Name: _____ Date: _____

UNIT #8 – QUADRATIC FUNCTIONS AND THEIR ALGEBRA
REVIEW QUESTIONS

Part I Questions

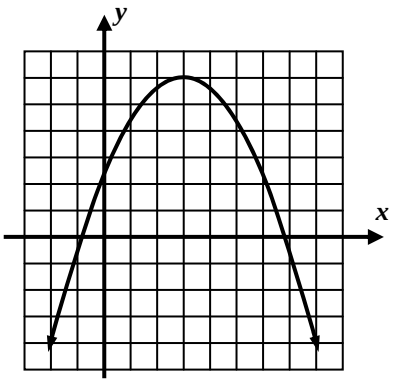
1. For the quadratic function shown below, the coordinates of its vertex are

(1) $(0, 2)$

(2) $(-1, 7)$

(3) $(6, 2)$

(4) $(3, 6)$



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2. A quadratic function has selected values shown in the table below. If its domain is all real numbers, which of the following represents the range of this quadratic function?

(1) $[1, 6]$

(2) $[6, 15]$

(3) $[6, \infty)$

(4) $(-\infty, 6]$

x	1	2	3	4	5	6
y	10	7	6	7	10	15

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3. Which of the following quadratic function has a maximum value of 16?

(1) $y = x^2 + 16$

(2) $y = 16 - x^2$

(3) $y = (x - 16)^2$

(4) $y = (x + 16)^2$

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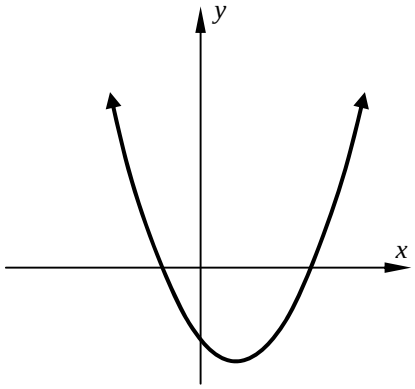
4. Which of the following could be the equation of the quadratic shown below? Explain your reasoning.

(1) $y = -3x^2 + 8x - 5$

(2) $y = 4x^2 - 6x + 7$

(3) $y = -2x^2 + 12x + 11$

(4) $y = x^2 - 8x - 2$



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5. The quadratic function $f(x)$ has one zero at $x=-5$ and a turning point at $(3,10)$. What is the value of its other zero?

(1) $x=11$ (3) $x=25$

(2) $x=5$ (4) $x=-3$

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6. Which of the following is the turning point of the function $y=(x-8)^2-2$?

(1) $(8,-2)$ (3) $(-8,-2)$

(2) $(-8,2)$ (4) $(8,2)$

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7. Which of the following represents the range of the function $g(x)=-3(x+5)^2+10$?

(1) $y>10$ (3) $y\le 10$

(2) $y>-15$ (4) $y\le 15$

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8. The quadratic function $y=x^2-8x+7$ can be written equivalently as

(1) $y=(x+4)^2+3$ (3) $y=(x-8)^2+7$

(2) $y=(x-4)^2-9$ (4) $y=(x-2)^2-11$

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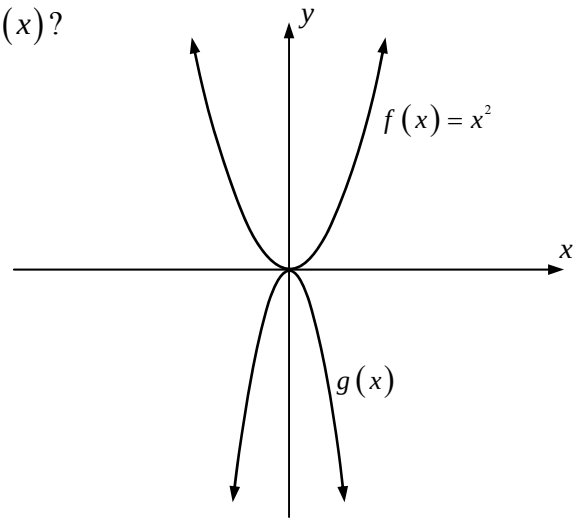
9. If the quadratic function $f(x)=x^2$ is graphed below along with the quadratic function $g(x)$, which of the following could be a correct equation for $g(x)$?



