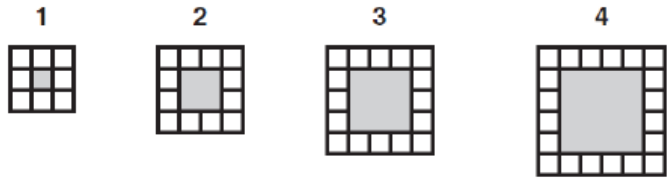
ALGEBRA 1, EOC PRACTICE ITEMS

Washington performance expectations assessed for purposes of graduation.

A1.1.A Select and justify functions and equations to model and solve problems.

1. Mrs. Morris gave her students this pattern of white tiles



She asked her students to write an equation to represent the number of white tiles, t, for any figure number, n. Which equation represents the number of white tiles in the pattern?

A. $t = n + 2$
B. $t = n + 4$
C. $t = 4n + 4$
D. $t = 4n + 8$

2. Kesha is planning to rent a van for her trip to Mt. Rainier. Two of her friends each rented the same type of van from the same car rental company last week. This is what they told her:

> John: "The cost of my rental was $240. The company charged me a certain amount per day and a certain amount per mile. I had the rental for five days and I drove it 200 miles."
>
> Katie: "The cost of my rental was only $100. I drove it for 100 miles and had it for two days."

Kesha plans to get the same type of van that John and Katie had from the same car rental company. Kesha estimated her trip would be 250 miles, and she would have the vehicle for four days.

Let C = cost, M = miles, and D = days
Which equation could Kesha use to figure out how much her rental would cost?

A. $C = 40.00M + 0.20D$
B. $C = 40.00D + 0.20M$
C. $C = 20.00M + 0.40D$
D. $C = 20.00D + 0.40M$

3. Joey earned money over the summer at different jobs and put all his money into savings. The table below shows how his total savings changed.

Weeks into the summer	0	1	2	3	4	5
Total Savings ($)	50	135	220	305	390	475

Write a function to model this situation. Be sure to define your variables.

4. Raven was selling cookies to raise money. She started off with 900 cookies.
   She sold an average of average of 75 cookies each day.

   - Write a function to model the number of cookies left. Be sure to define your variables.
   - State an appropriate domain for your model.

5. Professor Plum conducted an experiment on the number of bacteria growing in his lab.
   The data below shows his results.

Day	0	1	2	3	4	5
Approximate # of bacteria	50	100	200	400	800	1600

   Write a function to model this situation. Be sure to define your variables.

6. For the month of July, Michelle will be dog-sitting for her very wealthy, but eccentric, neighbor, Mrs. Buffett.
   Mrs. Buffett offers Michelle two different salary plans:

   — Plan 1: $100 per day for the 31 days of the month.
   — Plan 2: $1 for July 1, $2 for July 2, $4 for July 3, and so on, with the daily rate doubling each day.

   - Write functions that model the amount of money Michelle will earn each day on Plan 1 and Plan 2. Justify the functions you wrote.
   - State an appropriate domain for each of the models based on the context.
   - Which plan should Michelle choose to maximize her earnings? Justify your recommendation mathematically.
   - Extension: Write an algebraic function for the cumulative pay for each plan based on the number of days worked.

7. Scientists in Australia have been watching the humpback whale population for many years. In 1981, they counted 350 whales off of the shoreline. Through the years, they continued to count and noticed that the number of whales increased by 12% each year.

   Write a function rule that describes the humpback whale population. (Be sure to define your variables.)

8. The number of bacteria growing in Professor Plum's lab is recorded below.

Day	0	1	2	3	4	5
Bacteria	1024	1536	2304	3456	5184	7776

   Explain how you know the data is or is not exponential.

9. Josephine had $50 in savings at the start of the summer. She was able to save an additional $23 per week. Write a function to show the amount in savings, *S*, that Josephine will have after *w* weeks into the summer.

10. Matt drank a super tall glass of soda pop which had 200mg of caffeine. His body can process about 15% of the caffeine every hour. Which of the following best models the number of milligrams of caffeine, *C*, remaining in his body *h* hours after he drank that soda pop?

    A. $C(w) = 200 \cdot (.85)^h$
    B. $C(w) = 200 \cdot (.15)^h$
    C. $C(w) = 200 - 85h$
    D. $C(w) = 200 - 15h$

A1.1.B Solve problems that can be represented by linear functions, equations, and inequalities.

