Name: _____   **Date:** _____

1. Which verbal expression can be represented by $2(x-5)$?

2. Which expression represents "5 less than twice x"?

    A. $2x-5$ B. $5-2x$ C. $2(5-x)$ D. $2(x-5)$

3. What is the value of x in the equation $4(2x+1)=27+3(2x-5)$?

4. Solve for x: $15x-3(3x+4)=6$

5. What is the value of x in the equation $5(2x-7)=15x-10$?

6. The inequality $3x+2>x+8$ is equivalent to

    A. $x>-\frac{3}{2}$ B. $x>\frac{3}{2}$ C. $x>3$ D. $x<3$

7. The expression $5\le x-2$ is equivalent to

    A. $x\le 7$ B. $x\ge 7$ C. $x\ge 3$ D. $x\ge\frac{5}{2}$

8. Which inequality is equivalent to $2x-1>5$?

    A. $x>6$ B. $x>2$ C. $x<3$ D. $x>3$

9. Which value of x is in the solution set of $-3x+8\ge 14$?

    A. -3 B. -1 C. 0 D. 3

10. On a standardized test with normal distribution, the mean is 80 and the standard deviation is 4. If 1,500 students took the test, approximately how many students are expected to score between 76 and 84?

11. The heights of a group of 1,000 women are normally distributed. The mean height of the group is 170 cm with a standard deviation of 10 cm. What is the best approximation of the number of women between 180 cm and 190 cm tall?

12. To identify the most popular sport of people who live in a city, interviews are conducted with fans leaving a stadium after a hockey game. Identify the type of sampling method used.

13. A club has 20 male and 80 female members. If a committee of 20 is being formed by random selection, what is the best method of sampling to use to ensure that there is a proportional representation of males and females in the club.

14. A computer chip manufacturer evaluates product quality by testing every twentieth computer chip produced daily. Identify the type of sampling method used.

15. To collect data about the kinds of pets people own, Rebecca interviews everyone who brings their pet to a local Animal Hospital. What type of sample does this represent?

16. Which is the correct box-and-whisker plot for the following data:

    1, 6, 8, 10, 18, 30, 50
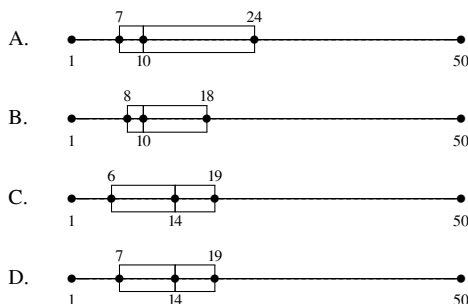
17. The box-and-whisker plots show the Test Scores of five schools that have written a common exam.

    At which school are the median and high scores closest?
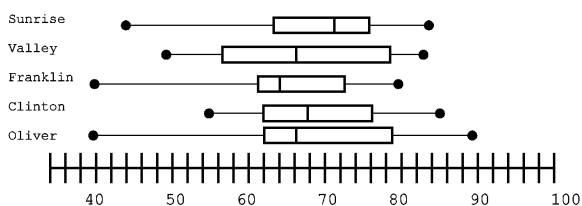
18. The values in the table below were generated using a rule.

x	y
0	23
1	30
2	37
3	44
4	51
5	58

    Which rule could have been used to generate the values in the table?

    A. $y=7x+23$ B. $y=23x$

    C. $y=x+23$ D. $y=7+23x$

19. Teresa saw the following advertisement in her local newspaper.

> **avocados—2 for $1.50**
> *ripe and delicious!*
> (limit 100 per family)

What would be the cost of 7 avocados?

20. The table shows the amounts earned from selling copies of four recipe books.

Book Title	Copies Sold	Amount
Quick Desserts	50	$300.00
Lean Meals	35	$175.00
Master the Grill	40	$160.00
Easy Appetizers	10	$20.00

According to the data, which recipe book costs the *most*?