(1) $g(x)=2x^2$

(2) $g(x)=-2x^2$

(3) $g(x)=\frac{1}{2}x^2$

(4) $g(x)=-\frac{1}{2}x^2$

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10. The solutions to the equation $5(x-1)(x+3)=0$ are

(1) $x=-3$ and $x=1$ (3) $x=-5$ and $x=15$

(2) $x=-1$ and $x=3$ (4) $x=-1,\ 3$, and 5

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11. Which of the following is the solution set to the equation $x^2-6x-16=0$?

(1) $\{6,16\}$ (3) $\{-8,2\}$

(2) $\{-6,16\}$ (4) $\{-2,8\}$

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12. The solution set to $8x^2-4x=0$ is

(1) $x=0$ and 4 (3) $x=0$ and $\frac{1}{2}$

(2) $x=\frac{1}{2}$ and 4 (4) $x=-4$ and 2

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13. Which of the following represent the zeros of the function $y=x^2+3x-10$?

(1) $x=-3$ and 10 (3) $x=-10$ and 0

(2) $x=-5$ and 2 (4) $x=-3$ and 5

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14. Which of the following is the turning point of the function $y=(x+3)(x-5)$?

(1) $(1,-16)$ (3) $(-2,-7)$

(2) $(3,12)$ (4) $(-4,-8)$

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15. The product of two consecutive integers is 24 more than six times the smaller integer. Which of the following equations could be solved to find the smaller integer, *n*?

(1) $n^2 + n - 24 = 0$ (3) $n^2 - 5n - 24 = 0$

(2) $n^2 + 7n + 24 = 0$ (4) $n^2 + 6n + 24 = 0$

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16. Which of the following represents the solution set to the equation below?

$$(x+7)(x-2)+(x+1)(x-2)=0$$

(1) $\{-4, 2\}$ (3) $\{-7, 2\}$

(2) $\{-6, -2\}$ (4) $\{-2, 8\}$

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17. Which of the following quadratic has the same zeroes as $y = x^2 - 7x - 30$?

(1) $y = x^2 - 7x - 10$ (3) $y = 2x^2 - 14x - 30$

(2) $y = 5x^2 - 35x - 150$ (4) $y = x^2 + 7x + 30$

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18. Which of the following represents the turning point of the quadratic function $y = x^2 + 10x + 35$?

(1) $(-3, 20)$ (3) $(-5, 10)$

(2) $(5, 110)$ (4) $(3, 74)$

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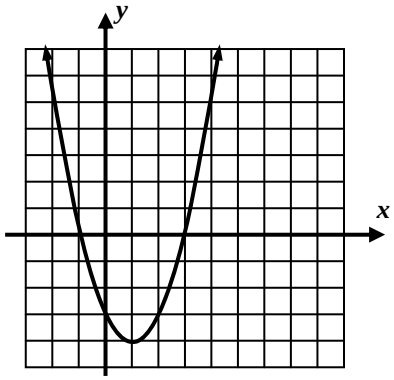
19. Which of the following represents a correct equation for the parabola shown below?



