

Algebra II Practice Test 2**Numeric Response**

1. (5 points) A 5-foot-tall student casts a shadow 7 feet long. At the same time, a flagpole casts a shadow that is 35 feet long. How many feet tall is the flagpole?
2. (5 points) Elena bought a sweatshirt in London that cost 16 pounds. At the time, \$1 was worth 0.56 pounds. Find the cost of the sweatshirt in dollars. If necessary, round your answer to the nearest cent.
3. (5 points) Using data from a new data set, the relationship between the height in centimeters and the length of a woman's humerus bone is modeled by the equation $h \approx 2.71l + 72.8$. Use this equation to approximate the height of a woman whose humerus bone is 28 centimeters long. Give your answer to the nearest tenth of a centimeter.

Short Answer

4. (5 points) Dan paid a total of \$25.80 last month for his international calls. He makes international calls only to England. Dan pays \$0.06 per minute in addition to \$10.98 fixed monthly payment. How many minutes of international calls did Dan make last month?

5. (5 points) Solve $-4(24 + 8y) = -64$.

6. (5 points) Solve $3n - 24 = 14 - 30n$.

7. (5 points) Solve $5j - 12 + 13j = -4 + 18j - 8$.

8. (5 points) Solve and graph $-2a - 7 > -3$.

9. (5 points) Solve and graph $5(-4 + 2x) \geq 2(5x + 4)$.

10. (5 points) Solve the proportion $\frac{4}{8} = \frac{x}{16}$.

11. (5 points) A high school stadium can seat about 80% of the students attending the high school. If there are 405 students enrolled in the high school, how many students can the stadium seat? If necessary, round to the nearest number of students.

12. (5 points) Lydia is training for the half marathon, a 13-mile-long race. This morning she ran 8 miles in 58 minutes. Assuming she can maintain this pace, how long will it take her to run the half marathon? Round your answer to the nearest minute.

13. (5 points) $\triangle ABC$ has vertices $A(0,0)$, $B(10,0)$, and $C(10,14)$. $\triangle ADF$ is similar to $\triangle ABC$ with a vertex at $D(5,0)$. Graph $\triangle ABC$ and $\triangle ADF$ on the same grid.

14. (5 points) A sawyer (person who cuts down trees) wants to know the height of a tree. The sawyer measures the shadow of his friend, who is 5 feet tall and standing beside the tree, and measures the shadow of the tree. If his friend's shadow is 12 feet long and the tree's shadow is 60 feet long, how tall is the tree?

15. (5 points) A recipe for trail mix requires 2 parts peanuts, 3 parts raisins, and 4 parts granola by weight. Chiwa has 30 ounces of peanuts, 63 ounces of raisins, and 40 ounces of granola. How many ounces of trail mix can she make? How many ounces of raisins will she need?

16. (5 points) Determine whether the data set could represent a linear function.

x	$f(x)$
0	1
1	0
2	-1
3	-2

17. (5 points) Graph the line with slope $-\frac{1}{3}$ that passes through $(-6, -4)$.

18. (5 points) Find the intercepts of $-x - y = 2$, and graph the line.

19. (5 points) Write the function $5x + 10y = -20$ in slope-intercept form. Then graph the function.

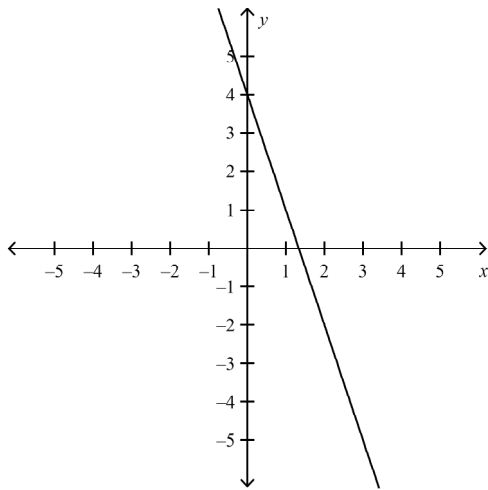
20. (5 points) Determine if $x = -2$ is vertical or horizontal. Then graph.