11. The assistant pizza maker makes 6 pizzas an hour. The master pizza maker makes 10 pizzas an hour but starts baking two hours later than his assistant. Together, they must make 92 pizzas.

    - How many hours from when the assistant starts baking will it take?
    - What is a general equation, in function form, that could be used to determine the number of pizzas that can be made in two or more hours?

12. A swimming pool holds 375,000 liters of water. Two large hoses are used to fill the pool. The first hose fills at the rate of 1,500 liters per hour and the second hose fills at the rate of 2,000 liters per hour. How many hours does it take to fill the pool completely?

13. Greenacres Golf Course started the season with 25,000 golf balls for their driving range. They estimate that 150 golf balls are lost, damaged or stolen each week. As such, those 150 golf balls are no longer used. How long until the total number of usable golf balls is under 20,000?

14. Pat and Alex Jones started the summer with $500 in their family savings account. Pat is able to put $50 into the family savings each week. Alex is able to put $75 into their savings account each week. How long until they have a total of $2000 in their family savings account?

15. Tina spent $45 to make cookies. She will sell each cookie for $1.25.

    - Write a function to describe Tina's profit, *P*, for selling *n* cookies.
    - How many cookies must Tina sell to make at least $100 in profit?

A1.1.C Solve problems that can be represented by a system of two linear equations or inequalities.

16. Two plumbing companies charge different rates for their service. Clyde's Plumbing Company charges a $75-per-visit fee that includes one hour of labor plus $45 dollars per hour after the first hour. We-Unclog-It Plumbers charges a $100-per visit fee that includes one hour of labor plus $40 per hour after the first hour. For how many hours of plumbing work would Clyde's be less expensive than We-Unclog-It?

17. Tim took 50 books to the used book store. He was paid $0.50 for each fiction book and $1.50 for each non-fiction book. Tim received $40 total for all 50 of his books. How many fiction books did he sell to the used book store?

18. Pam says she will charge $125 plus $15 an hour to paint a house. Michelle will charge $50 plus $20 per hour to paint a house. For how many hours or work will it be cheaper to have Michelle paint a house?

19. An airplane flies from Baltimore to Seattle (assume a distance of 2,400 miles) in 7 hours, but the return flight takes only 4 ½ hours. The air speed of the plane is the same in both directions.

    - How many miles per hour does the plane fly with respect to the wind?
    - What is the wind speed in miles per hour?

20. A coffee shop employee has one cup of 85% milk (the rest is chocolate) and another cup of 60% milk (the rest is chocolate). He wants to make one cup of 70% milk How much of the 85% milk and 60% milk should he mix together to make the 70% milk?

A1.1.E Solve problems that can be represented by exponential functions and equations.

21. E. coli bacteria reproduce by a simple process called binary fission—each cell increases in size and divides into two cells. In the laboratory, E. coli bacteria divide approximately every 15 minutes. A new E. coli culture is started with 1 cell.

    - Find a function that models the E. coli population size at the end of each 15-minute interval. Justify the function you found.
    - State an appropriate domain for the model based on the context.
    - After what 15-minute interval will you have at least 500 bacteria?

22. Estimate the solution to $2^x = 16{,}384$.

    A. 5
    B. 14
    C. 800
    D. 8,000

23. Tami invested $1500 in a bank account that pays back 7% every year in interest. Tami doesn't touch the money in her account—she doesn't take any money out or put any money into her account. Only the bank adds money (the interest) each year to Tami's account.

    - Write a function to model the amount of money, *M*, Tami will have after *n* years.
    - How many years will it take for Tami's money to grow to a total of $3000?

24. Kirk had 5 tribbles at the beginning of the day. The number of tribbles doubled each hour.

    - Write a function to model the number of tribbles, *T*, after *h* hours into the day.
    - When will Kirk have over 100,000 tribbles?

25. The number of bacteria in Dr. Smith's culture doubled every 3 hours. After 12 hours, there were approximately 10,000 bacteria in Dr. Smith's culture. How many bacteria were initially present?

    A. 123
    B. 200
    C. 625
    D. 2,500

A1.2.A Know the relationship between real numbers and the number line, and compare and order real numbers with and without the number line.

