

CTLS ONE TEAM ONE GOAL  
 Student Name: \_\_\_\_\_ Test ID: 20014160  
 Student Description: 1920 Algebra I EOC Prep Touchstone  
 Instructions: Part 3

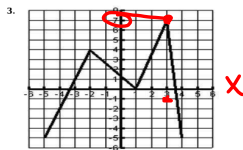
1. If the area of a circle of radius  $r$  is given by  $A = \pi r^2$ , then what is the radius of a circle given its area  $A$ ?

- A.  $r = \pi A^2$
- B.  $r = \sqrt{A - \pi}$
- C.  $r = \frac{A}{2\pi}$
- D.  $r = \sqrt{\frac{A}{\pi}}$

$A = \pi \cdot r^2$   
 $\frac{A}{\pi} = r^2$   
 $r = \sqrt{\frac{A}{\pi}}$

2. A boat is filling with water at a constant rate. The number of gallons of water in the boat at time  $x$  minutes is given by the expression  $5x + 8$ . What is the meaning of the 5 in this expression?

- A. The boat started with 5 gallons of water.
- B. The boat is filling with water at a rate of 5 gallons per minute.
- C. The boat will sink in 5 minutes.
- D. The boat will sink when it has 5 gallons of water.



Use the graph of  $y = f(x)$  above to find  $f(3)$ .

- A.  $f(3) = 2$
- B.  $f(3) = 1$
- C.  $f(3) = 4$
- D.  $f(3) = 4$

4. Peyton's data set has a median of 82. Josh's data set also has a median of 82. The interquartile range of Peyton's data is less than the interquartile range of Josh's set.

Which statement about the data in the two sets must be TRUE?

- A. There are fewer values in Peyton's data set than in Josh's.
- B. The middle 50% of Peyton's data set has less spread than the middle 50% of Josh's data set.
- C. Josh's data set must have a higher maximum value than Peyton's data set.
- D. The mean of Peyton's data set is equal to the mean of Josh's data set.

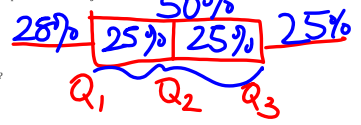
$IQR = Q_3 - Q_1$

5. Erik writes the following inequality.

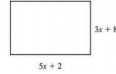
$-2(x + 8) > 16$

What is the solution to Erik's inequality?

- A.  $x > -16$
- B.  $x < -16$
- C.  $x < -4$
- D.  $x > -4$



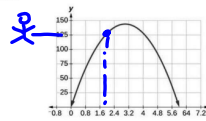
6. The dimensions of a rectangle are shown.



What is the perimeter, in units, of the rectangle?

- A.  $8x + 10$
- B.  $15x + 16$
- C.  $16x + 20$
- D.  $7x + 11$

7. Inez has a great seat for the fireworks, on top of the bank building where her dad works. She views the show from 125 feet above ground. The height  $y$  of a firework in feet as it is launched from the ground at time  $x$  seconds is shown by the graph. How long after each firework is launched will it first be at Inez's eye level?



- A. After about 0.8 seconds
- B. After about 1.9 seconds
- C. After about 3.0 seconds
- D. After about 6 seconds

8. Given that a person owns a Toyota, what is the percent that it is a SUV?

	Truck	SUV	Sedan	Total
Ford	8	2	5	15
Toyota	3	19	28	50
Total	11	21	33	65

- A. 14%
- B. 21%
- C. 30%
- D. 45%

$\frac{19}{50} = 38\%$   
 $38\% - 28\% = 10\%$

Bivariate  
 Joint =  $\frac{2cat}{Total}$   
 Marginal =  $\frac{1cat}{Total}$   
 Conditional =  $\frac{2cat}{1cat}$

9. James threw a basketball from the basketball court toward the hoop. The quadratic equation that models the height of the ball as a function of time,  $h(t) = -16t^2 + 12t + 5.8$ , where " $t$ " is the time in seconds. How long is the ball in the air until it hits the ground?

- A. 0.4 seconds
- B. 0.8 seconds
- C. 1.1 seconds
- D. 2.4 seconds

Q.F.

