

1. C

2.  $x = -36$

3.  $r = 12$

4.  $x = 3$

5.  $x = \frac{17}{12} \approx 1.416666$

6.  $x = 6$

$$\begin{array}{ll}
 2x + 3 = 5x - 6 & 2(3) + 3 = 9 \\
 3x = 9 & \text{or } 5(3) - 6 = 9 \\
 x = 3 & \text{Student should grid 9}
 \end{array}$$

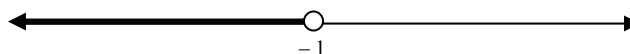
8.  $W = \frac{12 - 2L}{2}$  or  $W = 6 - L$  or  $W = -L + 6$

9.  $H = \frac{A - C}{B}$

10.  $x \leq 4$



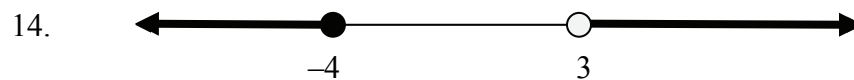
11.  $x < -1$



12.  $x > -11$



13.  $20 \leq x \leq 30$

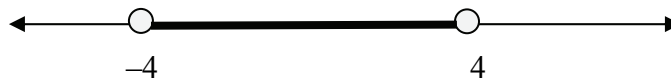


15. A

16.  $|x - 50| \leq 3$

17. C

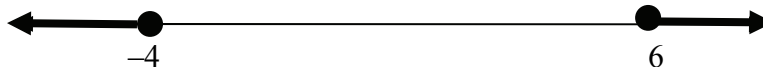
18.  $-4 < x < 4$



19.  $-11 < x < 5$



20.  $x \geq 6$  or  $x \leq -4$



21. **B**

22. A relation is a function if for every  $x$ -value (domain value, independent variable value), there is no more than one  $y$ -value (range value, dependent variable value).

23. **B**

24. The graph represents a function. Each  $x$ -value has no more than one corresponding  $y$ -value.

25.  $f(-1) = 2$

26.  $f(5) = -4$

27.  $f(0) = 1$

28. a.  $f(4) = 14$

b.  $f(-2) = -4$

29. **A**

30. **C**

31.

- 7.0 gallons (Response could indicate a rate of change of 0.4 gals per second times 5 seconds for a total change of 2 gallons,  $5 \times 0.4 = 2$ . Response could indicate an equation  $G = 3.0 + 0.4t$  and evaluating the function at  $t = 10$ . Response could indicate a continuation of the table.)
- The relationship is linear. (Response should indicate that as time increases by one second, that the number of gallons increases by a constant 0.4 gallons.)

32. Roberto orders 11 rings.

33.  $\frac{3}{4}$  or 0.75

34.  $\frac{39}{6}$  or  $\frac{13}{2}$  or 6.5

35. The greater the value of the coefficient of  $x$ , which is the slope, the steeper the line.

36.

  1    $y = 4x$

  2    $y = x - 4$

  3    $y = \frac{1}{4}x$

  4    $y = 4$

37.  $C = 2.67g$

38.  $d = 65t$

39.  $W = 7.5h$  or  $W = 7.50h$

40. a.  $S = 1.2w$  or  $\frac{S}{w} = \frac{12}{10}$

b. 18 centimeters

41.  $y = \frac{8}{5}x$  When  $x = 40$ ,  $y = 64$ .  $\left(\frac{8}{5}$  can be written as 1.6 or  $\frac{24}{15}$ )

42.  $C = 97.5A$  When  $C = 585$ ,  $A = 6$  ounces.

43.

- $D = 300 - 7.5t$  or  $D = -7.5t + 300$  (Response should indicate how the numbers  $-7.5$  and  $300$  were determined.)
- The runner is traveling at 7.5 yards per second. (Response should indicate a ratio of changes in  $D$  and  $t$  in some form.)
- 60 yards from the finish. (Possible responses could be evaluating the function at  $t = 32$ , or continuing the pattern in the table  $24 \rightarrow 120$ ,  $28 \rightarrow 90$ ,  $32 \rightarrow 60$ .)

44.

$x$	$y$
-3	7
-2	4
-1	<b>1</b>
0	-2
1	-5
2	-8
3	<b>-11</b>

45.