26. Which of the following places the numbers in order from least to greatest?

    A. $\sqrt{17}$, 3, π, $\frac{17}{3}$, 5

    B. 3, π, $\sqrt{17}$, $\frac{17}{3}$, 5

    C. 3, π, $\sqrt{17}$, 5, $\frac{17}{3}$

    D. π, 3, $\sqrt{17}$, 5, $\frac{17}{3}$

27. Which of the following is true?

    A. $\sqrt{20}$ is greater than 4 but less than 2π.
    B. $\sqrt{20}$ is less than 4 but greater than 2π.
    C. $\sqrt{20}$ is less than 4 and less than 2π.
    D. $\sqrt{20}$ is greater than 4 and greater than 2π.

A1.2.B Recognize the multiple uses of variables, determine all possible values of variables that satisfy prescribed conditions, and evaluate algebraic expressions that involve variables.

28. For what values of *a* and *n*, where *n* is an integer greater than 0, is a^n always negative?

    A. When *a* is positive and *n* is even.
    B. When *a* is negative and *n* is even.
    C. When *a* is positive and *n* is odd.
    D. When *a* is negative and *n* is odd.

29. For what values of *a* is $\sqrt{5-a}$ defined?

    A. When $a \geq 5$.
    B. When $a \geq -5$.
    C. When $a \leq 5$.
    D. When $a \leq -5$.

30. For what values of *x* is *-x* always positive?

A1.2.C Interpret and use integer exponents and square and cube roots, and apply the laws and properties of exponents to simplify and evaluate exponential expressions

31. Which of the following is equivalent to x^{-5}?

    A. $-5x$
    B. $-x^5$
    C. $\dfrac{1}{-x^5}$
    D. $\dfrac{1}{x^5}$

32. Which of the following is equivalent to $\left(3ab^2\right)^4$?

    A. $81a^4b^8$
    B. $12a^4b^8$
    C. $3a^4b^8$
    D. $81a^4b^6$

33. Write this expression in simplest radical form: $\sqrt{125}$.

34. Write this expression in simplest radical form: $\sqrt{\dfrac{75}{16}}$.

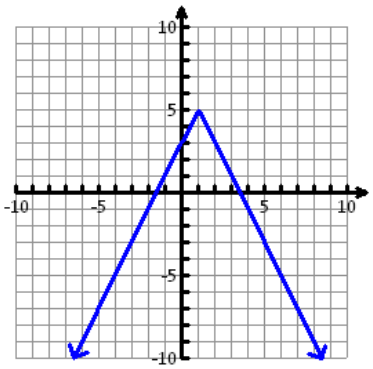
35. Simplify the expression $\left(\dfrac{x^2}{x^{-3}}\right)^4$ using positive exponents.

36. Which of the following is equivalent to $\dfrac{2^3 7^4}{2^2 5^3 7^{-2}}$?

    A. $2 \cdot 5^{-3} 7^6$
    B. $2^5 \cdot 5^3 7^2$
    C. $2^5 \cdot 5^{-7} 7^{-2}$
    D. $2^{-1} \cdot 5^3 7^{-6}$

A1.3.A Determine whether a relationship is a function and identify the domain, range, roots, and independent and dependent variables.

37. The absolute value function given by $f(x)=-2|x-1|+5$ is shown in the right.



Determine the domain and range of this function.

38. What is the domain of the function $g(x)=\sqrt{5-x}$?

39. What is the domain of the function $h(x)=\dfrac{500}{x}$?

A. All real numbers.
B. All real number where x ≠ 0.
C. All real number where x ≠ 500.
D. All real number where x = 500.

40. The function $P(n)=-80+9n$ is chosen to model the profit, *P*, for selling *n* cakes at Raven's cake shop. What restriction on the domain of the function should be considered to correctly model the situation?

A. All whole numbers where $P \le 0$.
B. All whole numbers where $P \ge 0$.
C. All whole numbers where $n \le 0$.
D. All whole numbers where $n \ge 0$.

41. Tom will fix almost anything. The *total price Tom charges* and the *number of hours Tom works* relate to each other. Which of the following is a true statement?

