rectangle.



139a.
Joey ate 34 hot dogs in 5 minutes. 34 ÷ 5 = 6.8 hot dogs per minute

139b.
Joey ate 66 hot dogs in 12 minutes. 66 ÷ 12 = 5.5 hot dogs per minute

139c.
Joey ate 54 hot dogs in 10 minutes. 54 ÷ 10 = 5.4 hot dogs per minute

141a.
To write the equation as F =..., it may help to write the pairs of temperatures as ordered pairs (C, F). The order is (C, F) because F is the y-variable since the equation starts with F = instead of y = ...

Water boils at 100°C or 212°F so you can write this ordered pair as (100, 212).
Water freezes at 0°C or 32°F so you can write this ordered pair as (0, 32).

If the equation is written as $F = mC + b$, then the slope is a rate that compares the change in Fahrenheit to the change in Celsius. To find this rate, you can use the slope formula:

$m = \frac{F_2 - F_1}{C_2 - C_1} \rightarrow m = \frac{212 - 32}{100 - 0} \rightarrow m = \frac{180}{100} \rightarrow m = \frac{9}{5}$

The slope is , so the equation can be written as $F = \frac{9}{5}C + b$. The point (0, 32) is the F-intercept, so the equation is $F = \frac{9}{5}C + 32$.

141b.
Replace F with 1220 and solve for C.

$1220 = \frac{9}{5}C + 32 \rightarrow 1188 = \frac{9}{5}C \rightarrow \frac{5}{9}\cdot 1188 = \frac{9}{5}C\cdot\frac{5}{9} \rightarrow 660 = C$

1220°F is the same as 660°C.

141c.

$F = \frac{9}{5}C + 32 \rightarrow F - 32 = \frac{9}{5}C \rightarrow \frac{5}{9}\cdot(F - 32) = \frac{9}{5}C\cdot\frac{5}{9} \rightarrow \frac{5}{9}(F - 32) = C$

143a.
Graph the horizontal line formed by the equation $y = 3$. Make the line dashed to show that points on the line do not make the inequality true so they are not part of the solution. Shade the region above the line. Every point above the line has a y-value that is greater than 3.

143b.
Graph the vertical line formed by the equation $x = -4$. Make the line solid to show that points on the line make the inequality true so they are part of the solution. Shade the region to the left of the line. Every point to the left of the line or on the line has an x-value that is less than or equal to −4.

144a.
Graph the vertical line formed by the equation $x = 2$. Make the line dashed to show that points on the line do not make the inequality true so they are not part of the solution. Shade the region to the right of the line. Every point to the right of the line has an x-value that is greater than 2.

144b.
Graph the horizontal line formed by the equation $y = 0$. It will be hard to show this line, because it is the same line as the x-axis, which is already included in the graph. Make the line solid to show that points on the line make the inequality true so they are part of the solution. Shade the region below the x-axis. Every point below the x-axis or on the x-axis has a y-value that is less than or equal to 0.

147a.

$3x + 5y < -30 \rightarrow 5y < -30 - 3x \rightarrow \frac{5y}{5} < \frac{-30 - 3x}{5} \rightarrow y < -6 - \frac{3}{5}x \rightarrow y < -\frac{3}{5}x - 6$

147b.

$-3y + 9x \geq 24 \rightarrow -3y \geq 24 - 9x \rightarrow \frac{-3y}{-3} \geq \frac{24 - 9x}{-3} \rightarrow y \leq -8 + 3x \rightarrow y \leq 3x - 8$

Notice that the direction of the inequality changes after dividing both sides by −3. When you solve for a variable in an inequality, the direction of the inequality changes whenever you multiply or divide both sides of the inequality by a negative number.

148a.

The inequality is $y \geq -x + 2$. Before you graph the shaded region, draw the boundary, which is formed by the equation $y = -x + 2$. First, plot a point at the y-intercept of 2, or (0, 2). Then, use the slope to plot more points. The slope is −1. As a fraction −1 is $\frac{-1}{1}$ or $\frac{1}{-1}$. If you think about the slope as $\frac{-1}{1}$, you can plot another point by starting at the y-intercept and moving down 1 and then right 1. If you think about the slope as $\frac{1}{-1}$, you can plot another point by starting at the y-intercept and moving up 1 and then left 1. After your plot at least 3 points, you can draw the boundary line. For the inequality $y \geq -x + 2$, the boundary line is included in the solution region. After you draw the line, shade the region above the line. The inequality is $y \geq$ ... and since y-values are up or down movements, the points that make the inequality true have y-values that are greater than the y-values of the points on the line. To show that these points are the solution to the inequality, you shade the region above the line.

