

Graphing Quadratics: $y = ax^2$

Graph each quadratic equation using a table of values. Charts may vary.

Example: $y = x^2$

x	y
-2	4
-1	1
0	0
1	1
2	4

1. $y = 2x^2$

x	y

2. $y = -x^2$

x	y

3. $y = -3x^2$

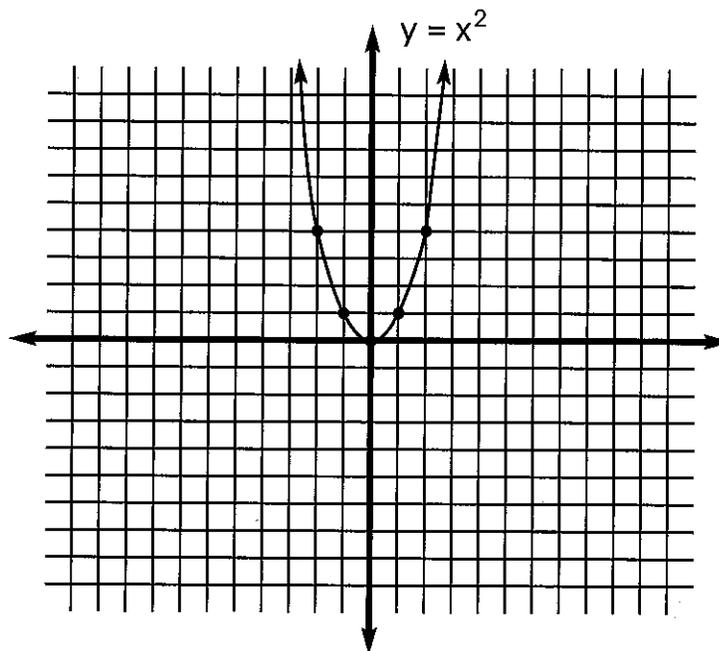
x	y

4. $y = \frac{1}{3}x^2$

x	y

5. $y = \frac{1}{2}x^2$

x	y



How do the constants a and $-a$ alter the graph?

Graphing Quadratics: $y = ax^2 + c$

Graph each quadratic equation.

Example: $y = x^2 + 1$

x	y
-2	5
-1	2
0	1
1	2
2	5

1. $y = x^2 - 2$

x	y

2. $y = 2x^2$

x	y

3. $y = \frac{1}{2}x^2 - 9$

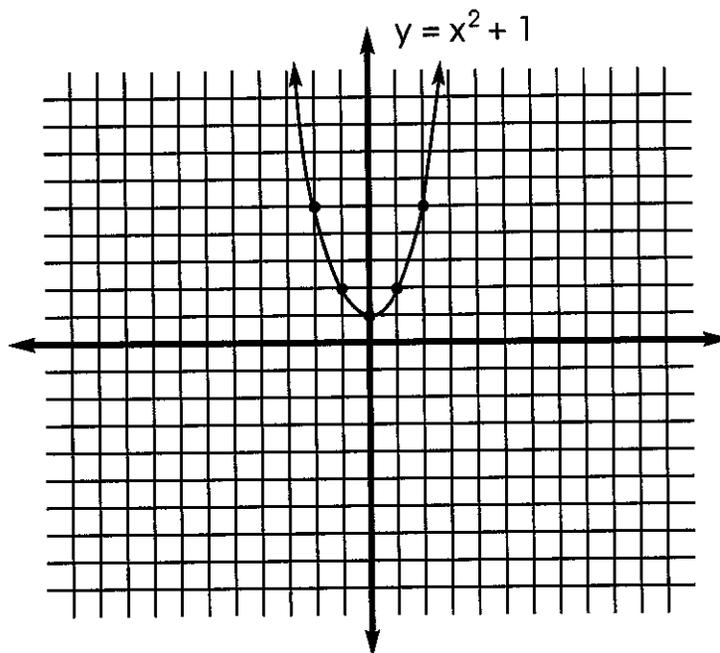
x	y

4. $y = -3x^2 + 6$

x	y

5. $y = \frac{2}{3}x^2 - 3$

x	y



How do the constants c and $-c$ alter the graph?