21. Consider the following sets of data:

A: {15, 24, 31, 31, 31, 42}

B: {92, 96, 102, 113}

C: {11, 17, 21, 21, 33}

D: {25, 37, 44}
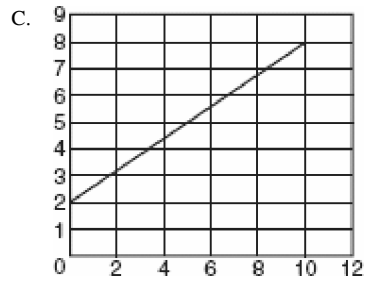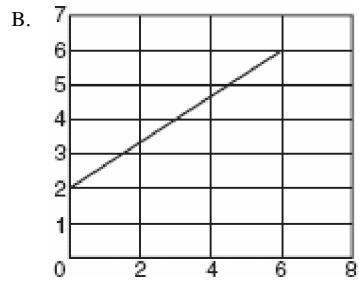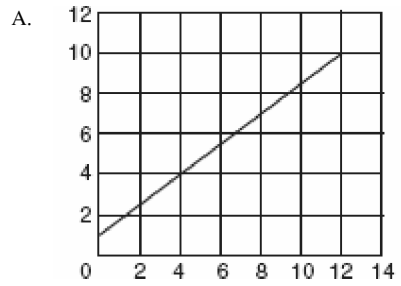
Which set has the greatest mode?

22. Which set of numbers has an average of 11?

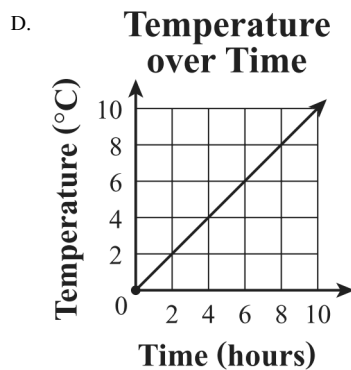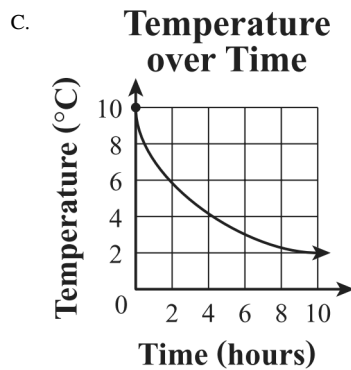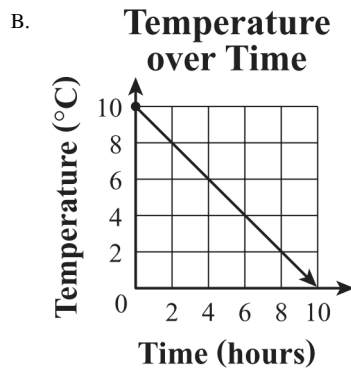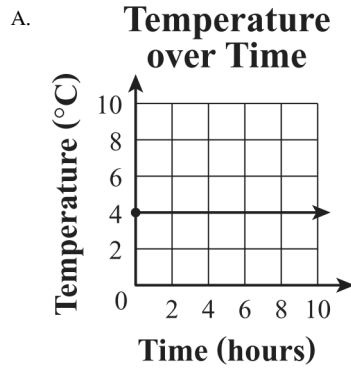A. {3, 8, 15, 18}   B. {5, 6, 16, 18}

C. {10, 12, 15, 16}   D. {11, 11, 11, 16}

23. Which graph has the greatest slope?

A.

B.

C.

D.
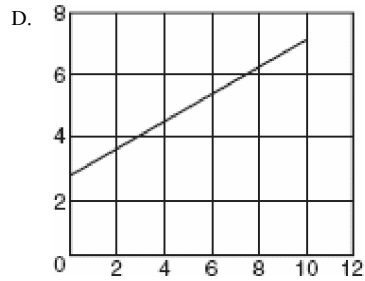
24. Which of the following graphs shows temperature increasing over time?

A.

Temperature over Time

B.

Temperature over Time

C.

Temperature over Time

D.

Temperature over Time

25. The following formula can be used to predict the weight of boys between the ages of 1 and 8:

$$w = 5a + 17$$

where w is the average weight in pounds, and a is the boy's age in years. According to this formula, how much weight will a boy gain each year?

26. For a few months, Dexter recorded the amounts, in fluid ounces, of laundry detergent remaining, y, after he and his family washed x loads of laundry. The equation of the line of best fit for his data is shown below.

$$y = -1.6x + 50$$

Which statement correctly describes the slope of Dexter's equation of the line of best fit in the context of the situation?

