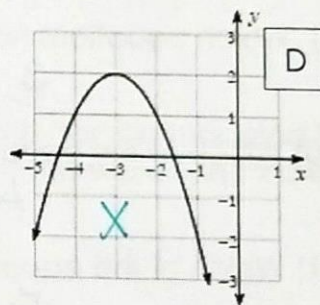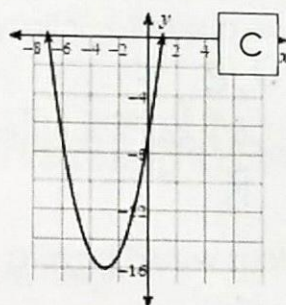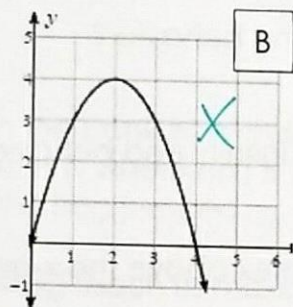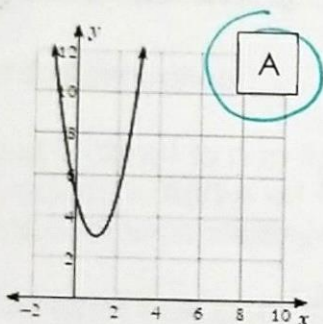Name:_____ Date:_____

Unit 3 Review! Graphing Quadratics

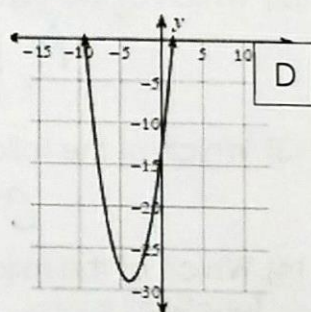**A)** For each of the following determine the vertex and axis of symmetry.

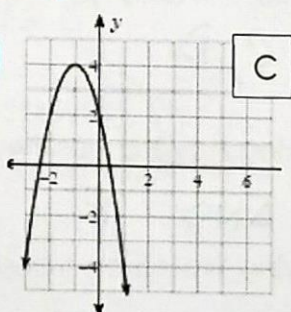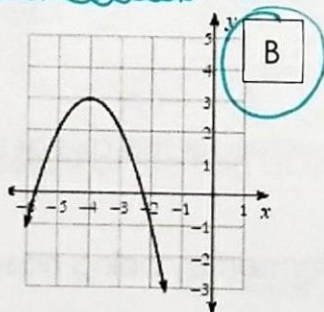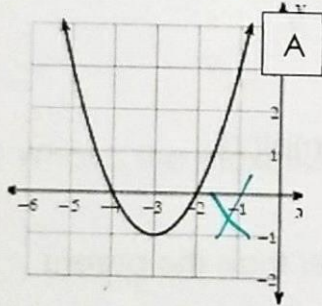|	
1) $f(x) = (x-3)^2 - 4$ Vertex $(3, -4)$ AoS $\quad x=3$	2) $f(x) = -2(x+2)^2 - 1$ Vertex $(-2, -1)$ AoS $\quad x=-2$
3) $y = 2x^2 - 4x + 5$ $y = 2(x-1)^2 + 3$ Vertex $= (1, 3)$ AoS $\quad x=1$	4) $y = -x^2 - 8x + 13$ $y = -(x+4)^2 + 29$ Vertex $= (-4, 29)$ AoS $= x = -4$

B) Determine which of the following graphs best represent the equation given
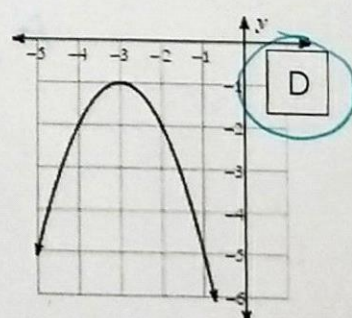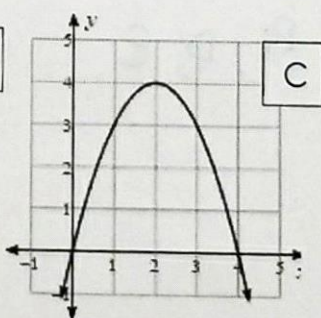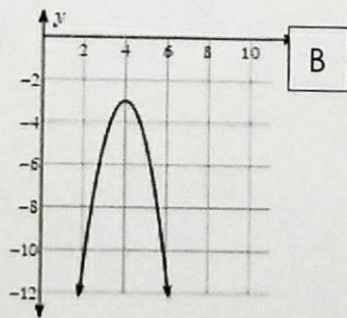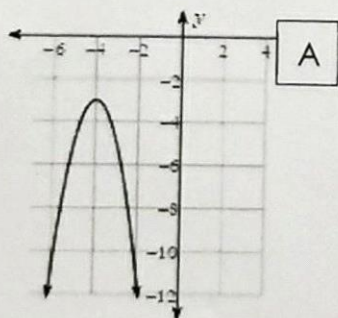
5) $y = 2x^2 - 4x + 5$ $\quad y = 2(x-1)^2 + 3$

A (circled) B (X) C D (X)