21. (5 points) There was \$1,400 in Naomi's school art and music fund when school began. Then the parents' group held a 12-day fundraiser to reach the school's goal of \$6,000. Find the average amount of money per day the parents raised. Graph the daily amount of money in the fund during the 12-day parent fundraiser.

22. (5 points) Determine whether the data in the table are linear. Explain.

Session Length (min)	4	9	14	21	27
Cost (\$)	2.90	4.65	6.40	8.85	10.95

23. (5 points) Write the equation of the graphed line in slope-intercept form.



24. (5 points) Find the slope of the line that passes through the points (1, 3) and (9, 7).

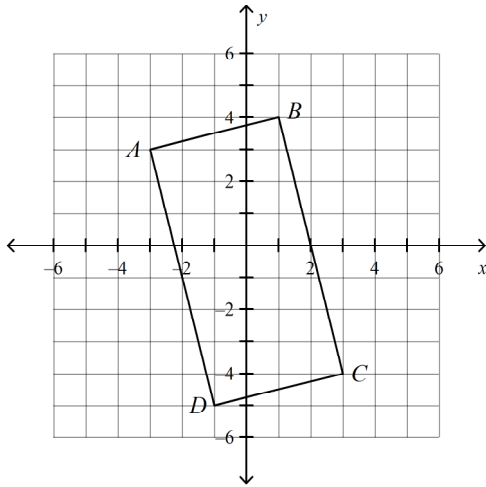
25. (5 points) In slope-intercept form, write the equation of the line that contains the points in the table.

x	-2	0	2	4	6
y	-3	1	5	9	13

26. (5 points) After the first three miles, the cost of a taxi ride is a linear function of the trip length. Express the taxi cost as a function of the trip length. Graph the relationship between the taxi cost and the trip length. If a 5-mile ride costs \$5.00 and a 10-mile ride costs \$8.75, how much does a 16-mile ride cost?

27. (5 points) In slope-intercept form, write the equation of the line that is parallel to $y = -2x - 9$ and passes through $(-2, -4)$.

28. (5 points) Find the slope of each segment and then classify the quadrilateral.



29. (5 points) Graph the inequality $y > \frac{3}{4}x - 2$.

30. (5 points) Graph $16x + 8y > -32$ using intercepts.

31. (5 points) A music store is selling posters and CDs. Each poster gives a profit of \$3.00 and each CD gives a profit of \$5.00. The store needs to make an average profit of \$200 per hour to stay in business. Let x represent the number of posters sold and y represent the number of CDs sold. Write and graph an inequality showing how many of each item (posters and CDs) the store needs to sell per hour to make a sufficient profit.

32. (5 points) Solve $\frac{3}{4}(5x - y) < 3$ for y . Graph the solution.

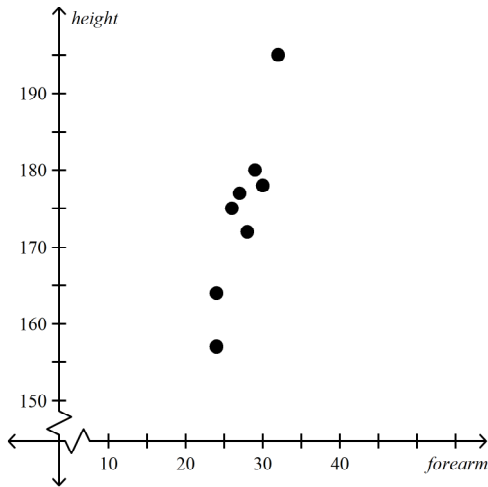
33. (5 points) Graph the inequality $5(5x - 4y) < 3(2 + 8x) - 17y$.