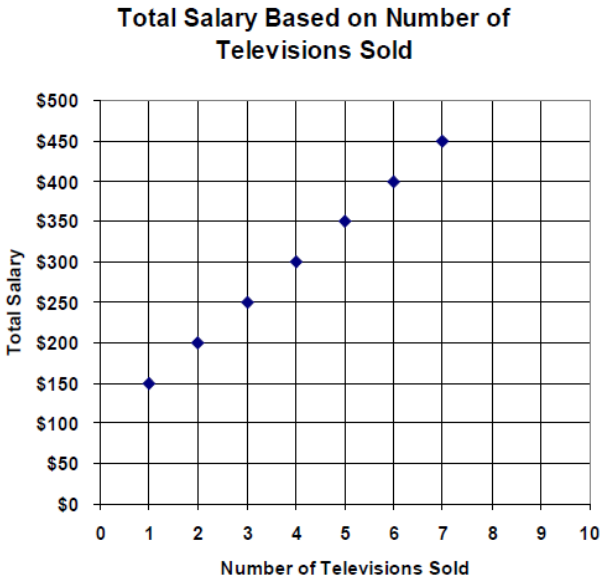
A. The *total price Tom charges* is the independent variable.
B. The *number of hours Tom works* is the independent variable.
C. The *total price Tom charges* and the *number of hours Tom works* mutually depend on each other.
D. The *total price Tom charges* and the *number of hours Tom works* do not depend on each other.

42. Which of the following could be a function?

A. The height of a student in your school related to the shoe size of that student.
B. The hair length of a student in your school related to the height of that student.
C. The color of hair of a student in your school related to the age of that student.
D. The student ID number of a student in your school related to the full name of that student.

A1.3.B Represent a function with a symbolic expression, as a graph, in a table, and using words, and make connections among these representations.

43. The chart shows the amount of total salary (commission plus base salary) paid to employees of a store that specializes in big screen televisions



Which equation best represents the total salary (T) that an employee makes for selling any number of television sets (n)?

A. $T = 50n + 100$
B. $T = 100(n + 50)$
C. $T = 100n + 50$
D. $T = 50(n + 100)$

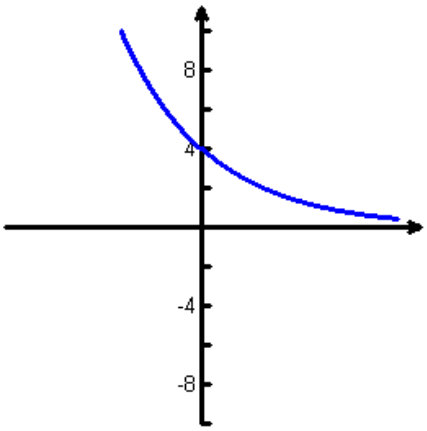
44. The table below shows the total profit, P, for selling n sandwiches at Sam's Sandwich shop in any certain day.

Sandwiches sold	0	5	10	15	20	25	30	35	40	45
Profit ($)	-80	-65	-50	-35	-20	-5	10	25	40	55

Write a rule to represent this situation.

45. Which rule best matches the graph shown to the right?

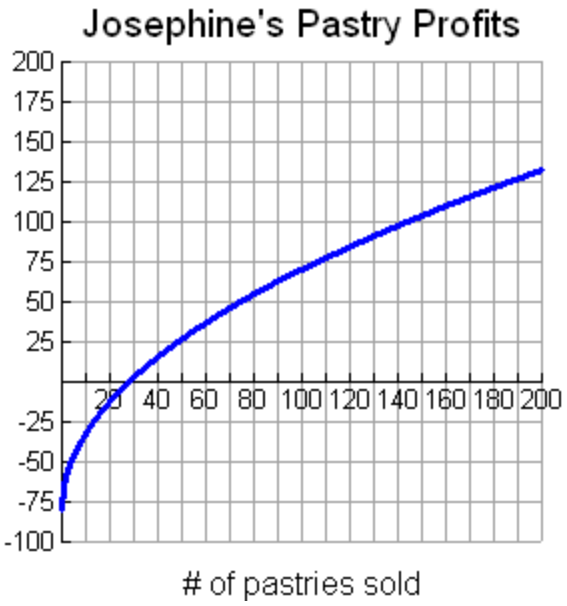
A. $y = 4 \cdot (0.8)^x$
B. $y = 0.8 \cdot (4)^x$
C. $y = 4 \cdot (2)^x$
D. $y = 2 \cdot (4)^x$



A1.3.C Evaluate *f*(*x*) at a (i.e., *f*(*a*)) and solve for *x* in the equation *f*(*x*) = *b*.

46. Josephine found that her profit for her pastry shop can be modeled by $P(n)=-80+15\sqrt{n}$ where *P* is the profit in dollars for selling *n* pastries as shown in the graph.

    - What profit would Josephine have for selling 200 pastries?
    - When is $P(n)=100$?