Graphing Quadratics: $y = a(x - b)^2 + c$

Graph each quadratic equation. Chart may vary.

Example: $y = (x - 2)^2$

x	y
0	4
1	1
2	0
3	1
4	4

1. $y = 2(x + 3)^2$

x	y

2. $y = \frac{1}{3}(x - 5)^2$

x	y

3. $y = 2(x - 7)^2$

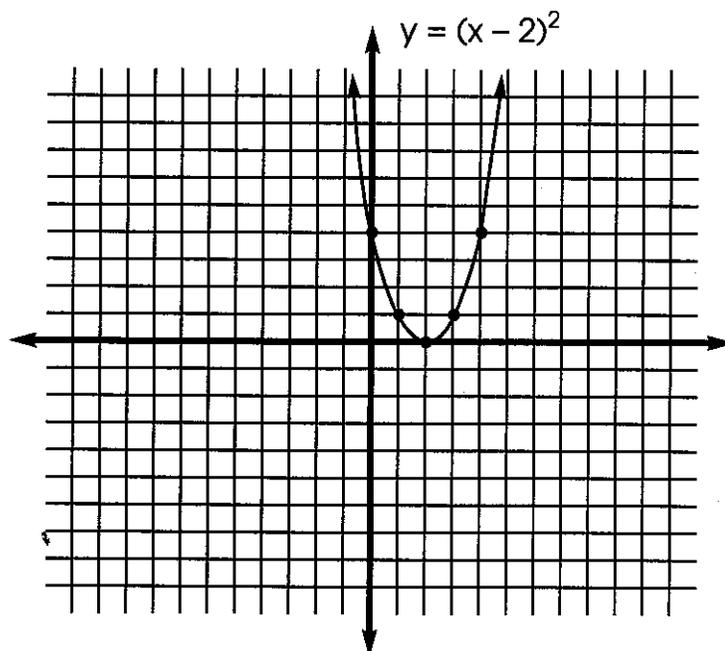
x	y

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

x	y

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

x	y



How do the constants b and $-b$ alter the graph?

Math - Problem Solving : Families of Functions Booklet

Teacher Name: **Mrs. Cajudoy**

Student Name: _____

CATEGORY	4	3	2	1
Neatness and Organization	The work is presented in a neat, clear, organized fashion that is easy to read.	The work is presented in a neat and organized fashion that is usually easy to read.	The work is presented in an organized fashion but may be hard to read at times.	The work appears sloppy and unorganized. It is hard to know what information goes together.
Mathematical Concepts	Explanation shows complete understanding of the mathematical concepts used to solve the problem(s).	Explanation shows substantial understanding of the mathematical concepts used to solve the problem(s).	Explanation shows some understanding of the mathematical concepts needed to solve the problem(s).	Explanation shows very limited understanding of the underlying concepts needed to solve the problem(s) OR is not written.
Explanation	Explanation is detailed and clear.	Explanation is clear.	Explanation is a little difficult to understand, but includes critical components.	Explanation is difficult to understand and is missing several components OR was not included.
Diagrams and Sketches	Diagrams and/or sketches are clear and greatly add to the reader's understanding of the procedure(s).	Diagrams and/or sketches are clear and easy to understand.	Diagrams and/or sketches are somewhat difficult to understand.	Diagrams and/or sketches are difficult to understand or are not used.
Mathematical Terminology and Notation	Correct terminology and notation are always used, making it easy to understand what was done.	Correct terminology and notation are usually used, making it fairly easy to understand what was done.	Correct terminology and notation are used, but it is sometimes not easy to understand what was done.	There is little use, or a lot of inappropriate use, of terminology and notation.
Completion	All problems are completed.	All but one of the problems are completed.	All but two of the problems are completed.	Several of the problems are not completed.
Mathematical Errors	90-100% of the steps and solutions have no mathematical errors.	Almost all (85-89%) of the steps and solutions have no mathematical errors.	Most (75-84%) of the steps and solutions have no mathematical errors.	More than 75% of the steps and solutions have mathematical errors.

