Foundations of Math 2 Name: _____ Period: _____
Final Exam Review

Unit 1 - Transformations and Symmetry:

What is Rotational Symmetry: _____

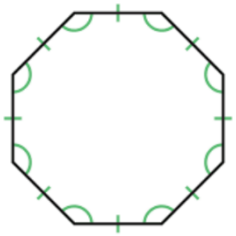
_____

Smallest Angle of Rotational Symmetry = _____

What is a Line of Symmetry: _____

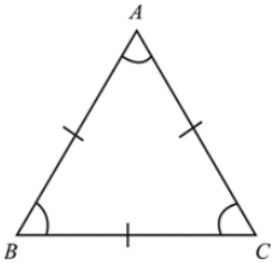
_____

Find the smallest angle of rotational symmetry and lines of symmetry for the following figures:

1. 

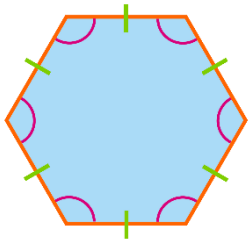
Smallest Angle: _____

Lines of Symmetry: _____

2. 

Smallest Angle: _____

Lines of Symmetry: _____

3. 

Smallest Angle: _____

Lines of Symmetry: _____

Types of Transformations:

Translation: _____

_____

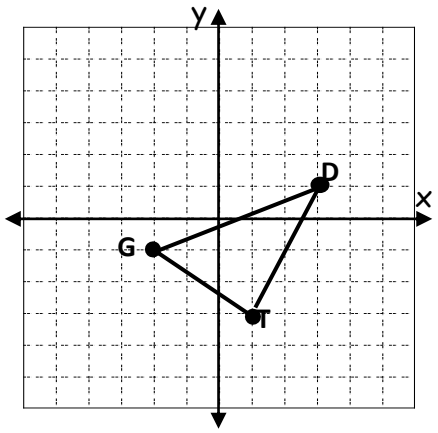
Algebraic Rule: $(x, y) \rightarrow (x \pm \#\ ,\ y \pm \#)$

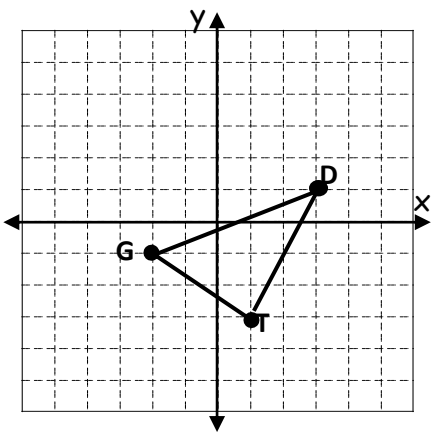
Describe the following Translations:

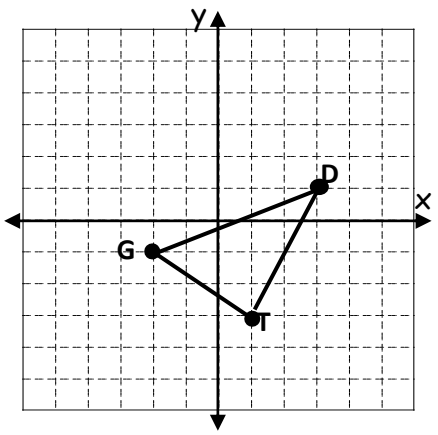
4. $(x, y) \rightarrow (x + 6\ ,\ y\ - 4)$ _____
5. $(x, y) \rightarrow (x - 2\ ,\ y + 1)$ _____
6. $(x, y) \rightarrow (x - 5\ ,\ y - 3)$ _____
7. $(x, y) \rightarrow (x + 7\ ,\ y + 6)$ _____
8. $(x, y) \rightarrow (x - 8\ ,\ y + 9)$ _____
9. $(x, y) \rightarrow (x + 5\ ,\ y - 2)$ _____

Translate the following with the given algebraic rule:

10. $(x, y) \rightarrow (x + 3\ , y - 1)$ 11. $(x, y) \rightarrow (x - 3\ , y + 4)$ 12. $(x, y) \rightarrow (x + 2\ , y + 3)$





