

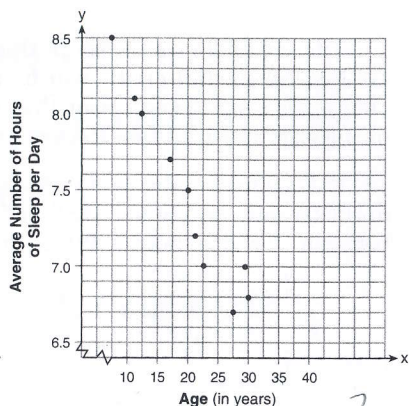
HW 3/20

ALGEBRA 1
June 2017

4. A student plotted the data from a sleep study as shown in the graph.

The student used the equation of the line $y = -0.09x + 9.24$ to model the data. What does the rate of change represent in terms of these data?

- (1) The average number of hours of sleep per day increases 0.09 hour per year of age.
- (2) The average number of hours of sleep per day decreases 0.09 hour per year of age.
- (3) The average number of hours of sleep per day increases 9.24 hours per year of age.
- (4) The average number of hours of sleep per day decreases 9.24 hours per year of age.



4 2

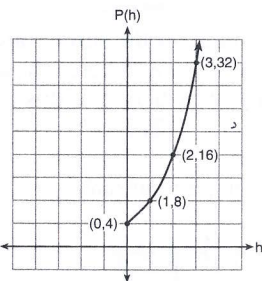
5. Lynn, Jude, and Anne were given the function $f(x) = -2x^2 + 32$, and they were asked to find $f(3)$. Lynn's answer was 14, Jude's answer was 4, and Anne's answer was ± 4 . Who is correct?

- (1) Lynn, only
- (2) Jude, only
- (3) Anne, only
- (4) Both Lynn and Jude

6. Which expression is equivalent to $16x^4 - 64$?

- (1) $(4x^2 - 8)^2$
- (2) $(8x^2 - 32)^2$
- (3) $(4x^2 + 8)(4x^2 - 8)$
- (4) $(8x^2 + 32)(8x^2 - 32)$

7. Vinny collects population data, $P(h)$, about a specific strain of bacteria over time in hours, h , as shown in the graph.



Which equation represents the graph of $P(h)$?

- (1) $P(h) = 4(2)^h$
- (2) $P(h) = \frac{46}{5}h + \frac{6}{5}$
- (3) $P(h) = 3h^2 + 0.2h + 4.2$
- (4) $P(h) = \frac{2}{3}h^3 - h^2 + 3h + 4$

7 1

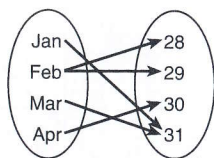
8. What is the solution to the system of equations?

- (1) no solution
- (2) infinite solutions
- (3) $(-1, 6)$
- (4) $(\frac{1}{2}, 9)$

8 1

9. A mapping is shown in the diagram. This mapping is

- (1) a function, because Feb has two outputs, 28 and 29
- (2) a function, because two inputs, Jan and Mar, result in the output 31
- (3) not a function, because Feb has two outputs, 28 and 29
- (4) not a function, because two inputs, Jan and Mar, result in the output 31



9 3

ALGEBRA 1
June 2017

10. Which polynomial function has zeros at $-3, 0,$ and 4 ?

- (1) $f(x) = (x + 3)(x^2 + 4)$
- (2) $f(x) = (x^2 - 3)(x - 4)$
- (3) $f(x) = x(x + 3)(x - 4)$
- (4) $f(x) = x(x - 3)(x + 4)$

10 _____

11. Jordan works for a landscape company during his summer vacation. He is paid \$12 per hour for mowing lawns and \$14 per hour for planting gardens. He can work a maximum of 40 hours per week, and would like to earn at least \$250 this week. If m represents the number of hours mowing lawns and g represents the number of hours planting gardens, which system of inequalities could be used to represent the given conditions?

- (1) $m + g \leq 40$
 $12m + 14g \geq 250$
- (2) $m + g \geq 40$
 $12m + 14g \geq 250$
- (3) $m + g \leq 40$
 $12m + 14g \leq 250$
- (4) $m + g \geq 40$
 $12m + 14g \leq 250$