Quadratic Family of Functions Chapter One (Booklet)

Students will be creating a booklet through out the year and this is the first chapter of many to come. Students please make sure you understand by doing this chapter to your booklet you are covering the following standards:

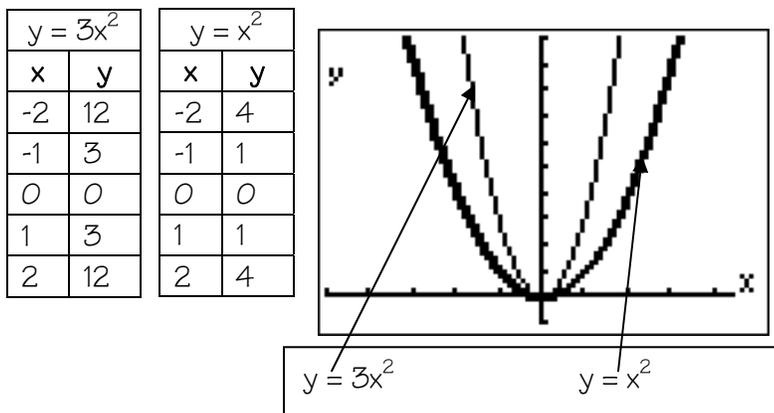
Standards:

F.IF.7 Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases.

Create your chapter by drawing the graphs and answering the questions. When graphing the quadratic functions please include your line of symmetry.

1. Draw the graph of $y = x^2$. Describe this graph in as much detail as possible.
2. Draw the graph of $y = 3x^2$. Describe similarities and differences in the graph $y = x^2$?
3. Draw the graph of $y = 1/3x^2$. Describe similarities and differences in the graph $y = x^2$?
4. Draw the graph of $y = -3x^2$. Describe similarities and differences in the graph $y = x^2$?
5. Draw the graph of $y = -1/3x^2$. Describe similarities and differences in the graph $y = x^2$?
6. Draw the graph of $y = x^2 + 3$. Describe similarities and differences in the graph $y = x^2$?
7. Draw the graph of $y = x^2 - 3$. Describe similarities and differences in the graph $y = x^2$?
8. Draw the graph of $y = (x + 3)^2$. Describe similarities and differences in the graph $y = x^2$?
9. Draw the graph of $y = (x - 3)^2$. Describe similarities and differences in the graph $y = x^2$?
10. Draw the graph of $y = 4x^2$. Describe similarities and differences in the graph $y = x^2$?
11. Draw the graph of $y = 1/4x^2$. Describe similarities and differences in the graph $y = x^2$?
12. Draw the graph of $y = -4x^2$. Describe similarities and differences in the graph $y = x^2$?
13. Draw the graph of $y = -1/4x^2$. Describe similarities and differences in the graph $y = x^2$?
14. Draw the graph of $y = x^2 + 4$. Describe similarities and differences in the graph $y = x^2$?
15. Draw the graph of $y = x^2 - 4$. Describe similarities and differences in the graph $y = x^2$?
16. Draw the graph of $y = (x + 4)^2$. Describe similarities and differences in the graph $y = x^2$?
17. Draw the graph of $y = (x - 4)^2$. Describe similarities and differences in the graph $y = x^2$?
18. Describe similarities and differences in the graph of $y = (x + 3)^2 + 3$ and $y = x^2$ without graphing the equations.
19. Describe similarities and differences in the graphs of $y = 2x^2$ and $y = 2(x - 1)^2 + 3$ without graphing the equations.

Example for number 2:



Similarities: All x-values are the same. The parent function $y = x^2$ does play a role in each function. The x-values are being doubled each time. Looking at the graph they are both going in the same direction.

Differences: Most of the y-values are different. The $y = 3x^2$ function is multiplying all the original y-values by three. Looking at the graph one graph is thinner than the other, this is because of the y-values changing.