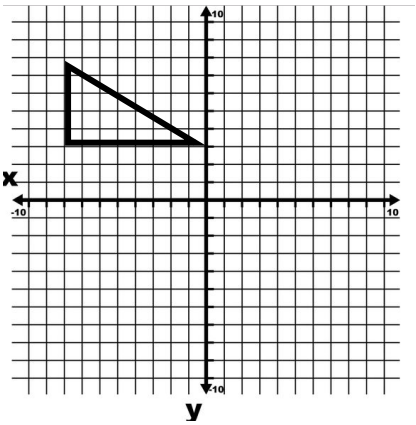


Reflection: _____

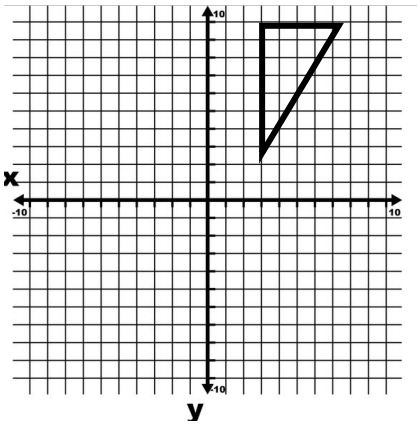
_____

Reflect over the following over the given lines:

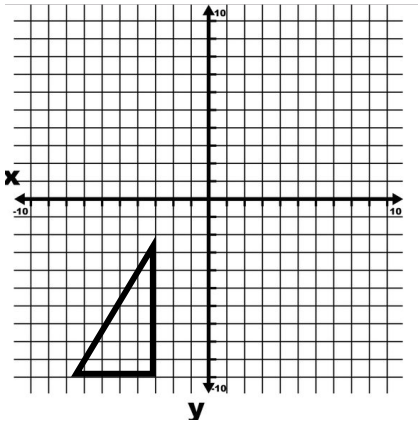
13. y-axis



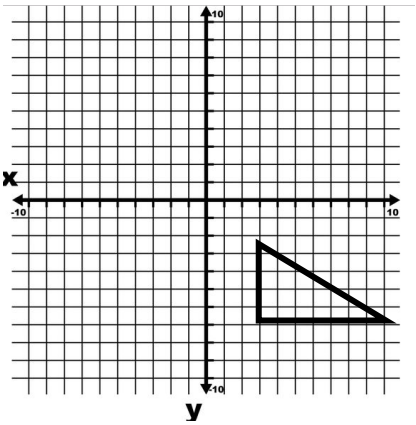
14. x-axis



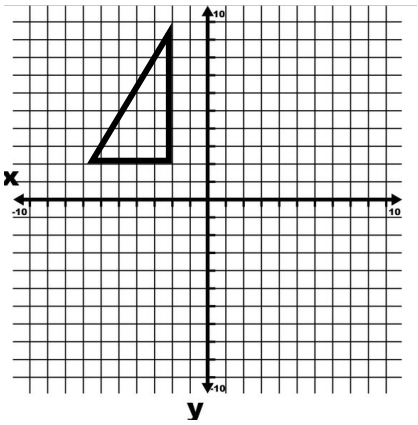
15. x=2



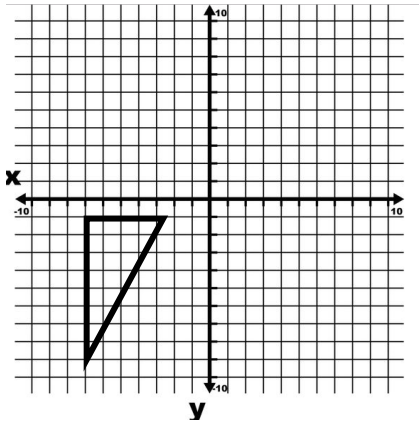
16. x-axis



17. y-axis



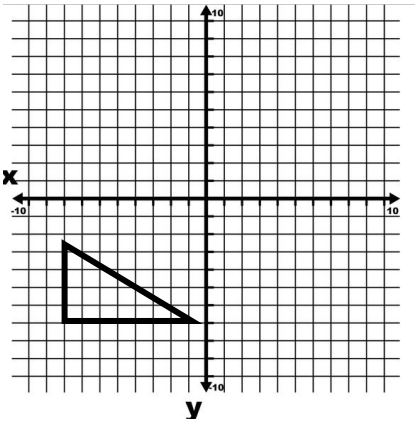
18. y = -4



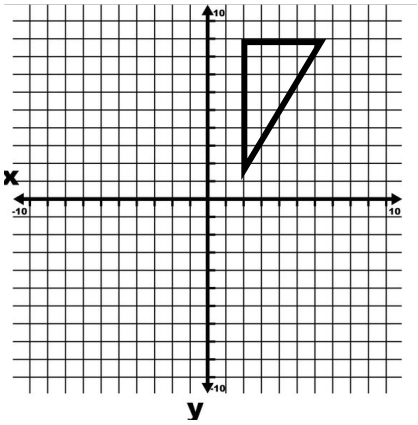
Rotation: _____

_____

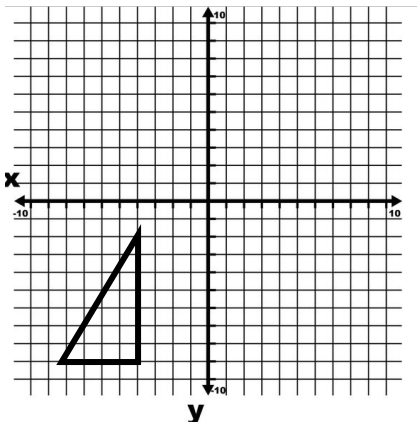
19. Rotate 180°around (0,0)



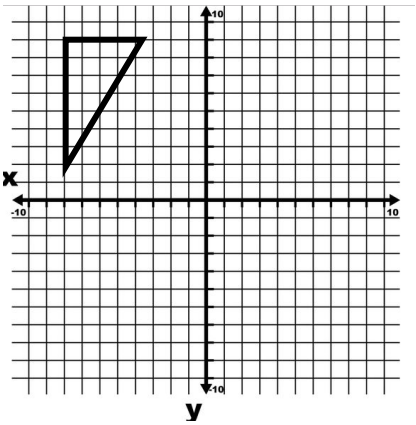
20. Rotate 90 °C around (2,1)



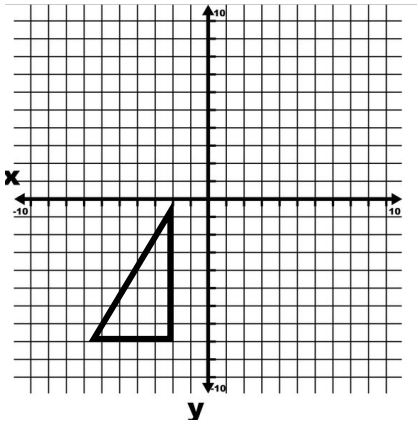
21. Rotate 270°CC about (-2, 1)



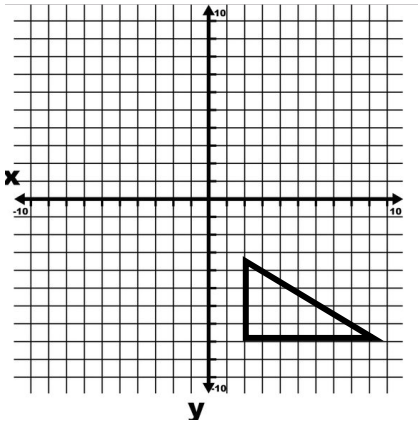
22. Rotate 270°C around (-8,1)



23. Rotate 180 °around (3,4)



24.Rotate 90°CC about (0, 0)



When doing all transformations we always start with the pre-image points ____, ____, ____ . . .