(1) $y = (x+3)(x-1)$

(2) $y = (x+2)(x-2)$

(3) $y = (x-5)(x+1)$

(4) $y = (x+1)(x-3)$

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Free Response Questions

20. A quadratic function has a turning point at $(3, 8)$. Selected values for the function are shown in the table below.

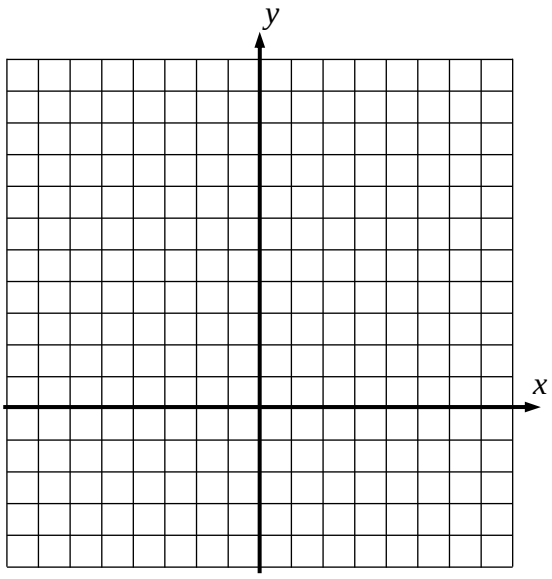
x	–1	0	1	2	3	4	5	6	7
$f(x)$		–10	0		8	6			–24

(a) Finish filling out the table.

(b) State the zeroes of the function.

21. For the quadratic function $f(x) = x^2 + 4x - 1$ defined on the interval $-6 \le x \le 2$.

(a) Graph the function for the stated domain interval.



(b) State the interval over which $f(x)$ is increasing.

(c) Is $x = 0$ part of an interval where $f(x) > 0$ or $f(x) < 0$? Explain your choice.

22. Place the quadratic $y = 2x^2 + 24x + 79$ into vertex form by using the method of completing the square and then state the coordinates of its vertex.

23. Solve the following equation for all values of x.

$$2x^2 + 18x - 17 = 11x - 2$$

24. Solve the following equation for all values of x.

$$(x-8)(4x+3) - (x-8)(x-2) = 0$$

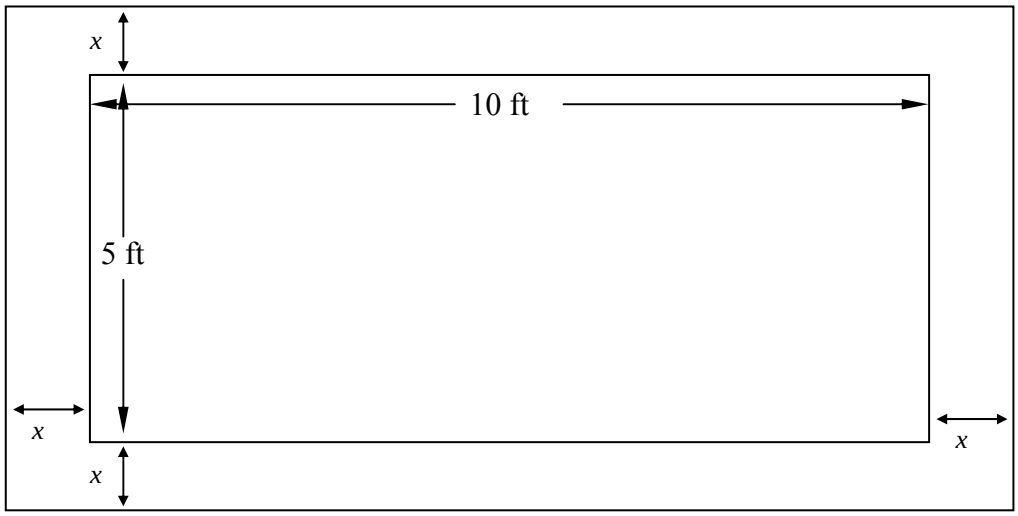
25. Three cousins have ages that are consecutive integers. The product of the two older cousin's ages is twelve less than six times the sum of the younger two cousin's ages.

    Write an equation that could be solved to find the three cousin's ages. Explain how your equation models the information provided.

    Find the ages of the three cousins algebraically.

26. A rectangle has a length that is nine feet less than four times its width. Its area is 90 square feet. Algebraically determine the length of its width and length. Show the work that leads to your answer.

27. A rectangular garden originally measured 5 feet by 10 feet as shown below. A path was created around the garden by increasing each side of the original triangle by x-feet on both sides.



Express the length and width of the larger rectangle in terms of x.

If the area of the path that rings the garden is 39 square feet, find the value of x.