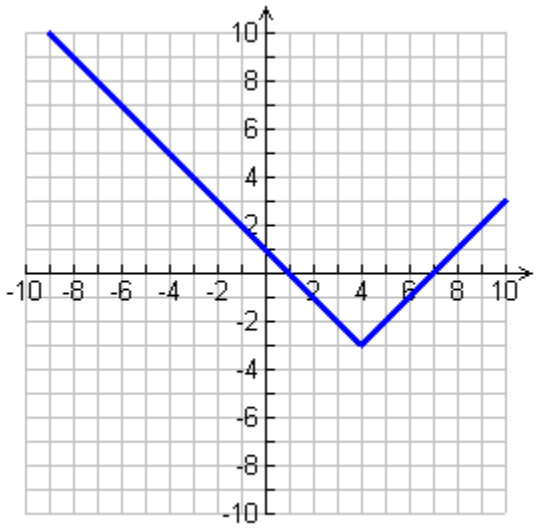


47. Roses-R-Red sells its roses for $0.75 per stem and charges a $20 delivery fee per order.

    - What is the cost of having 10 roses delivered?
    - How many roses can you have delivered for $65?

48. A graph of the function $g(x)=|4-x|-3$ is shown to the right. When is $g(x)<2$?

    A. $x=-1$ and $x=9$
    B. $-1<x<9$
    C. $-1\le x\le 9$
    D. $x<-1$ or $x>9$



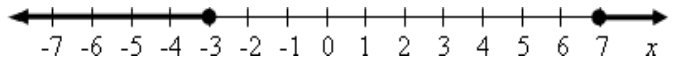
49. For the function $h(x)=5+3x$, when does $h(x)=0$?

50. For the function $R(t)=\sqrt{1-3t}$, evaluate $R(-8)$.

A1.4.A Write and solve linear equations and inequalities in one variable.

51. The equation $2|x-1|-10=-4$ has two real solutions. What is the negative solution of the equation?

52. Which of the following shows the solution to the equation $|x-2|\leq 5$?

A.


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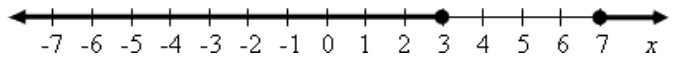
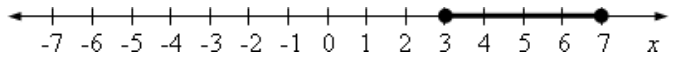
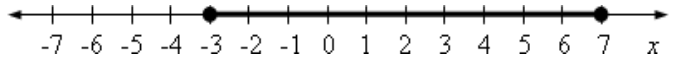


C.


D.


53. Solve for x in $2(x-3)+4x=15+2x$.

54. Solve for x in $3(x-2)+5x<18$.

55. Solve for b in $4b-4+5b>9b+8$.

A1.4.B Write and graph an equation for a line given the slope and the y-intercept, the slope and a point on the line, or two points on the line, and translate between forms of linear equations.

56. Which of the following is the equation for a line with y-intercept equal to 2 and slope equal to 3?

    A. $y = 3x + 2$
    B. $y = 2x + 3$
    C. $y = 3(x + 2)$
    D. $y = 2(x + 3)$

57. Which of the following is the equation for a line with a slope of 2 that goes through the point (1, 3)?

    A. $y - 1 = 2(x - 3)$
    B. $y + 1 = 2(x + 3)$
    C. $y - 3 = 2(x - 1)$
    D. $y + 3 = 2(x + 1)$

58. Which of the following is the equation for a line that goes through the points (-2, -5) and (6, -1)?

    A. $y = \frac{-1}{2}x - 4$
    B. $y = \frac{1}{2}x - 4$
    C. $y = -2x - 4$
    D. $y = 2x - 4$

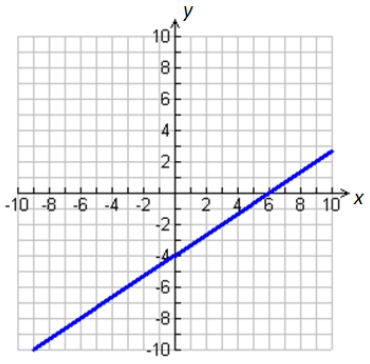
59. Which of the following is the correct equation for $3x + 2y = 5$ in slope intercept form?

