Name: _____ **Unit 3:** Parent Functions & Transformations

Date: _____ Bell: _____ **Homework 5:** Vertex Form of a Quadratic Equation

**** This is a 2-page document! ****

Describe the transformation of each function compared to its parent function.

1. $f(x)=(x-4)^2+9$

2. $f(x)=-2x^2-3$

3. $f(x)=\frac{1}{4}(x+6)^2$

4. $f(x)=-(x-7)^2-1$

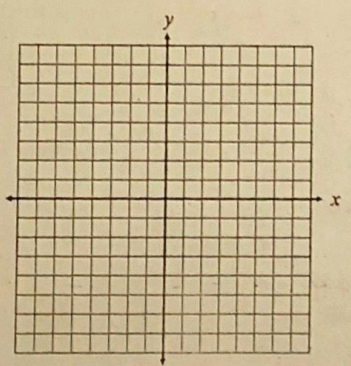
5. $f(x)=\frac{3}{2}x^2$

6. $f(x)=-\frac{2}{3}(x-5)^2+2$

Give the **then graph.**

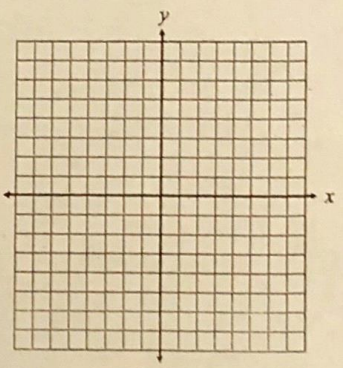
7. $f(x)=(x+1)^2-8$

x	$f(x)$



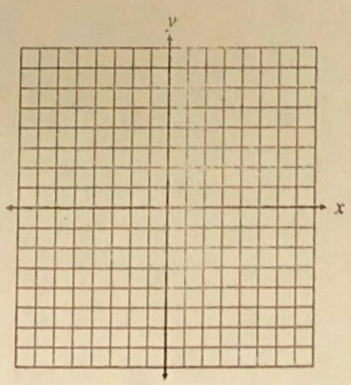
8. $f(x)=-(x+5)^2+5$

x	$f(x)$



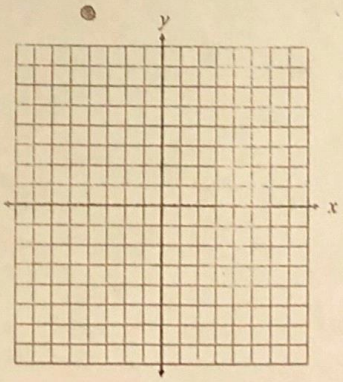
9. $f(x)=\frac{1}{2}x^2-3$

x	$f(x)$



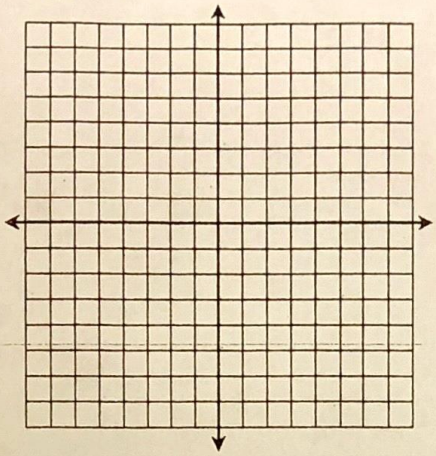
10. $f(x)=-3(x-4)^2+1$

x	$f(x)$



11. $y = -(x-1)^2$

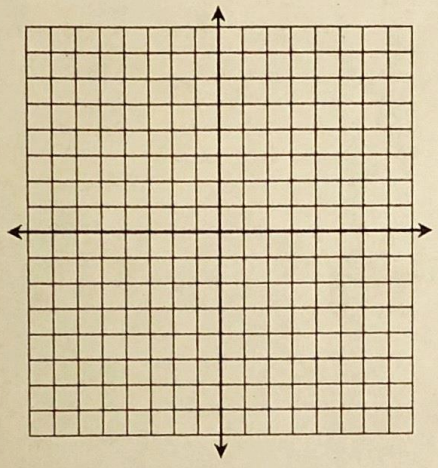
x	y



Axis of Symmetry:
Vertex:
Domain:
Range:
Transformations: • •

12. $y = \frac{1}{2}(x+4)^2 - 8$

x	y



Axis of Symmetry:
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Transformations: • • •

Without graphing, describe the transformations of each equation from its parent function.

13. $y = -x^2 + 4$

Transformations: • •

14. $y = 3(x-6)^2 - 2$

Transformations: • • •

The transformations to the parent function of a quadratic equation are given below. Write an equation of the new function in vertex form.

15 translated 3 units down

16 translated 7 units right and 2 units up

17 reflected over the x-axis, then translated 5 units left

18 vertically stretched by a factor of 2, then translated 4 units left and 1 unit down

15 $y =$ _____

16 $y =$ _____

17 $y =$ _____

18 $y =$ _____