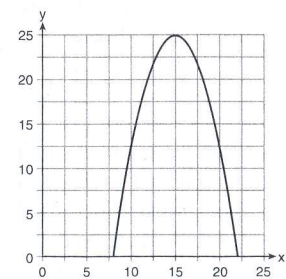
11 _____

8) $-6x + 3y = 12$
 $-6x + 3(2x + 8) = 12$
 $-6x + 6x + 24 = 12$
 $24 \neq 12$
 no solution

rate.
ne
12 _____
 $x < 7$?
13 _____
e
icient
cient
14 _____

16. The graph of a quadratic function is shown. An equation that represents the function could be

- (1) $q(x) = \frac{1}{2}(x + 15)^2 - 25$
- (2) $q(x) = -\frac{1}{2}(x + 15)^2 - 25$
- (3) $q(x) = \frac{1}{2}(x - 15)^2 + 25$
- (4) $q(x) = -\frac{1}{2}(x - 15)^2 + 25$



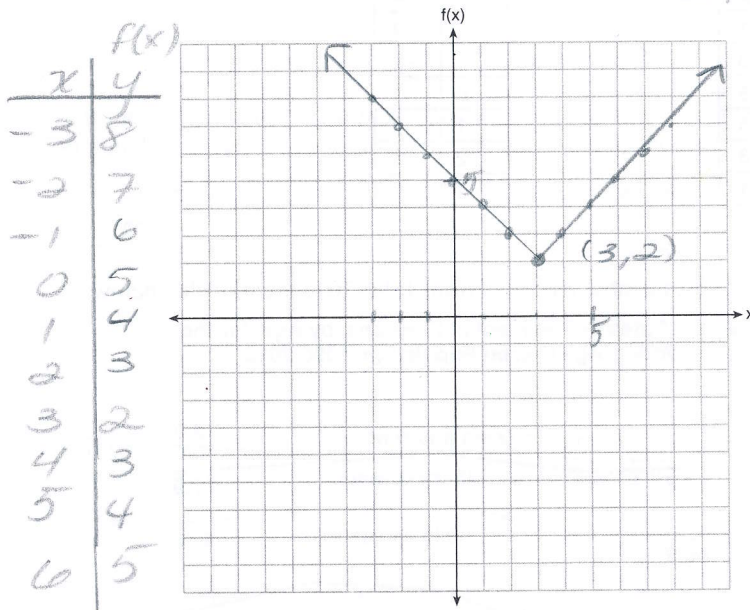
16 _____

ALGEBRA 1
January 2018

Part II

Answer all 8 questions in this part. Each correct answer will receive 2 credits. Clearly indicate the necessary steps, including appropriate formula substitutions, diagrams, graphs, charts, etc. Utilize the information provided for each question to determine your answer. Note that diagrams are not necessarily drawn to scale. For all questions in this part, a correct numerical answer with no work shown will receive only 1 credit. All answers should be written in pen, except for graphs and drawings, which should be done in pencil. [16]

25. On the set of axes below, graph $f(x) = |x - 3| + 2$. (3, 2)



26. Determine all the zeros of $m(x) = x^2 - 4x + 3$, algebraically.

$$x^2 - 4x = -3$$

$$x^2 - 4x + 4 = -3 + 4$$

$$\sqrt{(x-2)^2} = \sqrt{1}$$

$$x - 2 = \pm 1$$

$$x = 2 \pm 1$$

$2 + 1 = 3$
 $2 - 1 = 1$

any method
 • factoring
 • quadratic formula

ALGEBRA 1
January 2018

27. The distance traveled is equal to the rate of speed multiplied by the time traveled. If the distance is measured in feet and the time is measured in minutes, then the rate of speed is expressed in which units? Explain how you arrived at your answer.

$$d = r \cdot t$$

feet mins
 ↓ ↙

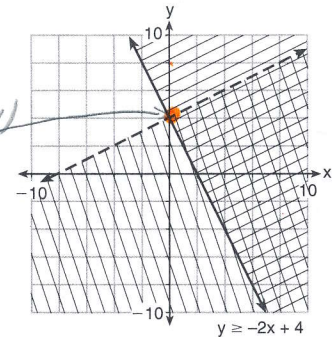
$$\frac{d}{t} = r$$

$\frac{\text{feet}}{\text{min}} = \text{rate}$

The rate of speed would be feet per minute. This is b/c it is measuring how far something is traveling in a certain amount of minutes.

28. Determine if the point (0, 4) is a solution to the system of inequalities graphed below. Justify your answer.

no, because the line with the positive slope (dotted line) means that any point on that line is not included in the solution.



29. If the zeros of a quadratic function, F , are -3 and 5 , what is the equation of the axis of symmetry of F ? Justify your answer.

$$x = -3 \quad x = 5$$

$$(x + 3)(x - 5) = 0$$

$$x^2 - 2x - 15 = 0$$

$$a = 1 \quad b = -2 \quad c = -15$$

$$x = \frac{-b}{2a} = \frac{-(-2)}{2(1)} = \frac{2}{2}$$

$x = 1$