    A. $y = \frac{3}{2}x + 5$
    B. $y = \frac{3}{2}x + \frac{5}{2}$
    C. $y = \frac{-3}{2}x + 5$
    D. $y = \frac{-3}{2}x + \frac{5}{2}$

60. Which of the following is the correct equation for $y - 1 = 2(x - 3)$ in standard form?

    A. $2x - y = 5$
    B. $2x + y = 5$
    C. $2x - y = 4$
    D. $2x - y = -4$

61. Which of the following is the correct equation for the graph shown to the right?



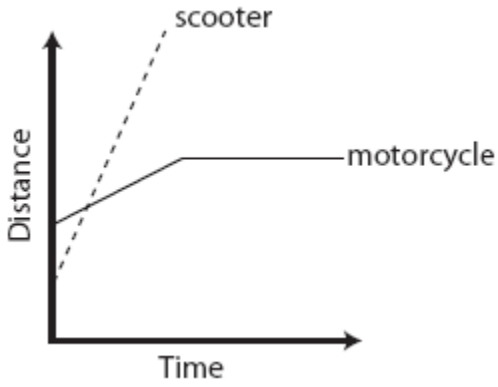
A. $6x-4y=24$
B. $4x-6y=24$
C. $4x+6y=24$
D. $6x+4y=24$

62. Which of the following must be true about the graph of $y-5=2(x+4)$?

A. The slope is 2 and the line goes through the point (-4, 5).
B. The slope is 2 and the line goes through the point (4, -5).
C. The slope is -2 and the line goes through the point (-4, 5).
D. The slope is -2 and the line goes through the point (4, -5).

A1.4.C Identify and interpret the slope and intercepts of a linear function, including equations for parallel and perpendicular lines.

63. The graph to the right shows the relationship between time and distance from a gas station for a motorcycle and a scooter. What can be said about the relative speed of the motorcycle and scooter that matches the information in the graph?



A. The scooter and motorcycle are traveling at the same speed only once.
B. The scooter and motorcycle are traveling at the same speed more than once.
C. The motorcycle is always traveling faster than the scooter.
D. The scooter is always traveling faster than the motorcycle.

64. Kara owns a business selling cakes. She won't make any profit unless she sells enough cakes to cover her costs. Her profits are shown in the table below.

# of cakes sold	0	2	4	6	8	10	12	14	16
Profit ($)	-80	-64	-48	-32	-16	0	16	32	64

What is the horizontal intercept and what does it mean for this situation?

A. The horizontal intercept is at (0, -80) and means Kara starts $80 in debt.
B. The horizontal intercept is at (0, -80) and means Kara starts with 80 cakes.
C. The horizontal intercept is at (10, 0) and means Kara will need to make $10 to break even.
D. The horizontal intercept is at (10, 0) and means Kara will need to make 10 cakes to break even.

A1.4.D Write and solve systems of two linear equations and inequalities in two variables.

65. Solve the system $\begin{cases} x - y = 10 \\ 2x + 3y = 25 \end{cases}$

66. The two lines defined by $y = 4 - 3x$ and $y = x - 8$ intersect at which point?

    A. (1, 1)
    B. (1, -5)
    C. (3, 5)
    D. (3, -5)

67. Solve the system $\begin{cases} 2x + y = 23 \\ y = 5x + 2 \end{cases}$

68. Harry is choosing between two different cars to buy. He found out that the '93 Escort will cost $1000 and need about $300 a month to operate. He also found that the '95 Honda will cost $1900 and need about $150 a month to operate.

    For what months is it less expensive to own the '95 Honda?

    A. For the first 6 months.
    B. After the first 6 months.
    C. Only at 6 months.
    D. It will always be cheaper to own the '95 Honda.

A1.4.E Describe how changes in the parameters of linear functions and functions containing an absolute value of a linear expression affect their graphs and the relationships they represent.

69. How will changing the "4" to a "6" in the equation $y = 4 - 3x$ affect the graph?

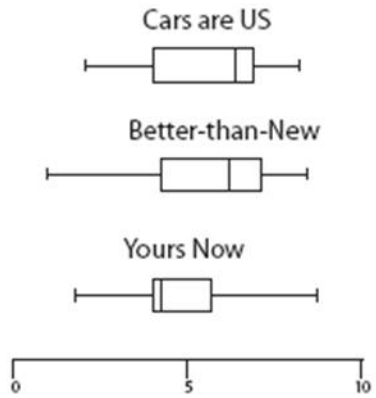
    A. The slope will become greater, and the vertical intercept will not change.
    B. The slope will not change, yet the vertical intercept will become greater.
    C. The slope and the vertical intercept will both become greater.
    D. The slope and the vertical intercept will not change.