and then we plot the image points ____, ____, ____. . . (We call _____ - _____)

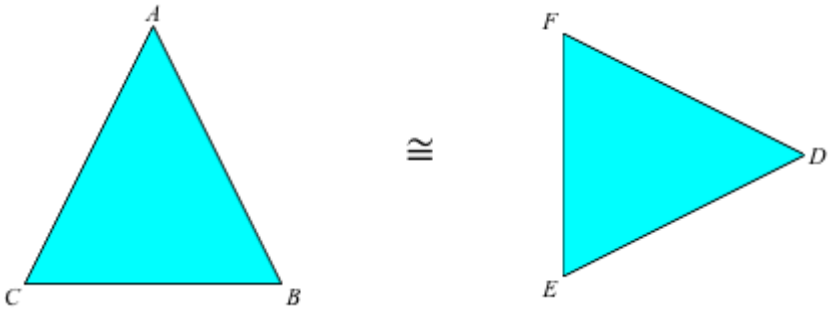
When a pre-image is _____ , _____, and

_____ it is congruent to the image.

Unit 2 – Congruency: Congruence Symbol: ____

What does it mean to be Congruent: _____

_____



Congruency Statement: _____

Using the given congruency statement, find the corresponding congruent parts:

$$\Delta KLM \cong \Delta ARN$$

25. $< K \cong$ _____ 26. $< N \cong$ _____ 27. $< R \cong$ _____ 28. $< M \cong$ _____

29. $\overline{LM} \cong$ _____ 30. $\overline{AR} \cong$ _____ 31. $\overline{NA} \cong$ _____ 32. $\overline{LK} \cong$ _____

$$\blacksquare LOPX \cong \blacksquare ERCY$$

33. $< P \cong$ _____ 34. $< E \cong$ _____ 35. $< R \cong$ _____ 36. $< Y \cong$ _____

37. $\overline{LO} \cong$ _____ 38. $\overline{CY} \cong$ _____ 39. $\overline{OP} \cong$ _____ 40. $\overline{XL} \cong$ _____

We can prove two shapes are congruent through transformations.