34. (5 points) Let $g(x)$ be the transformation, vertical translation 3 units down, of $f(x) = -4x + 8$. Write the rule for $g(x)$.
- _____
- _____
35. (5 points) Let $g(x)$ be a horizontal compression of $f(x) = 3x + 5$ by a factor of $\frac{1}{2}$. Write the rule for $g(x)$ and graph the function.
- _____
- _____
36. (5 points) Let $g(x)$ be a vertical shift of $f(x) = -x$ up 4 units followed by a vertical stretch by a factor of 3. Write the rule for $g(x)$.
- _____
- _____
37. (5 points) The Ybarra family is renting a car for a few days. Meinke Rentals charges \$20 per day, plus a fixed cleaning fee of \$20. The function $M(d) = 20d + 20$ represents the cost to rent a car from Meinke Rentals for d days. SmartRent charges \$25 per day. The function $S(d) = 25d$ represents the cost to rent a car from SmartRent for d days. Graph $M(d)$ and $S(d)$ on the same coordinate plane and describe the transformation that takes $M(d)$ to $S(d)$.
- _____
- _____
38. (5 points) Give two different combinations of transformations that would transform $f(x) = 5x + 3$ into $g(x) = 15x - 12$.
- _____
- _____
39. (5 points) Anchorage, Alaska and Augusta, Georgia have very different average temperatures. This is a table of the average monthly temperature in each city. Make a scatter plot for the temperature data, identify the correlation, and then sketch a line of best fit and find its equation.

Average Temperatures (°F)												
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Anchorage	15	19	26	26	47	54	58	56	48	35	21	16
Augusta	44	47	56	63	71	78	81	80	75	64	55	47

40. (5 points) There is a known relationship between forearm length (f) and body height (h). The table and accompanying scatter plot show arm lengths and heights from a randomly selected sample of people. Find the correlation coefficient r and the line of best fit.

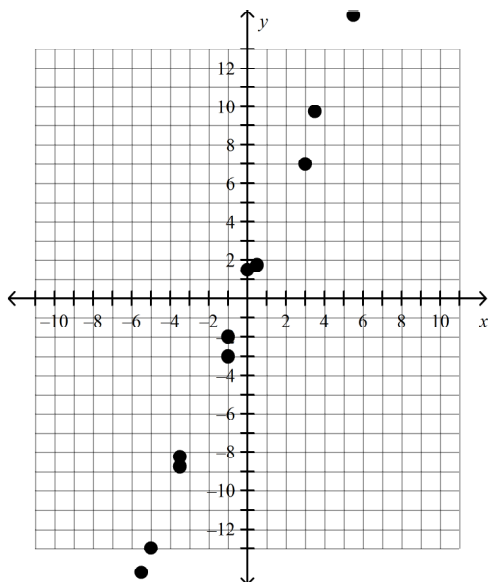
Forearm length (cm)	24	27	24	26	32	30	29	28
Body height (cm)	157	177	164	175	195	178	180	172



41. (5 points) The data set shows the amount of funds raised and the number of participants in the fundraiser at the Family House organization branches. Make a scatter plot of the data with number of participants as the independent variable. Then, find the correlation coefficient and the equation of the line of best fit and draw the line.

Family House Fundraiser								
Number of participants	6	10	15	20	25	13	15	18
Funds raised (\$)	450	550	470	550	650	600	600	650

42. (5 points) Estimate the value of r for the scatter plot.



43. (5 points) Solve the compound inequality. Then graph the solution set.

$$s - 2 < -10 \text{ or } -3s \leq 6$$

44. (5 points) Solve the equation $9|x - 4| = 81$.

45. (5 points) Solve the inequality $|12 + 4x| > 16$ and graph the solution set.

46. (5 points) Solve $\frac{|x - 12|}{4} \leq 1$ and graph the solution set.

47. (5 points) Solve the inequality and graph the solution set for $-6|6 + 3x| = -24$.

Algebra II Practice Test 2

Answer Section

NUMERIC RESPONSE

1. ANS: 25

PTS: 5

2. ANS: \$28.57

PTS: 5

3. ANS: 148.7

PTS: 5

SHORT ANSWER

4. ANS:
247 minutes

PTS: 5

REF: Page 91

5. ANS:
 $y = -1$

PTS: 5

REF: Page 91

6. ANS:
 $n = 1\frac{5}{33}$

PTS: 5

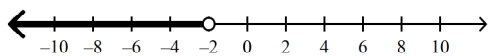
REF: Page 92

7. ANS:
The solution set is all real numbers, or $\mathbb{R}$.

PTS: 5

REF: Page 92

8. ANS:
 $a < -2$

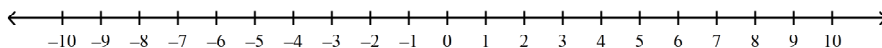


PTS: 5

REF: Page 93

9. ANS:

The inequality has no solution. The solution set is the empty set.