70. How will changing the "3" to a "8" in the equation $f(x) = 2|x - 3|$ affect the graph?

    A. The graph will become steeper.
    B. The graph will become less steep.
    C. The graph will shift to the right.
    D. The graph will shift to the left.

A1.6.A Use and evaluate the accuracy of summary statistics to describe and compare data sets.

71. Each box-and-whisker plot to the right shows the prices of used cars (in thousands of dollars) advertised for sale at three different car dealers. Suppose Joe wants to go to the dealer whose prices seem least expensive. Which of the following is the best statistical reasoning?



    A. Joe should go with Cars are Us because they have the lowest maximum price.
    B. Joe should go with Better-than-New because they have the lowest low price of all three.
    C. Joe should not go with Yours Now because they have the maximum high price.
    D. Joe should go with Yours Now because 75% of their prices fall in the range of the lowest 50% of both the other companies' prices.

72. The local minor league baseball team has a salary dispute. Players claim they are being underpaid, but managers disagree. Most of the players earn about $12,000 a year. Yet a few top players earn salaries that are quite high—nearly $50,000 a year. Would it be in the players' best interest to use the mean or median when quoting the "average" salary of the team? Why?

    A. Players should use the mean, because the mean is less than the median.
    B. Players should use the mean, because the mean is less than the median.
    C. Players should use the median, because the mean is more than the median.
    D. Players should use the median, because the mean is more than the median.

A1.6.B Make valid inferences and draw conclusions based on data.

73. Mr. Shapiro found that the amount of time his students spent doing mathematics homework is positively correlated with test grades in his class. He concluded that doing homework makes students' test scores higher. Is this conclusion justified? Explain any flaws in Mr. Shapiro's reasoning.

    A. Yes, it is justified. Doing homework increases test scores.
    B. Yes, it is justified. Students do well on tests when they do their homework.
    C. No, it is not justified. Doing homework increases test scores.
    D. No, it is not justified. Students can do well on tests for reasons other than doing homework.

74. A positive correlation was found to exist between the number of barbeques sold and the number of bicycle accidents in Spokane over the last 80 years. Would limiting the sales of barbeques sold in Spokane decrease the number of bicycle accidents? Explain your reasoning.

    A. Yes, it would. Smaller numbers of barbeques sold correlates to lower numbers in bicycle accidents.
    B. Yes, it would. The number of bicycle accidents isn't necessary caused by the number of barbeques sold.
    C. No, it would not. The number of bicycle accidents isn't necessary caused by the number of barbeques sold.
    D. No, it would not. Smaller numbers of barbeques sold correlates to lower numbers in bicycle accidents.

A1.6.C Describe how linear transformations affect the center and spread of univariate data.

75. Snack Shack is a company that makes all sorts of packaged snack foods. They decided to increase the amount of food in all of their products by 25%. What impact does this increase have on the mean and on the range of the amount of food in each package?

    A. The mean increases but the range does not change.
    B. The mean does not change but the range increases.
    C. The mean and range both increase.
    D. The mean and range do not change.

76. A company decides to reduce the salary of each employee by $2,000 this next year. What impact does this decrease have on the mean and on the range of employee salaries?

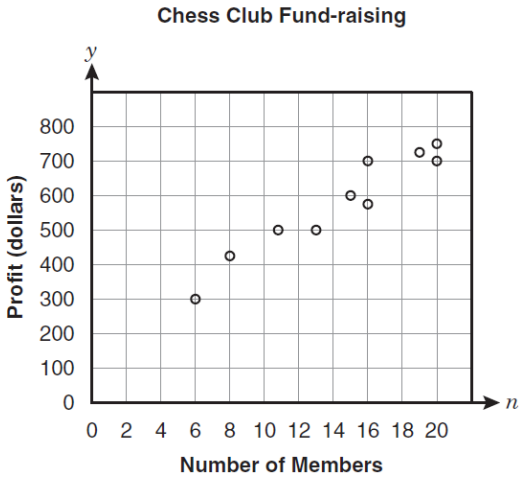
    A. The mean decreases but the range does not change.
    B. The mean does not change but the range decreases.
    C. The mean and range both decrease.
    D. The mean and range do not change.

A1.6.D Find the equation of a linear function that best fits bivariate data that are linearly related, interpret the slope and *y*-intercept of the line, and use the equation to make predictions.