To do this we want to match:

Point to _____ by using _____

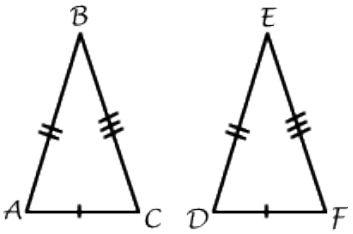
Line to _____ by using _____

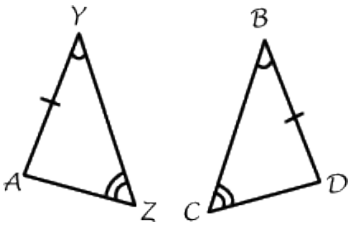
Plane to _____ by using _____

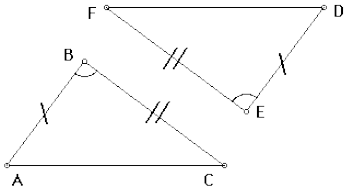
Triangle Congruency Criteria: _____

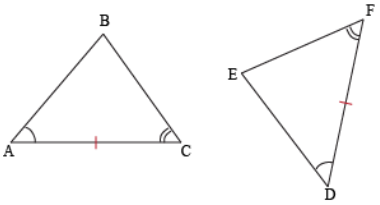
_____

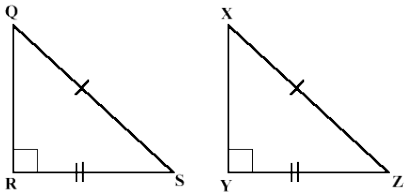
Triangle Criteria That Works:



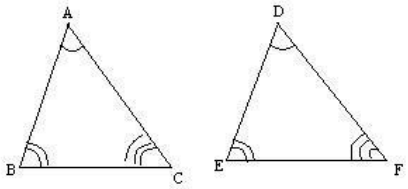


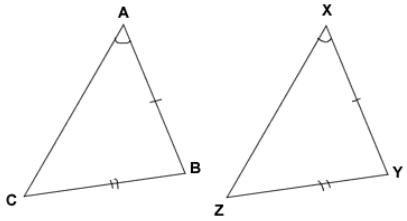




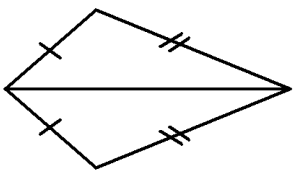


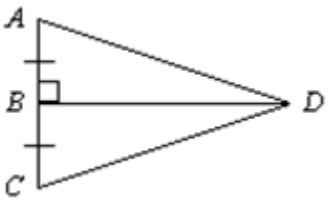
Triangle Criteria That Does Not Work:





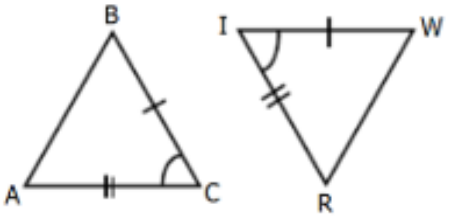
Reflexive Property: _____



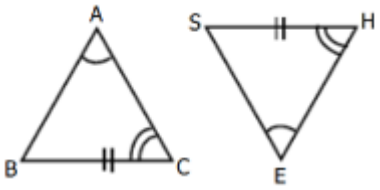


Determine if the following triangles are congruent. If so, state by which criteria:

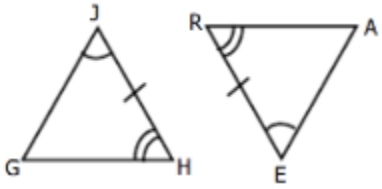
41. Congruent: YES or NO
Criteria: _____



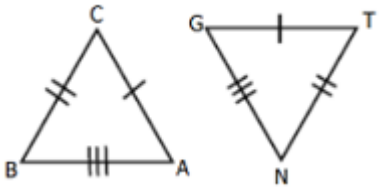
42. Congruent: YES or NO
Criteria: _____



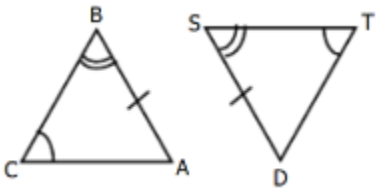
43. Congruent: YES or NO
Criteria: _____