$x$	$y$
0	-4
1	<b>1</b>
2	6
3	<b>11</b>
4	16
5	<b>21</b>
6	<b>26</b>

46. **A**47. **D**

48.  $y = 3x + 6$  or  $-3x + y = 6$  or  $3x - y = -6$  or  $y = 6 + 3x$

49.  $y = \frac{1}{2}x + 4$  or  $-x + 2y = 8$  or  $x - 2y = -8$  or  $y - 3 = \frac{1}{2}(x + 2)$  or  $y = 4 + \frac{1}{2}x$

50.  $y = -2x + 4$  or  $2x + y = 4$  or  $y = 4 - 2x$

51.  $y = \frac{2}{5}x - 3$  or  $y = -3 + \frac{2}{5}x$  or  $-2x + 5y = -15$  or  $2x - 5y = 15$

52.

- $C = 10.00 + 1.50n$
- \$14.50 (response should indicate substitution into the equation or state verbally “add 3 times \$1.50 plus \$10.00”)
- 14 nights (response could indicate solving the equation  $31.00 = 10.00 + 1.50n$ , or could indicate dividing \$21.00 by \$1.50)

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

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

55. The  $x$ -intercept is 10. The student can extend the table, write the equation for the line

$$\left( y = -\frac{3}{2}x + 15 \right) \text{ or graph the points.}$$

56. The  $y$ -intercept is 15. The student can extend the table, write the equation for the line

$$\left( y = -\frac{3}{2}x + 15 \right) \text{ or graph the points.}$$

57.

- \$240 *Response could indicate using the rate of change of \$30 per year or continuing the pattern:  $0 \rightarrow 240$ .*
- 8 years *Response could indicate a continuation of the pattern:  $6 \rightarrow \$60, 7 \rightarrow \$30, 8 \rightarrow \$0$ .*

58.

- Jay’s uncle gives him an additional 15 cards each year.
- Jay’s father gave him 40 cards to start.

59. The delivery charge is \$25.00.

60. B

61. D

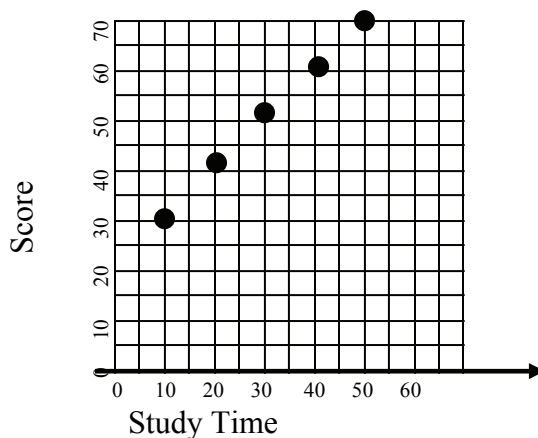
62.

- -15 gallons per minute, the bathtub is draining at the rate of 15 gallons per minute.
- The  $x$ -intercept represents the number of minutes required to drain the tub. The  $y$ -intercept represents how many gallons of water were in the tub when the tub started draining.
- $y = 120 - 15x$  or  $y = -15x + 120$

63.

- The calculator gives a line of fit as  $y = 3.885714286x + 26.74285714$ . *Accept slope values between 3 and 5 and intercepts between 25 and 30.*
- The  $y$ -intercept gives the number of seconds Jan could hold her breath swimming underwater before the swimming class started.
- The rate of change is 3.886 seconds per week (*or student's slope number*).
- Using the calculator equation results in 73.371 seconds in the 12<sup>th</sup> week of class. *Accept correct responses based on the equation given in the first part.*
- Using the calculator equation results in 17.565 weeks. *Accept correct responses based on the equation given in the first answer. Accept 18 weeks.*

64. Study Time and Scores



- The calculator gives a line of fit of  $y = .98x + 21.2$ . *Accept slope values between 0.5 and 1.5 and  $y$ -intercept values between 15 and 25.*

- Using the calculator equation  $y(7) = 28.06$ . Accept responses that are correct based on the students' equation in the previous part.

65. 
$$32 + 7c < 47.75$$
$$c < 2.25$$

66. A

67. If the slopes are the same but the  $y$ -intercepts are different, the two lines are parallel.

If the slopes and  $y$ -intercepts are the same, the lines intersect at an infinite number of points.

If the slopes of the graphs are different, the lines intersect at exactly one point.