A. The bottle Dexter's family buys holds about 50 fluid ounces of detergent.

B. For each load of laundry, Dexter's family uses about 1.6 fluid ounces of detergent.

C. With 50 fluid ounces of detergent, Dexter's family can wash about 1.6 loads of laundry.

D. With 1.6 bottles of laundry detergent, Dexter's family can wash about 50 loads of laundry.

27. According to the Woodlawn Park Zoo in Seattle, Washington, the average height in inches (h) of a baby giraffe during its first week can be described by the equation $h = 72 + 1.2d$, where d is the number of days since it was born.

Which statement explains the meaning of the 1.2 in the equation?

A. The giraffe's growth after 1.2 days.

B. The giraffe grows 1.2 inches a day.

C. The giraffe is this tall after 1.2 weeks.

D. The giraffe's initial height is 1.2 inches.

28. Which of the following is *not* a function of x?

A.

B.

C.

D.
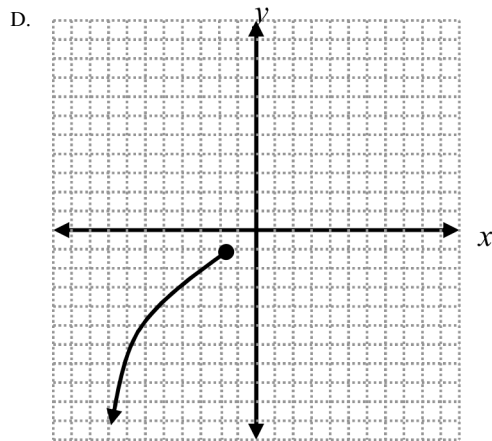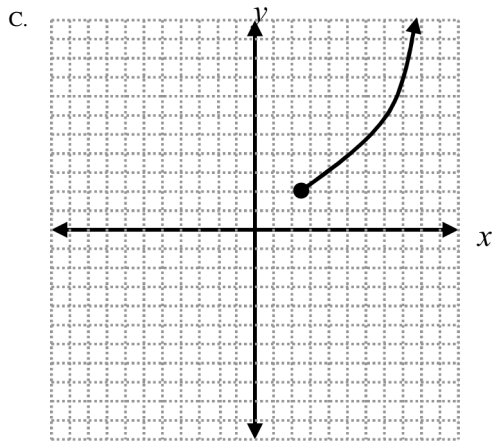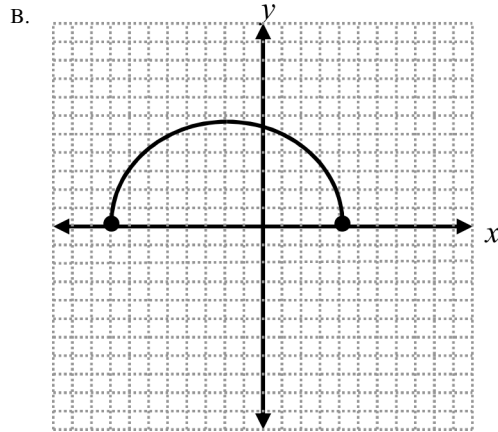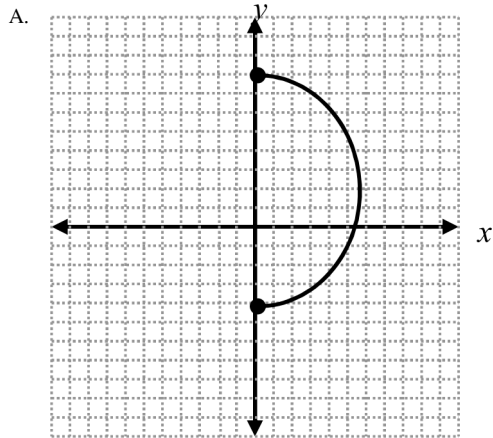
29. Which relation is a function?

A.

Input	Output
1	2
2	2
3	3
4	3

B.

Input	Output
2	6
2	5
6	4
6	3

C.

Input	Output
1	2
2	4
4	6
4	8

D.