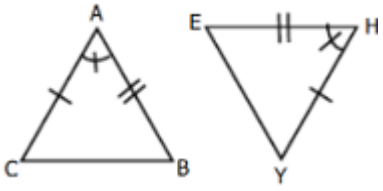
44. Congruent: YES or NO
Criteria: _____



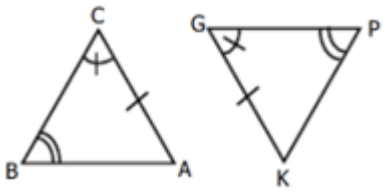
45. Congruent: YES or NO
Criteria: _____



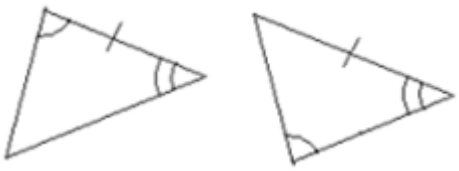
46. Congruent: YES or NO
Criteria: _____



47. Congruent: YES or NO
Criteria: _____



48. Congruent: YES or NO
Criteria: _____



Unit 3 – Linear, Quadratic, and Exponential Functions

Types of Functions:

Recursive Function: _____

_____

Examples:

Explicit Function: _____

_____

Examples:

Rates of Change:

Quadratic Functions have _____ rates of change. When looking at a table we will find that _____.

Examples:

x	-2	-1	0	1	2	3
y	22	6	0	4	18	42

Linear Functions have _____ rates of change. When looking at a table we will find that _____.

Examples:

x	-2	-1	0	1	2	3
y	-17	-11	-5	1	7	13

Exponential Functions have _____ rates of change. When looking at a table we will find that _____.

Examples:

x	-2	-1	0	1	2	3
y	.25	.5	1	2	4	8

Given the following tables determine if the following functions are quadratic, linear, exponential or neither:

49.

x	-2	-1	0	1	2	3
y	1	0	1	4	9	16

50.

x	-2	-1	0	1	2	3
y	.04	.2	1	5	25	125

51.

x	-2	-1	0	1	2	3
y	-10	-5	0	5	10	15

52.

x	-2	-1	0	1	2	3
y	0	-2	-2	0	4	10

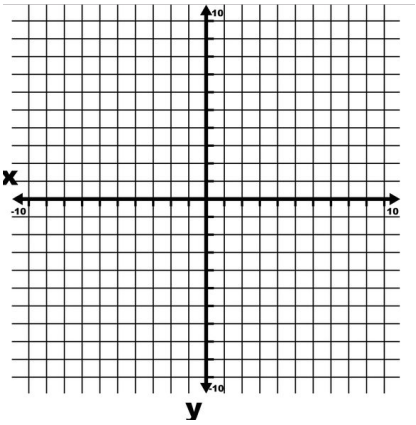
53.

x	-2	-1	0	1	2	3
y	22	20	18	16	14	12

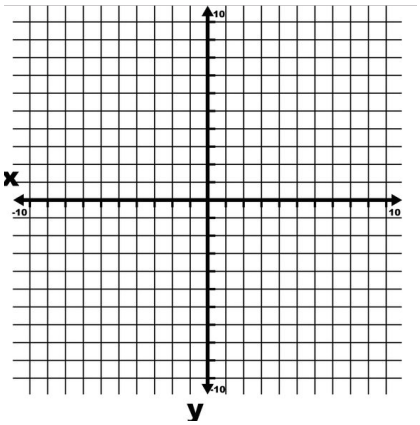
Graphs of functions:

Sketch an example of the following functions:

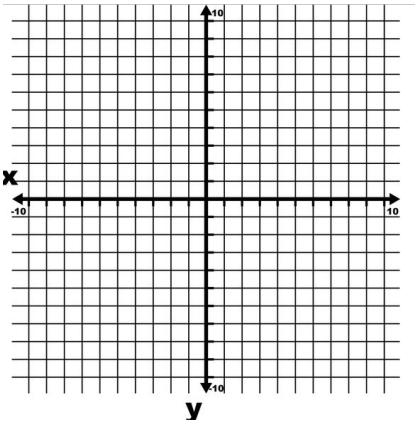
54. Quadratic Function



55. Linear Function



56.Exponential Function

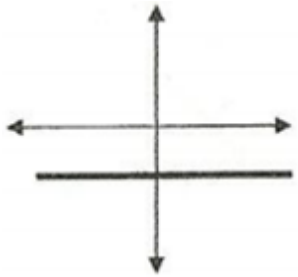


Function or Not a Function?