10. Which of the expressions show the correct factorization?

- i.  $x^2 + 18x + 11 = (x + 9)(x + 2)$
- ii.  $x^2 + 6x - 16 = (x + 8)(x - 2)$
- iii.  $x^2 + x - 6 = (x + 3)(x - 2)$

- A. i only
- B. ii and iii
- C. i and ii
- D. i, ii, and iii

11. Which function has the greater rate of change from [2,4]?

x	f(x)	g(x)
2	5	6
4	13	2

- A.  $f(x)$  has a greater rate of change.
- B.  $g(x)$  has a greater rate of change.
- C.  $f(x)$  and  $g(x)$  have the same rate of change.
- D. Can not be determined.

$f(x) = 2^x + 5$   
 $(2, 9)(4, 21)$   
 $\frac{21-9}{4-2} = \frac{12}{2} = 6$

$g(x) = (2, 6)(4, 2)$   
 $\frac{2-6}{4-2} = \frac{-4}{2} = -2$

12. Which equation best fits the data?

$y = ax + b$   
 $a = -1.74$   
 $b = 17.57$

x	y
1	18
2	13
3	11
4	10
5	9
6	7
7	6
8	4

- A.  $y = -1.74x - 17.57$
- B.  $y = -1.74x + 17.57$
- C.  $y = 1.74x - 17.57$
- D.  $y = 1.74x + 17.57$

Linear

Data  
 $L_1, L_2$   
 2nd Data  
 #4  
 Lin Reg  
 Calc

13. Find the solutions to the equation  $2(x + 1)^2 - 8 = 0$ .

- A.  $x = 2, x = -2$
- B.  $x = -1, x = 3$
- C.  $x = 2, x = -3$
- D.  $x = 1, x = -3$

14. The quadratic expression  $A = 4x^2 - 7x - 2$  represents the area of a rectangle. Which expression fits the dimensions of the garden?

- A.  $A = (x - 2)(4x - 1)$
- B.  $A = (x + 2)(4x - 1)$
- C.  $A = (x - 3)(4x + 5)$
- D.  $A = (x + 3)(4x - 5)$

$4x^2 - 7x - 2$   
 $(4x + 1)(x - 2)$   
 $-8 \quad -7$   
 $-8 \cdot 1 = -8$   
 $1 \cdot -2 = -2$   
 $-8 \cdot -2 = 16$   
 $1 \cdot -2 = -2$

15. Which function has x-intercepts of (7, 0) and (-3, 0)?

- A.  $f(x) = x^2 - 4x - 21$
- B.  $f(x) = x^2 + 10x - 21$
- C.  $f(x) = x^2 + 4x - 21$
- D.  $f(x) = x^2 - 10x + 21$

16. Lucas determined that final exam scores are linearly associated with class average and has a correlation coefficient of 0.92.

- A. Class averages increase as final exam scores decrease.
- B. Class averages decrease as final exam scores increase.
- C. Final exam scores increase as class average increase.
- D. Final exam scores decrease as class average increase.

.92

17.  $y = 2x + 1$   
 $-4x + 2y = 2$

- How many solutions does the system have?  
 A. None  
 B. Exactly one  
 C. Exactly two  
 D. Infinitely many

18. Which statement is true regarding  $f(x)$  and  $g(x)$ ?

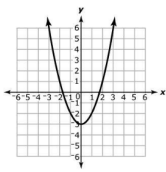
Function 1:  $f(x)$   
 $f(x) = (x - 4)^2 + 1$

Function 2:  $g(x)$

x	g(x)
-1	2
0	1
1	2
2	5

- A.  $f(x)$  is 4 times narrower than  $g(x)$ .  
 B.  $f(x)$  is shifted 4 units to the left of  $g(x)$ .  
 C.  $f(x)$  is shifted 4 units to the right of  $g(x)$ .  
 D.  $f(x)$  is 4 times wider than  $g(x)$ .

19. Consider this graph of  $f(x)$ .



Which function represents  $f(x)$  moving 5 units to the right?

- A.  $f(x) - 5$   
 B.  $f(x - 5)$   
 C.  $f(x + 5)$   
 D.  $f(x) + 5$

20. Andy and Jessie are tutors. Their tutoring rates are described in the tables.

Andy's Tutoring Service:

Number of Days	Fee
1	15
2	20
3	25
4	30

Jessie's Tutoring Service:

Number of Days	Fee
1	2
2	4
3	8
4	16

At how many days does Jessie's rate exceed Andy's rate?

- A. 5 days  
 B. 6 days  
 C. 7 days  
 D. Never, Jessie's rate will always be lower than Andy's.

21.



Part A: What is the rate of change in the graph above?

Part B: Interpret what the y-intercept means in context of the problem.

(NOTE: Your teacher will score your response to this item using a 2 point rubric.)