PTS: 5

10. ANS:

$$x = 8$$

PTS: 5

REF: Page 97

11. ANS:

324 students

PTS: 5

REF: Page 98

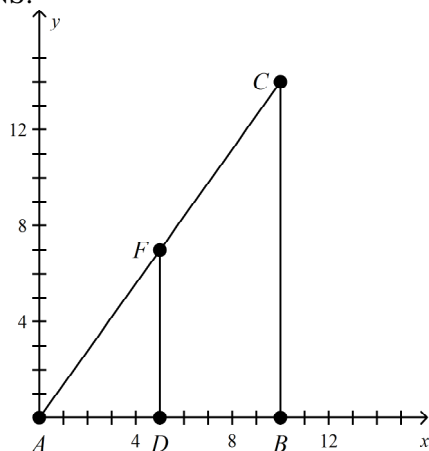
12. ANS:

94 min

PTS: 5

REF: Page 98

13. ANS:



PTS: 5

REF: Page 99

14. ANS:

25 feet

PTS: 5

REF: Page 99

15. ANS:

90 oz; 30 oz

PTS: 5

REF: Page 103

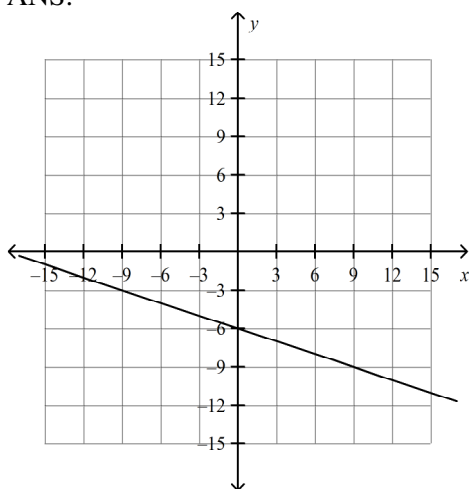
16. ANS:

Yes, the data set could represent a linear function.

PTS: 5

REF: Page 105

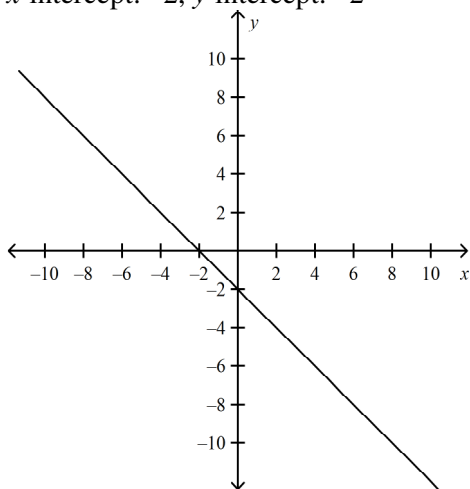
17. ANS:



PTS: 5

REF: Page 106

18. ANS:

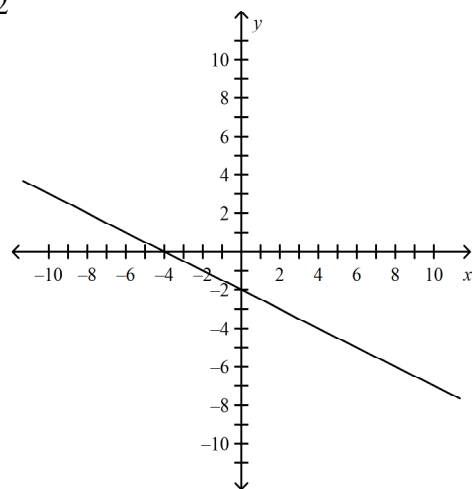
 x -intercept: -2 , y -intercept: -2 

PTS: 5

REF: Page 106

19. ANS:

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

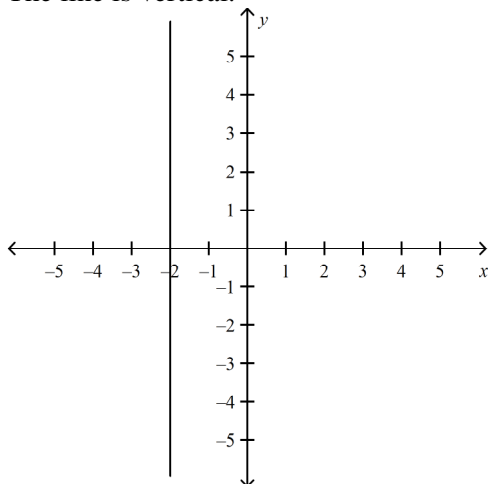


PTS: 5

REF: Page 107

20. ANS:

The line is vertical.