148b.

Convert the inequality to Slope−Intercept Form.

$x - 4y > 12 \rightarrow -4y > 12 - x \rightarrow \frac{-4y}{-4} > \frac{12 - x}{-4} \rightarrow y < -3 + \frac{x}{4} \rightarrow y < \frac{1}{4}x - 3$

Notice that the direction of the inequality changes after dividing both sides by −4. When you solve for a variable in an inequality, the direction of the inequality changes whenever you multiply or divide both sides of the inequality by a negative number.

Before you graph the shaded region for the inequality, draw the boundary, which is formed by the equation $y = \frac{1}{4}x - 3$. First, plot a point at the y-intercept of −3, or (0, −3). Then, use the slope to plot more points. The slope is $\frac{1}{4}$. You can plot another point by starting at the y-intercept and moving up 1 and then right 4. If you think about the slope as $\frac{-1}{-4}$, you can plot another point by starting at the y-intercept and moving down 1 and then left 4. After your plot at least 3 points, you can draw the boundary line. For the inequality $y < \frac{1}{4}x - 3$, the boundary line is not included in the solution region. You can show the line is not included by drawing the line as a dashed line. After you draw the dashed line, shade the region above the line. The inequality is $y <$ ... and since y-values are up or down movements, the points that make the inequality true have y-values that are less than the y-values of the points on the line. To show that these points are the solution to the inequality, you shade the region below the line.

150a.

$x - 8 = 3 - (x + 6)$ distribute the negative sign to both terms inside the parentheses

$x - 8 = 3 - x - 6$ on the right side, combine 3 and − 6 to get −3

$x - 8 = -x - 3$ add x on both sides

$2x - 8 = -3$ add 8 on both sides

$2x = 5$ divide by 2 on both sides

$x = 2.5$

150b.

$\frac{2 + 3x - 5}{3} = 7$ in the numerator, combine 2 and − 5 to get −3

$\frac{3x - 3}{3} = 7$ multiply both sides by 3

$3 \cdot \left(\frac{3x - 3}{3}\right) = 7 \cdot 3$ simplify on both sides

$3x - 3 = 21$ add 3 on both sides

$3x = 24$ divide by 3 on both sides

$x = 8$

151.

$128,000 increases by 12%. To find how much it increases, calculate 12% of 128,000. To find this amount, you can multiply 0.12 and $128,000.

0.12(128,000) = $15,360

The value of the painting increases by $15,360.

152.

If the average attendance is 3,528 per game after 3 games, then the total attendance for those 3 games was 3x3,528 or 10,584. After 4 games, a total of 14,570 people had attended the games. You can calculate the attendance in the fourth game by subtracting 10,584 from 14,570.

14,570 − 10,584 = 3,986

153.

The number of people who voted in 2004 was 15.9% higher than the number who voted in 2000.

Let x be the number people who voted in 2000

122 million is 15.9% higher than x?

122,000,000 is x + 15.9% of x

$122{,}000{,}000 = x + .159x$

$122{,}000{,}000 = 1.159x$

To solve for x, divide both sides by 1.159

$x = 122{,}000{,}000 \div 1.159$

$x = 105{,}263{,}157.89$

105,263,158 people voted in 2000

154.

The slopes as fractions:

a. $\frac{1}{5}$ b. $\frac{1}{4}$ c. $\frac{2}{4}$ or $\frac{1}{2}$ d. $\frac{3}{3}$ or 1 e. $\frac{4}{2}$ or 2 f. $\frac{6}{2}$ or 3 g. $\frac{6}{1}$ or 6

The slopes as decimals:

a. 0.2 b. 0.25 c. 0.5 d. 1 e. 2 f. 3 g. 6

As the slope gets steeper, the numerical value of the slope gets larger.