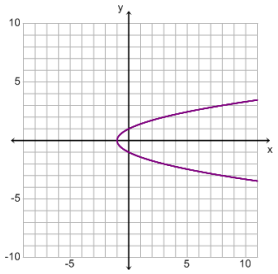
We can determine if we have a function by seeing if it passes the _____.

Determine if the following are a function.

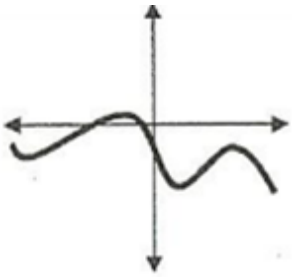
57. Function? YES or NO



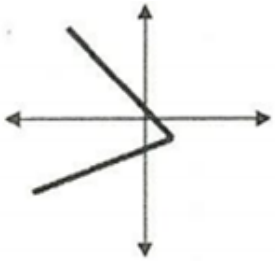
58. Function? YES or NO



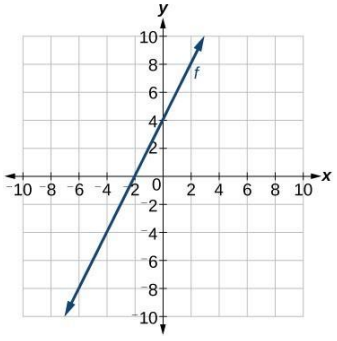
59. Function? YES or NO



60. Function? YES or NO

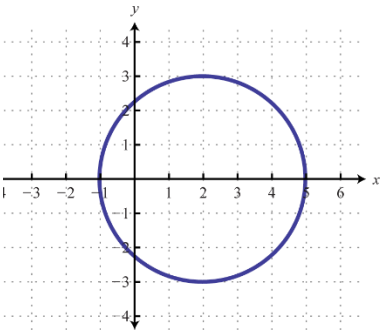


61.Function? YES or NO

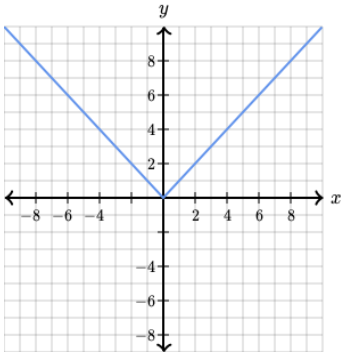


62. Function? YES or NO

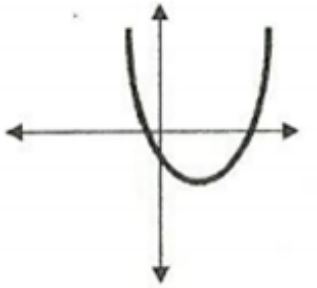
63. Function? YES or NO



64.Function? YES or NO



65. Function? YES or NO



Unit 4 – Structures of Quadratic Functions

Factoring:

When factoring we want to find numbers that _____

that also _____

Example: $x^2 - 2x - 8$

( ) ( )

Factor the following quadratics:

66. $x^2 + 8x + 12$

( ) ( )

67. $x^2 - x - 12$

( ) ( )

68. $x^2 + 6x - 16$

( ) ( )

69. $x^2 + 8x + 15$

( ) ( )

70. $x^2 - 11x + 24$

( ) ( )

71. $x^2 + 5x - 14$

( ) ( )

Complete the Square:

When completing the square we want to _____

Next we want to._____.

Example: $y = x^2 - 12x + 28$

( )^2 _____

Complete the square for the following quadratics:

72. $y = x^2 + 12x + 20$

( )^2 _____

73. $y = x^2 + 8x + 16$

( )^2 _____

74 $y = x^2 - 10x - 15$

( )^2 _____

75. $y = x^2 - 18x + 80$

( )^2 _____

76. $y = x^2 + 4x + 3$

( )^2 _____

77. $y = x^2 - 16x + 200$

( )^2 _____

Vertex Form: We can describe transformations given the vertex form equation by using the following rules.

$$-\ a\ (\ x\ -\ h\ )^2\ +\ k$$

Vertex: (,) LOS: x =

State the transformations given the following quadratics:

78. $y = -2(x-1)^2 + 1$

79. $y = .25\ (x+3)^2 - 5$

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

81. $y = 3(x-1)^2 - 2$

82. $y = .5x^2 - 7$

83. $y = -(x+4)^2$

Write the equation of the quadratic where the parent function has been translated:

84. Up 3, Left 6, Reflected over the x-axis: _____

85. Vertical Stretch by 5, Down 6, Right 2: _____

86. Left 2, Reflect over the x-axis, Up 4: _____

87. Vertical Shrink of .75, Reflect over the x-axis, Up 7: _____

State the vertex and line of symmetry of the following:

88. $y = -2(x-1)^2 + 1$

Vertex:_____ LOS:_____

89. $y = .25\,(x+3)^2 - 5$

Vertex:_____ LOS:_____

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

Vertex:_____ LOS:_____

91. $y = 3(x-1)^2 - 2$

Vertex:_____ LOS:_____

92. $y = .5x^2 - 7$

Vertex:_____ LOS:_____

93. $y = -(x+4)^2$

Vertex:_____ LOS:_____

Graphing Quadratics: We can determine a quadratic function easily by looking at a graph!