Input	Output
0	1
0	2
1	3
1	4

30. If $h(x) = 2x$ and $g(x) = 3x^2 + 1$, what is $h(g(x))$?

31. Given $f(x) = x^3 + x^2 - x$, what is $f(4)$?

32. If $f(x) = 2x^3 - 2$, what is the value of $f(2)$?
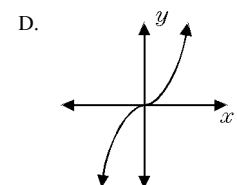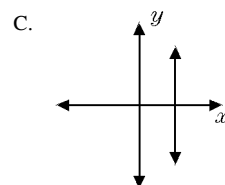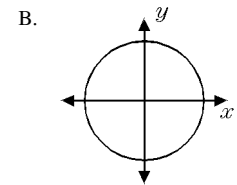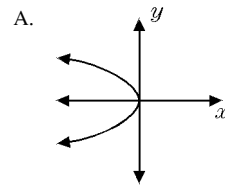
33. Which is the inverse of the function $f(x) = x - 9$?

A. $f^{-1}(x) = \dfrac{1}{x + 9}$ B. $f^{-1}(x) = x + 9$
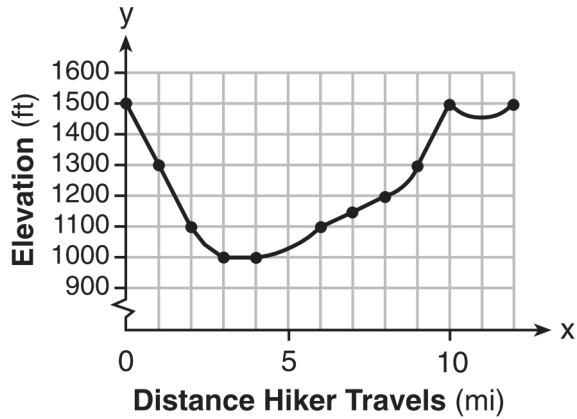
C. $f^{-1}(x) = 9 - x$ D. $f^{-1}(x) = \dfrac{1}{x - 9}$
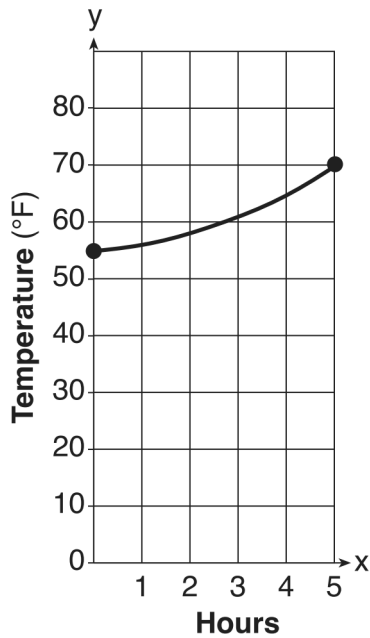
34. Which graph represents a function?

A.

B.

C.

D.

35. The accompanying graph shows the elevation of a certain region in New York State as a hiker travels along a trail.
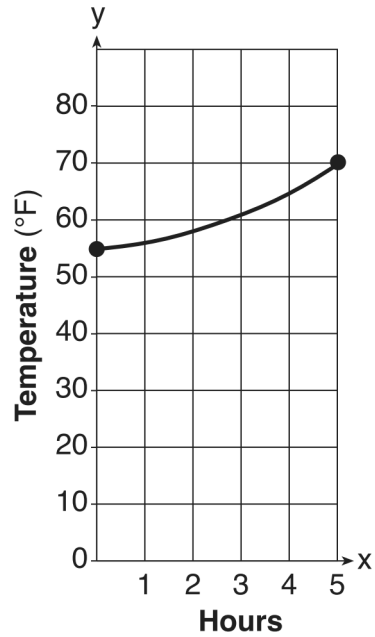

Elevation (ft) vs **Distance Hiker Travels (mi)**

What is the domain of this function?