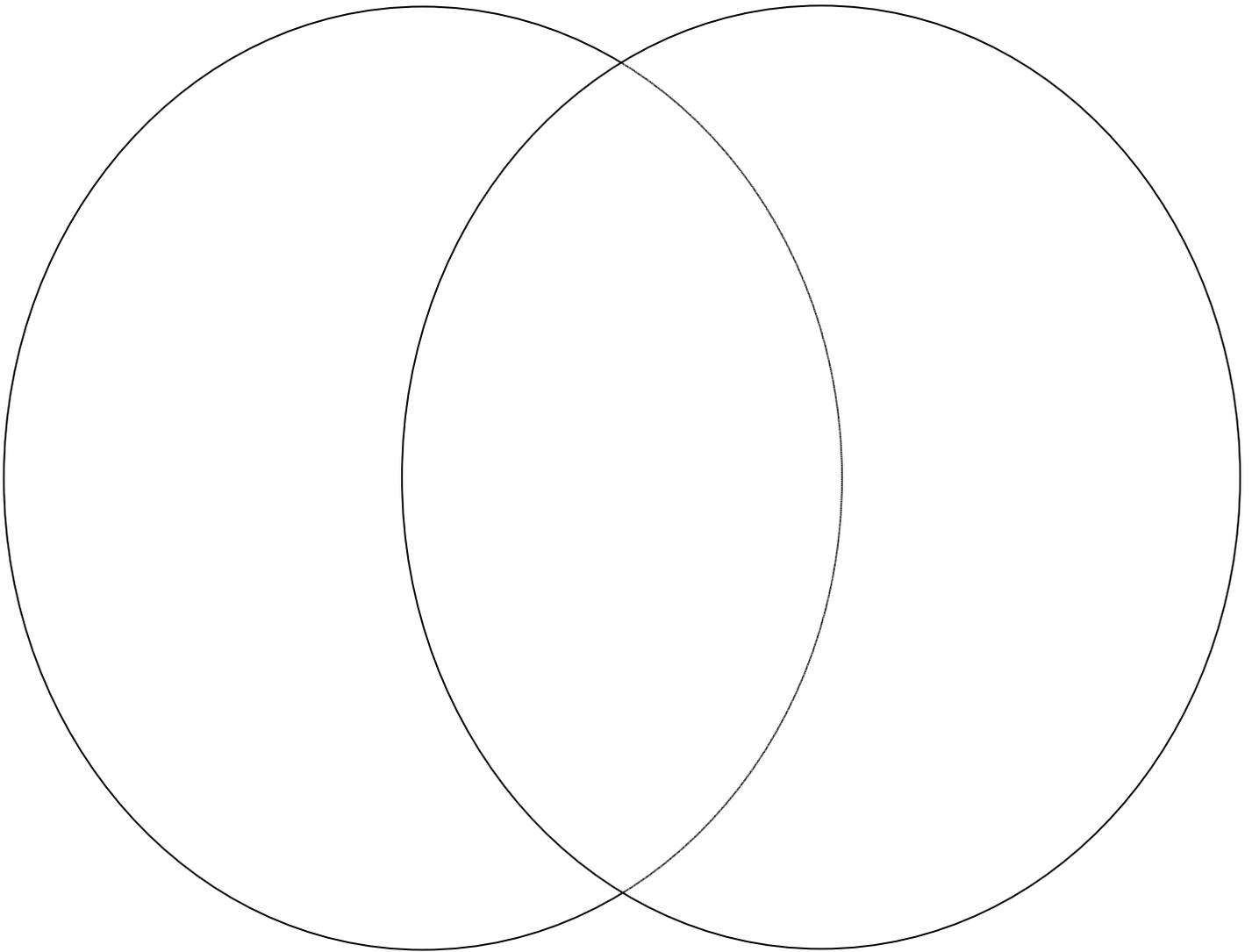
Functions Venn Diagram

Name: _____

Block: _____

Parent Function: _____

Use the Venn Diagram to compare the parent function with another function made from the parent function.



Functions Venn Diagram – Comparing Three Functions from the same Family

Name: _____

Block: _____

Parent Function: _____

Use the Venn Diagram to compare the parent function with two other functions made from the parent function.