Quadratic Functions in Vertex Form:

First we want to identify the location of the vertex (_____)!

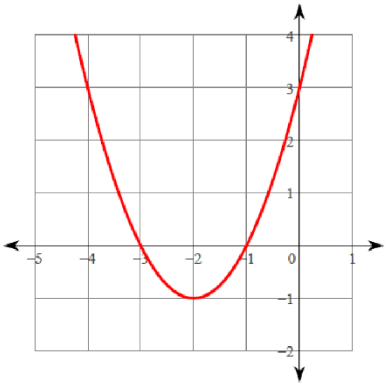
When putting it in the equation don't forget to_____.

Next we want to determine if there have been any_____!

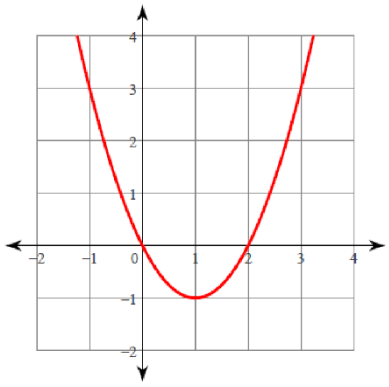
We can do this by_____

Lastly, check for _____by looking to see if your graph is _____.

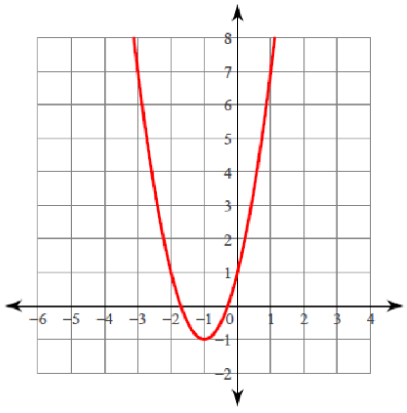
State the quadratic function for the following in Vertex Form:

93. 

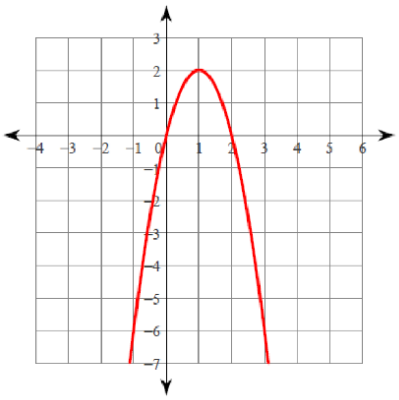
( )^2 _____

94. 

( )^2 _____

95. 

( )^2 _____

96. 

( )^2 _____

Quadratic Functions in Factored Form:

First we want to identify where the function _____!

When putting it in factored form don't forget to_____.

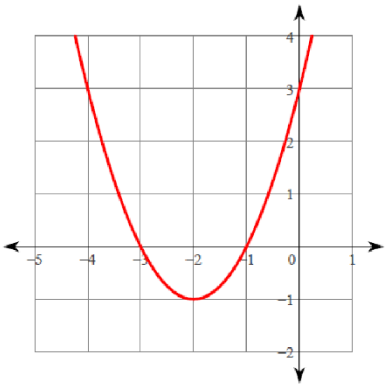
Next we want to determine if there have been any_____!

We can do this by_____

Lastly, check for _____by looking to see if your graph is _____.

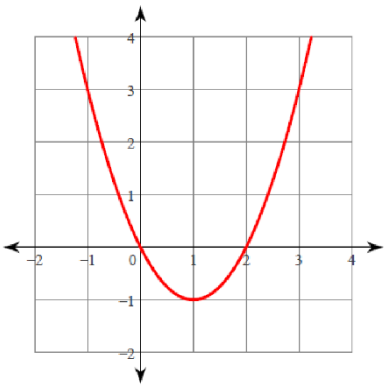
State the quadratic function for the following in Vertex Form:

97.



