Date Completed: _____
Mentor Initials: _____

Quadratics (Basic)

Multiple Choice

1. Marcus has a tutoring company, Smart Enterprises, and he estimates that if the company makes its hourly rate d dollars, then its weekly profit p can be modeled by the function $p(d) = 1{,}000d - 5d^2$, where $0 \leq d \leq 200$. According to the model, for which of the following values of d will the weekly profit of this product be the largest?

A) 5
B) 100
C) 1,000
D) 5,000

2. In the xy plane, what are the coordinates of the vertex of the parabola with equation $y = 3(x - 5)^2 + 6$?

A) $(-6, -5)$
B) $(6, 5)$
C) $(5, -6)$
D) $(5, 6)$

3. In the xy-plane, the graph of the function $f(x) = x^2 - 4x + 3$ has two x-intercepts. What is the distance between the x-intercepts?

A) 1
B) 2
C) 3
D) 4

4. Which of the following is an equivalent form of the quadratic equation $y = 5x^2 + 10x - 75$, from which the x-intercepts can be identified as constants or coefficients in the equation?

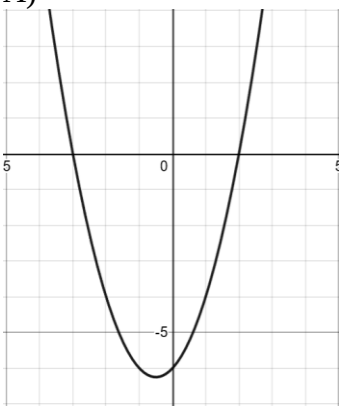
A) $y = 5(x^2 + 2x - 15)$
B) $y = 5(x^2 - 2x) + 75$
C) $y = 5(x + 5)(x - 3)$
D) $y = 5(x + 1)^2 - 80$

5. In the standard (x, y) coordinate plane, the equation $y = -2(x + 4)^2 + 2$ intersects the x-axis at points $(-5, 0)$ and $(a, 0)$. What is the value of a?

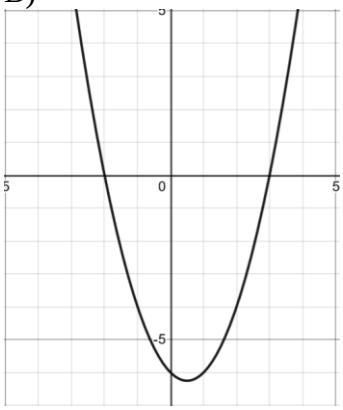
A) -3
B) -2
C) -1
D) 2

6. Which of the following could be the graph of $y = x^2 + x - 6$?

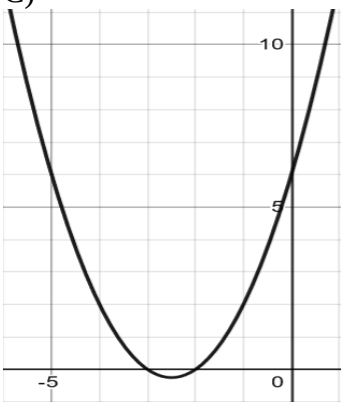
A)



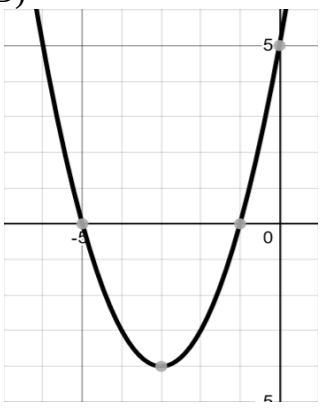
B)



C)



D)



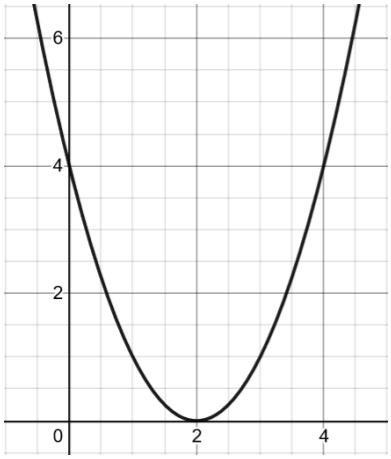
7. Which of the following is an equivalent form of the quadratic equation $y = 5x^2 + 10x - 75$, in which the coordinates of the vertex of its graph in the (x, y) coordinate plane appear as constants or coefficients?

A) $y = 5(x^2 + 2x - 15)$
B) $y = 5(x - 10)^2 - 75$
C) $y = 5(x + 5)(x - 3)$
D) $y = 5(x + 1)^2 - 80$

8. Rectangle F has an area of 144 square centimeters. The length of rectangle F is 7 inches less than the width of rectangle F. What is the length, in centimeters, of rectangle F?

A) 7
B) 9
C) 12
D) 16

9.



The graph of $y = (x + b)^2$, where b is a constant, is shown. What is the value of b?

A) -2
B) 0
C) 2
D) 4

10. What are the solutions of the quadratic equation $(x - 3)^2 - 9 = 0$?

A) $x = -6$ and $x = 0$
B) $x = 6$ and $x = 0$
C) $x = 6$ and $x = 3$
D) $x = -6$ and $x = 6$

Grid In

11. $(3x - 2)(x + 6)$

The given expression is equivalent to $ax^2 + bx + c$, where a, b, and c are constants. What is the value of b?

12. For the function $f(x) = -x^2 + 8x - 6$, the graph of f has vertex (h, k). What is the value of k?

13. What is the y-coordinate of the y-intercept of the graph of $y = (3x - 5)(2x - 4)$?

14. $f(x) = 2x^2 - 4x + 7$

For the function f shown, for what value of x does $f(x)$ obtain its minimum value?

15. In the xy-plane, the graph of $y = (x + 4)^2 + 4$ is the image of the graph of $y = (x - 5)^2 + 4$ after a translaton of how many units to the left?