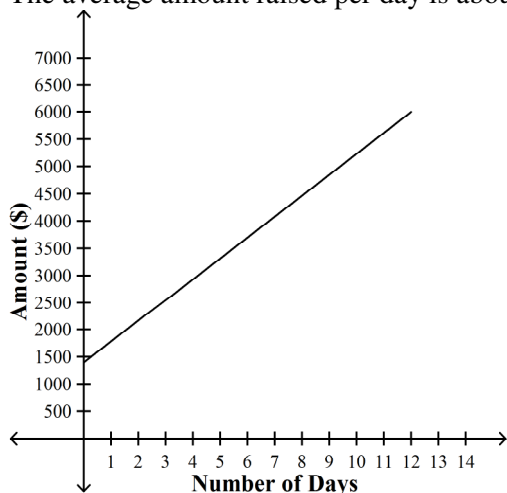


PTS: 5

REF: Page 108

21. ANS:

The average amount raised per day is about \$383.33.



PTS: 5

REF: Page 108

22. ANS:

Yes, the rate of change is constant. For example, to the nearest hundredth, $\frac{4.65 - 2.90}{9 - 4} = \frac{1.75}{5} = 0.35$,

$$\frac{6.40 - 4.65}{14 - 9} = \frac{1.75}{5} = 0.35, \text{ and so on.}$$

PTS: 5

23. ANS:

$$y = -3x + 4$$

PTS: 5

REF: Page 115

24. ANS:

$$\frac{1}{2}$$

PTS: 5

REF: Page 116

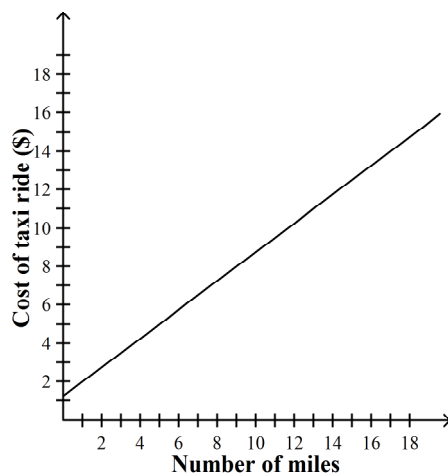
25. ANS:

$$y = 2x + 1$$

PTS: 5

REF: Page 117

26. ANS:
 $y = 0.75x + 1.25$



The 16-mile ride costs \$13.25.

PTS: 5 REF: Page 118

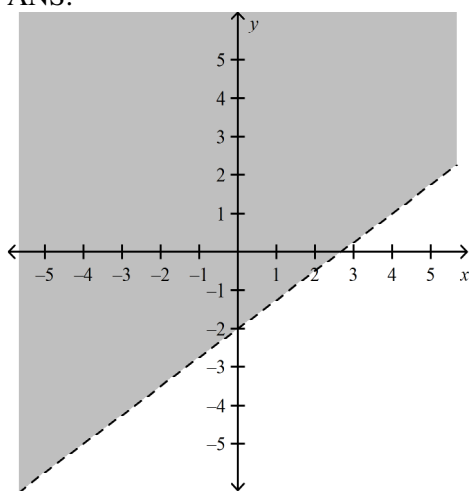
27. ANS:
 $y = -2x - 8$

PTS: 5 REF: Page 119

28. ANS:
 The slope of $\overline{AB}$ and $\overline{DC}$ is $\frac{1}{4}$. The slope of $\overline{BC}$ and $\overline{AD}$ is -4 .
 The quadrilateral is a rectangle.