6) $y = -x^2 - 8x + 13$ $\quad y = -(x+4)^2 + 3$

A B (circled) C D

7) $y = -(x+3)^2 - 1$ $\quad (-3, -1)$

A B C D (circled)

8) $y = \frac{1}{2}(x - 2)^2 - 1$ $(2, -1)$

A   B   C   D
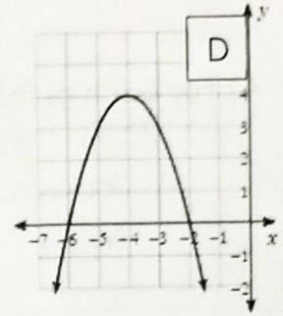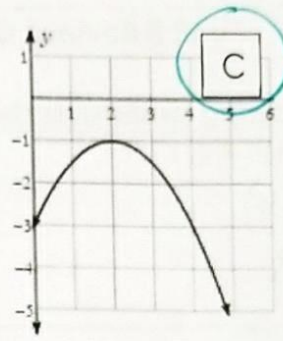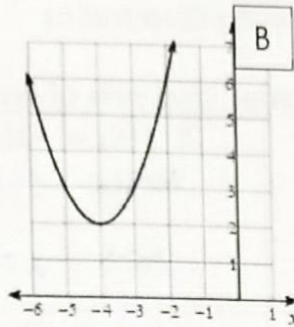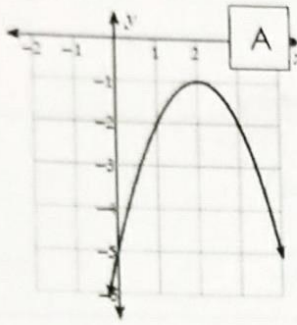
C) Decoding word problems (matching) Given the bank of quadratic equations select ALL of the equations that match the situation given

A) $y = -(x + 7)^2 - 2$ $(-7, -2)$	B) $y = -x^2 - 6x - 10$ $y = -(x+3)^2 - 1$ $(-3, -1)$	C) $y = 2(x - 5)^2 - 1$ $(5, -1)$
D) $y = x^2 + 6x + 6$ $y = (x+3)^2 - 3$ $(-3, -3)$	E) $y = \frac{1}{4}(x + 1)^2 + 2$ $(-1, 2)$	F) $y = 4x^2 - 16x + 19$ $y = 4(x - 2)^2 + 3$ $(2, 3)$

9) Which equations have a positive infinity end behavior?

    C, D, E, F

10) Which of the equations have a negative infinity end behavior?

    A, B

11) Which of the equations would have a vertex above the x-axis?

    E, F

12) Which of the equations would have a vertex below the x-axis?

    A, B, C, D

13) Which of the following have a positive value for the axis of symmetry?

    C AND F

14) Which of the following would be transformed by being narrower than the parent function?

    C AND F

15) Which functions would have a left transformation?

    A, B, D, E

Part D: Analyzing a graph

Given the graph below answer the following questions:
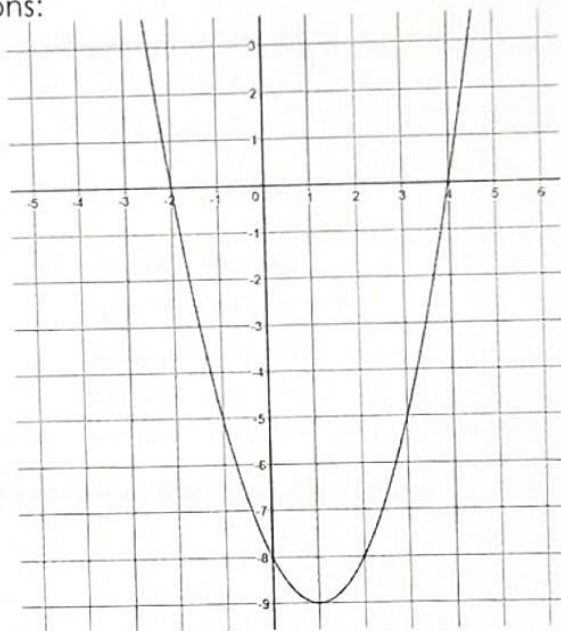
16) Vertex: $(1, -9)$

17) Axis of Symmetry: $x = 1$

18) Zeros: $x = -2$ $x = 4$

19) Y-intercept: $y = -8$

End Behavior:

20) As $x \to -\infty$, $y \to$ ∞

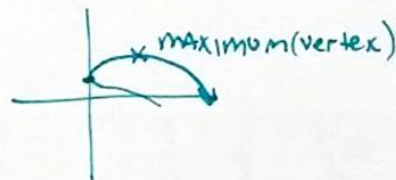21) As $x \to \infty$, $y \to$ ∞

Part E: Application

A frog is about to hop from the bank of a creek. The path of the jump can be modeled by the equation $h(x) = -x^2 + 4x + 1$, where $h(x)$ is the frog's height above the water and x is the number of seconds since the frog jumped.

15) At what **time** does the frog reach its maximum height?

convert to vertex

$y = -(x-2)^2 + 5$ vertex $(2, 5)$

AT 2 seconds

× MAXIMUM (vertex)

16) What is the **maximum height** of the frog at this point in time?

5 feet is the maximum height