36. The air temperature in Dallas, Texas, over a 5-hour period is shown in the accompanying graph.

Temperature (°F) vs **Hours**
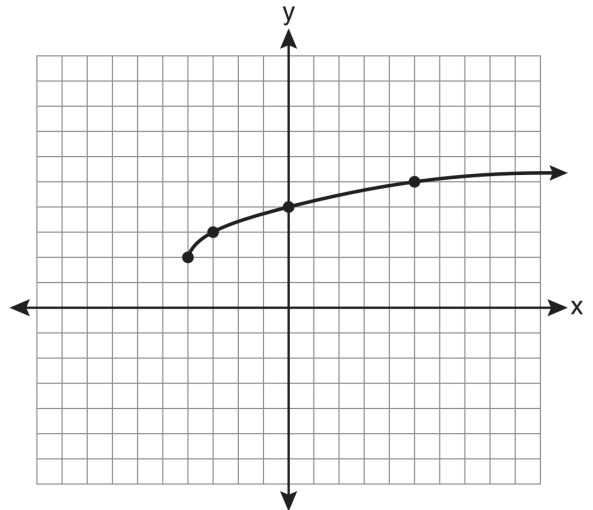
What is the range of this set of data?

37. The air temperature in Dallas, Texas, over a 5-hour period is shown in the accompanying graph.
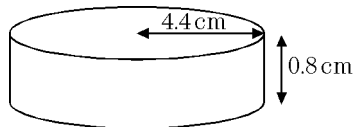

Temperature (°F) vs **Hours**

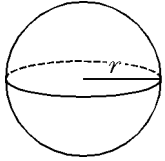What is the domain of this set of data?

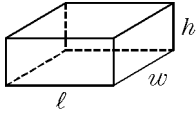38. What are the domain and the range of the function shown in the graph below?

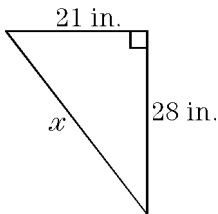39. To the nearest cubic centimeter, what is the volume of this cylinder? $V = \pi r^2 h$

4.4 cm

0.8 cm

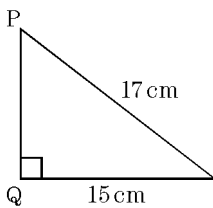40. Find the volume of the sphere if $r = 5$. [$V = \frac{4}{3}\pi r^3$]

41. What is the surface area of this solid, if $\ell = 5$, $w = 10$ and $h = 15$?
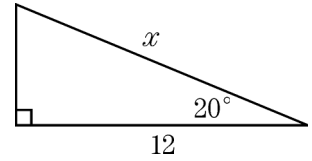

42. What is x?

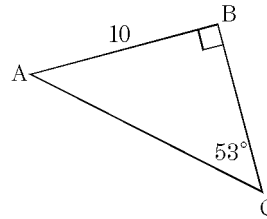43. In the right triangle shown, what is the length of $\overline{PQ}$?

44. Which equation can be used to find the value of x in the right triangle shown?

A. $\cos 20° = \dfrac{x}{12}$

B. $\sin 20° = \dfrac{12}{x}$

C. $\cos 20° = \dfrac{12}{x}$

D. $\cos 70° = \dfrac{x}{12}$

45. Find the length of $\overline{AC}$ to the nearest tenth. Hint: Use a trig ratio.

46. A guy wire attached to the top of a radio antenna is bolted to the ground 48 m from the base of the tower. If the wire makes an angle of 14° with the ground, how high is the radio antenna? Express your answer to 2 decimal places.
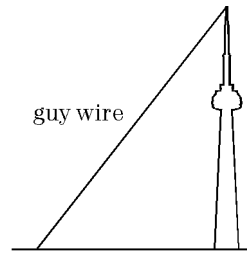
47. If 7 cubic feet of sand weighs 215 pounds, which formula can be used to determine x, how much 23 cubic feet of sand weighs?

48. This table shows the distances planets are from the sun (in millions of kilometers) and their temperatures (in degrees Celsius). Name the independent and dependent quantities respectively.

Planet	Mercury	Venus	Earth	Mars	Jupiter	Saturn	Uranus	Neptune	Pluto
Distance	58	108	150	228	778	1430	2875	4504	5900
Temperature	127	462	−16	−63	148	−178	−216	−214	−228

49. Find b.
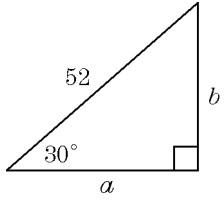
50. Find a.
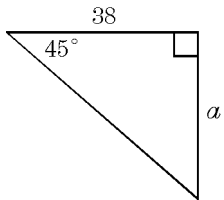
51. Find a.

52. In the given figure, $YZ = 1$. Find the length of $\overline{XY}$. (If your answer is a fraction, do not rationalize radical denominators.)