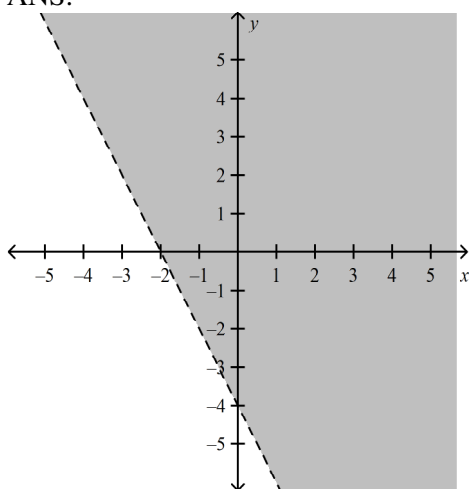
PTS: 5

29. ANS:



PTS: 5 REF: Page 124

30. ANS:

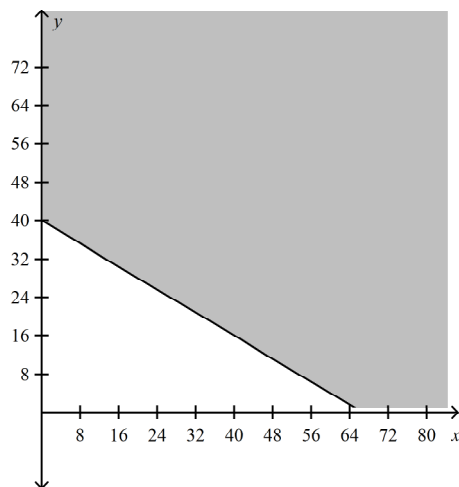


PTS: 5

REF: Page 125

31. ANS:

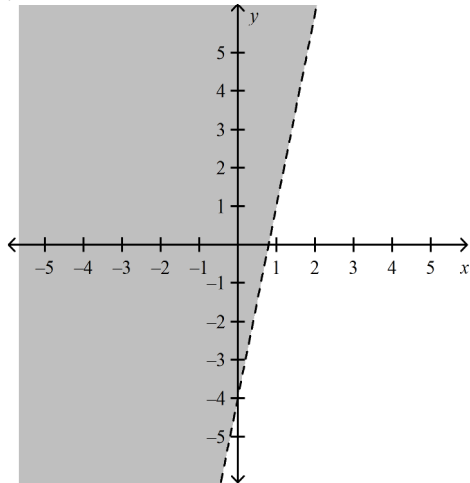
$$3x + 5y \geq 200$$



PTS: 5

REF: Page 126

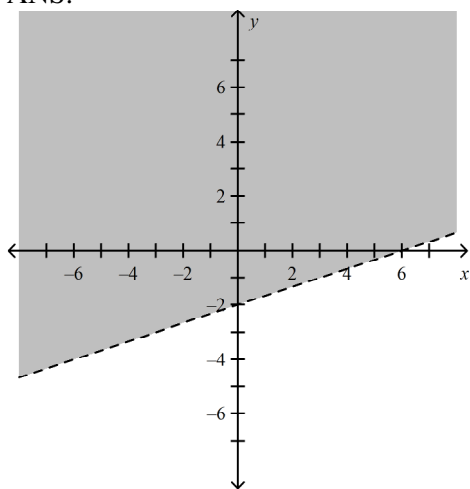
32. ANS:
 $y > 5x - 4$



PTS: 5

REF: Page 127

33. ANS:



PTS: 5

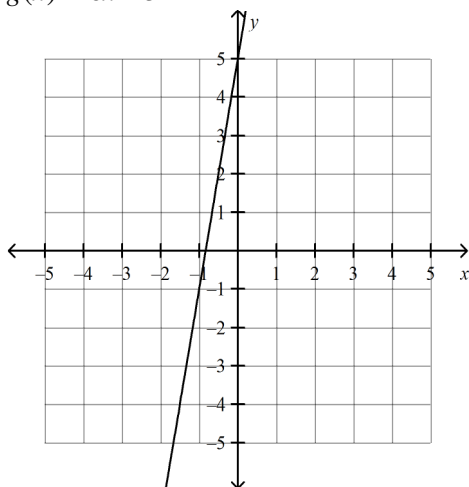
34. ANS:
 $g(x) = -4x + 5$

PTS: 5

REF: Page 134

35. ANS:

$$g(x) = 6x + 5$$



PTS: 5

REF: Page 136

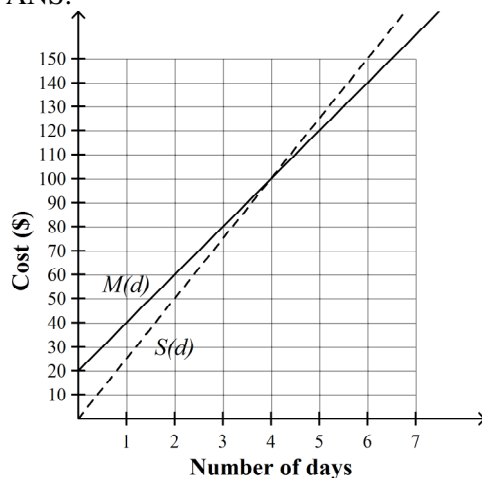
36. ANS:

$$g(x) = -3x + 12$$

PTS: 5

REF: Page 136

37. ANS:



A vertical shift down 20 units, followed by a vertical stretch by a factor of 1.25.

PTS: 5

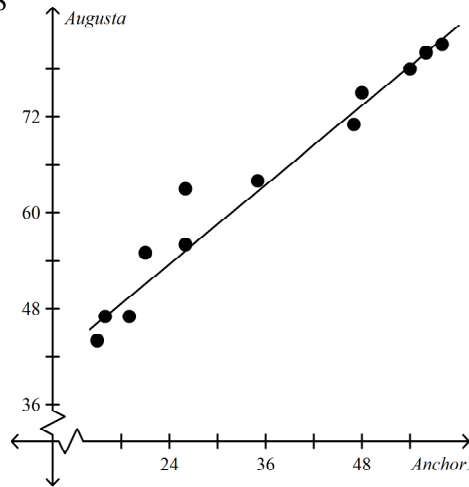
REF: Page 137

38. ANS:

1. A vertical shift 15 units down, followed by a horizontal compression by a factor of $\frac{1}{3}$.