68. The graphs are parallel lines and the system has no solutions.

69. The graphs intersect in one point and the system has exactly one solution.

70. The graphs are the same lines. The lines intersect in an infinite number of points and the system has an infinite number of solutions.

71.  $\left(-\frac{4}{3}, 3\right)$

72.  $(5, -3)$

73.

- $$\begin{cases} x + y = 50 \\ 1.5x + 2y = 95 \end{cases}$$

- $x = 10, y = 40$  (Response should indicate the method used to solve the system)

- 10 boxes of M&M's, 40 boxes of Reese's.

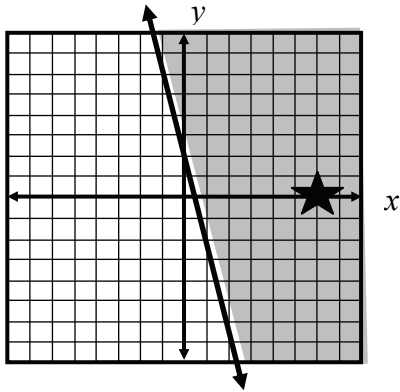
74. Let  $x$  represent the number of hours to fix the brakes.

$$25 + 50x = 70 + 40x$$

$$x = 4.5 \text{ hours}$$

75. One grid line equals one unit.

a.



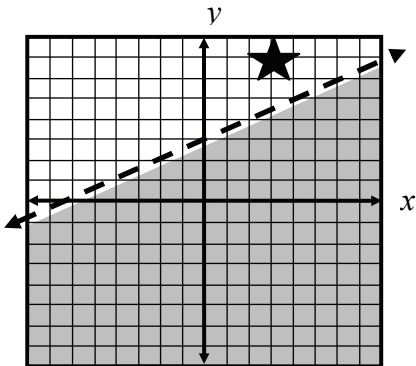
b.

b.  $(6,0)$  is in the shaded region and **is** a solution to the inequality.

Student may substitute  $(6,0)$  into the inequality and show that the inequality is true.

76. One grid line equals one unit.

a.



b.  $(3,7)$  is not in the shaded region and **is not** a solution to the inequality

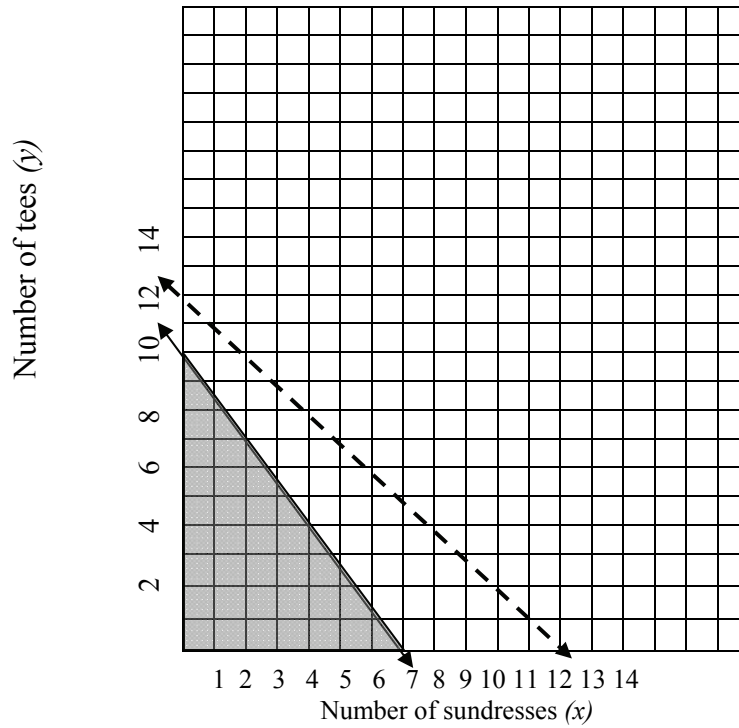
Student may substitute  $(3,7)$  into the inequality and show that the inequality is false.

77. **B**

78.

a.  $x + y < 12$   
 $15x + 10y \leq 100$

b.



The shaded area represents the solution to the system of inequalities.

- c. Many possibilities including:  
6 sundresses and 1 tee  
3 sundresses and 5 tees  
1 sundress and 8 tees  
10 tees