53. A piece of lumber is leaning against the side of a barn. The piece of lumber is 8 meters long and the angle between the piece of lumber and the building is 34°. How far up the barn does the piece of lumber reach (to the nearest hundredth)?

54. A person sights an airplane at an elevation of 50°. The airplane is flying 3000 m above the the person. What is the distance from the person to the airplane to the nearest meter?
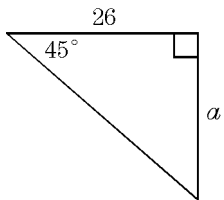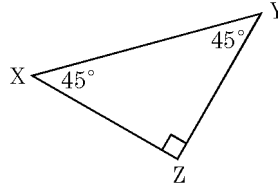
55. Jessica rode her bike 3 miles to Lisa's house. How many feet did she ride her bike to Lisa's house?

56. A biker traveled 3,520 yards. How many miles did he travel?

57. A runner ran 1760 yards. How many miles did she run?

58. The distance from the post office to the nearest bank is 7040 yards. If you convert this distance to the more practical units of miles, then it is approximately _____ .

59. The distance from the post office to the nearest bank is 15,840 feet. If you convert this distance to the more practical units of miles, then it is approximately _____ .

Midterm Review   03/21/2017

1.
Answer: twice the difference of x and 5

2.
Answer: A

3.
Answer: 4

4.
Answer: 3

5.
Answer: −5

6.
Answer: C

7.
Answer: B

8.
Answer: D

9.
Answer: A

10.
Answer: 1020
Objective: AII.11

11.
Answer: 135
Objective: AII.11

12.
Answer: clustered sampling
Objective: PS.9

13.
Answer: stratified random sample
Objective: PS.9

14.
Answer: systematic sampling
Objective: PS.9

15.
Answer: a convenience sample
Objective: PS.9

16.
Answer: A
Objective: A.10

17.
Answer: Sunrise
Objective: A.10

18.
Answer: A

19.
Answer: $5.25
Objective: 7.04B

20.
Answer: Quick Desserts
Objective: 7.04B

21.
Answer: Set A
Objective: A1.D.1.1

22.
Answer: A
Objective: A1.D.1.1

23.
Answer: A

24.
Answer: D

25.
Answer: 5 pounds

26.
Answer: B

27.
Answer: B

28.
Answer: A

29.
Answer: A

30.
Answer: $6x^2 + 2$

31.
Answer: 76

32.
Answer:

33.
Answer: B

34.
Answer: D

35.
Answer: $0 \leq x \leq 12$

36.
Answer: $56 \leq y \leq 70$

37.
Answer: $56 \leq y \leq 70$

38.
Answer: $\{x \geq -4\}; \{y \geq 2\}$

39.
Answer: $49 \, \text{cm}^3$
Objective: 8.G.09

40.
Answer: $\dfrac{500\pi}{3}$
Objective: 8.07A

41.
Answer: 550
Objective: 8.07B

42.
Answer: 35 inches
Objective: 8.07C

43.
Answer: 8 cm
Objective: 8.07C

44.
Answer: C
Objective: G.RT.1.4

45.
Answer: 12.5

46.
Answer: 11.97 m
Objective: G.RT.1.4

47.
Answer: $\dfrac{215}{7} = \dfrac{x}{23}$
Objective: 7.A.2.2

48.
Answer: Distance, Temperature
Objective: PA.A.1.1

49.
Answer: 26
Objective: G.RT.1.2

50.
Answer: 38
Objective: G.RT.1.2

51.
Answer: 26
Objective: G.RT.1.2

52.
Answer: $\sqrt{2}$
Objective: G.RT.1.2

53.
Answer: 6.63 m
Objective: G.RT.1.4

54.
Answer: 2517 m
Objective: G.RT.1.4

55.
Answer: 15,840 ft
Objective: 6.GM.3.2

56.
Answer: 2 mi
Objective: 6.GM.3.2

57.
Answer: 1
Objective: 6.GM.3.2

58.
Answer: 4 miles
Objective: 6.GM.3.2

59.
Answer: 3 miles
Objective: 6.GM.3.2