2. A vertical stretch by a factor of 3, followed by a vertical shift 21 units down.

PTS: 5

39. ANS:
Positive correlation
 $y = 0.825x + 33.8$

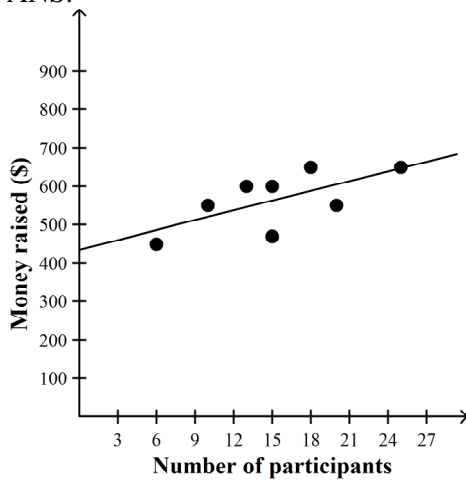


PTS: 5 REF: Page 142

40. ANS:
 $h = 3.64f + 74.57; r = 0.83$

PTS: 5 REF: Page 144

41. ANS:



$$y = 8.5x + 435.3; r \approx 0.66$$

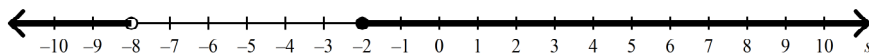
PTS: 5 REF: Page 145

42. ANS:
1.00

PTS: 5

43. ANS:

$$\{s \mid s < -8 \text{ or } s \geq -2\}$$



PTS: 5

REF: Page 150

44. ANS:

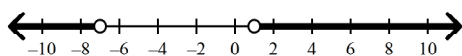
$$x = 13 \text{ or } x = -5$$

PTS: 5

REF: Page 152

45. ANS:

$$(-\infty, -7) \cup (1, \infty)$$

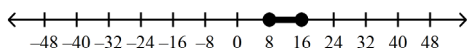


PTS: 5

REF: Page 152

46. ANS:

$$8 \leq x \leq 16$$

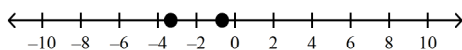


PTS: 5

REF: Page 153

47. ANS:

$$x = -\frac{2}{3} \text{ or } x = -\frac{10}{3}$$



PTS: 5