77. Vance graphed the relation between fund-raising profits for the chess club and the number of members.

    Which equation represents a line that fits the data?
    (*Circle your choice*.)

    A. $y = 29n + 180$
    B. $y = 60n + 180$
    C. $y = \frac{2}{3}n + 180$
    D. $y = \frac{200}{3}n + 180$



78. Linda collected data on the height of her plant over a month.
    Her data is shown in the table below.

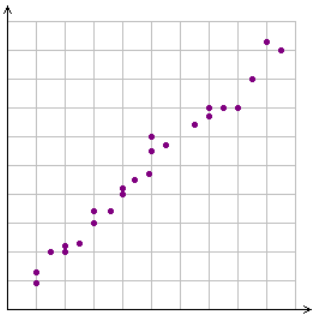
Day of the Month	0	4	6	10	12	15	18	22	26	30
Plant Height (cm)	20	39	53	82	102	119	140	154	176	193

    Using technology, find the line of best fit for this data.
    What does the slope of the line of best fit mean for this situation?

    A. The plant grows 4.75 cm per day on average.
    B. The plant grows 5.76 cm per day on average.
    C. The plant grows 6 cm per day on average.
    D. The plant grows 7 cm per day on average.

A1.6.E Describe the correlation of data in scatter plots in terms of strong or weak and positive or negative.

79. Describe the correlation type shown in the graph to the right.



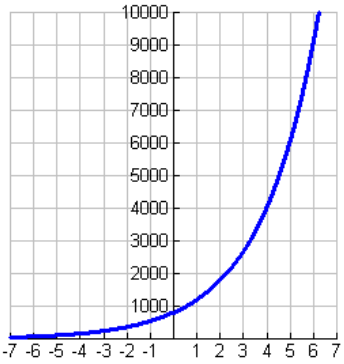
A. Strong, positive correlation.
B. Strong, negative correlation.
C. Weak, positive correlation.
D. Weak, negative correlation.

A1.7.A Sketch the graph for an exponential function of the form $y = ab^n$ where n is an integer, describe the effects that changes in the parameters a and b have on the graph, and answer questions that arise in situations modeled by exponential functions.

80. Graph A is the graph of $y = 2 \cdot 3^x$ and graph B is the graph of $y = 3 \cdot 2^x$.
Which statement about the two graphs is true?

A. Both graphs A and B rise at the same rate.
B. Graph B rises at a faster rate than graph A.
C. Graph A rises at a faster rate than graph B.
D. The y-intercept of graph A is above the y-intercept of graph B.

81. A graph of $y = 800 \cdot (1.5)^x$ is shown to the right.
How will the graph change if the 1.5 is changed to 2.5 in the equation?



A. The vertical intercept will go up.
B. The vertical intercept will go down.
C. The graph will be flatter.
D. The graph will be steeper.

82. Jane walked into a bank on its grand opening and won a door prize.
She was given a choice between two options

Option 1: $150 invested at 6% compounded annually.
Option 2: $200 invested at 3% compounded annually.

For how many years will option 1 yield less total money than option 2?

A1.7.B Find and approximate solutions to exponential equations.

83. Using tables or graphs, estimate the solution $4000 = 800 \cdot (1.5)^x$

    A. $x = 3.33$
    B. $x = 3.5$
    C. $x = 4$
    D. $x = 5$

A1.7.C Express arithmetic and geometric sequences in both explicit and recursive forms, translate between the two forms, explain how rate of change is represented in each form, and use the forms to find specific terms in the sequence.

84. The first four terms of a geometric sequence are 5, 10, 20, 40.

    - Write a recursive formula for this sequence.
    - Determine the 30th term of this sequence.

85. Suppose $a_0 = 2$ and $a_{n+1} = 3 \cdot a_n$. Find the value of a_5.

86. The function values found by the rule $f(x) = 3 \cdot 4^x$ can be described by which of the following?

    A. $a_0 = 3$ and $a_{n+1} = 4 + a_n$
    B. $a_0 = 4$ and $a_{n+1} = 3 + a_n$
    C. $a_0 = 3$ and $a_{n+1} = 4 \cdot a_n$
    D. $a_0 = 4$ and $a_{n+1} = 3 \cdot a_n$

A1.7.D Solve an equation involving several variables by expressing one variable in terms of the others.

87. Solve for r in the formula $d = r \cdot t$.

88. Solve for h in the formula $A = \pi r^2 h$.

89. Solve for y in the formula $Ax + By = C$.