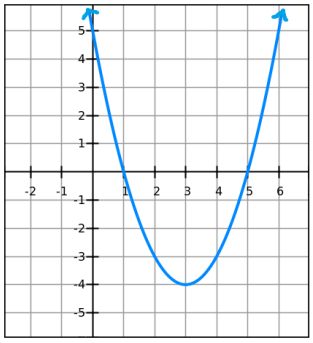
( ) ( )

98.



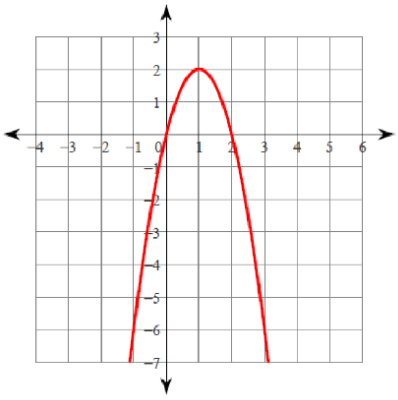
( ) ( )

99.



( ) ( )

100.



( ) ( )

Unit 5 – Solving Quadratic Functions

Simplifying Radicals:
When simplifying radicals it is important that we make _____.

We want to look for _____.

Anything left _____.

If multiple numbers are present in either location we must_____.

Simplify the following radicals completely.

101. $\sqrt{250}$ 102. $\sqrt{48}$ 103. $\sqrt{-16}$ 104. $\sqrt{216}$

105. $\sqrt{45}$ 106. $\sqrt{-98}$ 107. $\sqrt{-169}$ 108. $\sqrt{200}$

Looking at Quadratics in Standard Form:_____

State the abc's of the following quadratic functions. (Make sure they're set =0 and be careful of signs!!

109. $4x^2 + 2x - 3 = 0$ 110. $15 + 6x^2 + 7x = 0$ 111. $10 + x^2 = 3$

a= ____ b=____ c=____ a= ____ b=____ c=____ a= ____ b=____ c=____

112. $5x^2 - 3x + 9 = 0$

a= ____ b=____ c=____

113. $18 - 26x^2 + 3x = 0$

a= ____ b=____ c=____

114. $13 - 3x^2 = 14$

a= ____ b=____ c=____

115. *Let's Try Something New….*

Solve by moving to the left.

$3x^2 + 7x = -9$

a= ____ b=____ c=____

Solve by moving to the right.

$3x^2 + 7x = -9$

a= ____ b=____ c=____

What do you notice about the abc values? _____

_____

(This is why our neighbors could have gotten different answers then us when we set equal to zero and yet we were both right! Neat huh?)

If I solved and got the following abc values, what else could our neighbor have gotten??

116. $a = 13\ b = 22\ c = -6$

a= ____ b=____ c=____

117. $a = -7\ \ b = 5\ \ c = 54$

a= ____ b=____ c=____

118. $a = 2\ b = -12\ c = 8$

a= ____ b=____ c=___

119. $a = 6\ b = -14\ c = 7$

a= ____ b=____ c=____

120. $a = 25\ b = 32\ c = -45$

a= ____ b=____ c=____

121. $a = 15\ \ b = -1\ c = 24$

a= ____ b=____ c=____

State the Quadratic Formula:

To help you remember, you could sing our song… or think about this story! *"There once was a negative **b**oy who was unsure if he wanted to go to a radical party. But the **b**oy was feeling squared and missed out on four **a**wesome **c**hicks! The party was not over until **2 a**m!*

$$x = \frac{\qquad\qquad\qquad\qquad}{\qquad\qquad\qquad\qquad}$$

Solving using the Quadratic Formula:

122. $x^2 + 16x + 68 = 0$

a= ____ b=____ c=____

123. $2x^2 - 7x + 6 = 0$

a= ____ b=____ c=____

124. $x^2 - 8x + 24 = 0$

a= ____ b=____ c=____

125. $2x^2 - 32 = 0$

a= ____ b=____ c=____

Quadratic Applications:

126. If a rectangle has dimensions of (2x - 3) inches by (x +1) inches and an area of 12 square inches, what are the actual dimensions of the rectangle?

127. If a rectangle has dimensions of (x) inches by (x +5) inches and an area of 22 square inches, what are the actual dimensions of the rectangle?

128. If a rectangle has dimensions of (x + 2) inches by (x – 6) inches and an area of 30 square inches, what are the actual dimensions of the rectangle?

129. If a rectangle has dimensions of (x + 4) inches by (x – 3) inches and an area of 44 square inches, what are the actual dimensions of the rectangle?

130. I have completed my review and have asked Mrs. Adkins any questions I had.

YES or NO