WS07.04 Transformations of the Quadratic

Activity 1: A to G

1. Fill in the tables for the activity you are completing.
2. On your white boards, using the same axes and scales, plot the graphs of the given functions for your activity. Label your graphs clearly.
(i.e. all the graphs for activity A should be on the same graph.

LOOK AT THE *X* AND *Y* COUPLES TO HELP YOU SCALE YOUR AXES

ACTIVITY A

x	$f(x) = x^2$	(x, y)
−3		
−2		
−1		
0		
1		
2		
3		
x	$g(x) = 2x^2$	(x, y)
−3		
−2		
−1		
0		
1		
2		
3		
x	$p(x) = 3x^2$	(x, y)
−3		
−2		
−1		
0		
1		
2		
3		
x	$k(x) = 0.5x^2$	(x, y)
−3		
−2		
−1		
0		
1		
2		
3		

ACTIVITY B

x	$f(x) = x^2$	(x, y)
−3		
−2		
−1		
0		
1		
2		
3		
x	$g(x) = -x^2$	(x, y)
−3		
−2		
−1		
0		
1		
2		
3		
x	$p(x) = -3x^2$	(x, y)
−3		
−2		
−1		
0		
1		
2		
3		
x	$k(x) = -0.5x^2$	(x, y)
−3		
−2		
−1		
0		
1		
2		
3		

Activity A

By considering the graph of $f(x) = x^2$ what effect does "a" have on $g(x) = af(x) = ax^2$.

Activity B

By considering the graph of $f(x) = x^2$ what effect does "a" have on $g(x) = af(x) = ax^2$.

ACTIVITY C

x	$f(x) = x^2$	(x, y)
-3		
-2		
-1		
0		
1		
2		
3		
x	$g(x) = x^2 + 1$	(x, y)
-3		
-2		
-1		
0		
1		
2		
3		
x	$p(x) = x^2 + 3$	(x, y)
-3		
-2		
-1		
0		
1		
2		
3		
x	$k(x) = x^2 - 4$	(x, y)
-3		
-2		
-1		
0		
1		
2		
3		

ACTIVITY D

x	$f(x) = -x^2$	(x, y)
-3		
-2		
-1		
0		
1		
2		
3		
x	$g(x) = -x^2 + 1$	(x, y)
-3		
-2		
-1		
0		
1		
2		
3		
x	$p(x) = -x^2 + 3$	(x, y)
-3		
-2		
-1		
0		
1		
2		
3		
x	$k(x) = -x^2 - 4$	(x, y)
-3		
-2		
-1		
0		
1		
2		
3		

Activity C

By considering the graph of $f(x) = x^2$ what effect does "c" have on $g(x) = f(x) + c = x^2 + c$.

Activity D

By considering the graph of $f(x) = -x^2$ what effect does "c" have on $g(x) = f(x) + c = -x^2 + c$.

ACTIVITY E

x	$f(x) = x^2$	(x, y)
-3		
-2		
-1		
0		
1		
2		
3		
x	$g(x) = (x+1)^2$	(x, y)
-4		
-3		
-2		
-1		
0		
1		
2		
x	$p(x) = (x+3)^2$	(x, y)
-6		
-5		
-4		
-3		
-2		
-1		
0		
x	$k(x) = (x+0.5)^2$	(x, y)
-3		
-2		
-1		
0		
1		
2		
3		

ACTIVITY F

x	$f(x) = x^2$	(x, y)
-3		
-2		
-1		
0		
1		
2		
3		
x	$g(x) = (x-1)^2$	(x, y)
-2		
-1		
0		
1		
2		
3		
4		
x	$p(x) = (x-3)^2$	(x, y)
0		
1		
2		
3		
4		
5		
6		
x	$k(x) = (x-0.5)^2$	(x, y)
-3		
-2		
-1		
0		
1		
2		
3		

Activity E

By considering the graph of $f(x) = x^2$ what effect does "a" have on $g(x) = f(x+a) = (x+a)^2$.

Activity F

By considering the graph of $f(x) = x^2$ what effect does "a" have on $g(x) = f(x+a) = (x+a)^2$.

ACTIVITY G

x	$f(x) = x^2$	(x, y)
-3		
-2		
-1		
0		
1		
2		
3		
x	$g(x) = (x+1)^2$	(x, y)
-4		
-3		
-2		
-1		
0		
1		
2		
x	$p(x) = (x+1)^2 + 2$	(x, y)
-4		
-3		
-2		
-1		
0		
1		
2		
x	$k(x) = (x+1)^2 - 2$	(x, y)
-4		
-3		
-2		
-1		
0		
1		
2		

Activity G

By considering the graph of $f(x) = x^2$ what effect do "a" and "c" have on $g(x) = f(x+a) \pm c = (x+a)^2 \pm c$?

Activity 2: Review of Graphs of Functions

Write down the function which represents the graphs shown on the slides.

Graph	*Function*	*Local Maximum/Minimum*
1	$f(x) = x^2$	
2	$f(x) =$	
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
16		
17		
18		
19		
20		
21		
22		
23		
24		

Activity 3: Different forms of the Quadratic

x	$y = x^2 - 4x - 5$	(x, y)
−2		
−1		
0		
1		
2		
3		
4		
5		
6		

x	$y = (x - 5)(x + 1)$	(x, y)
−2		
−1		
0		
1		
2		
3		
4		
5		
6		

x	$y = (x - 2)^2 - 9$	(x, y)
−2		
−1		
0		
1		
2		
3		
4		
5		
6		

1. Fill in the tables opposite.

2. Plot the points and draw the graph for each of the functions in the table.

3. What do you notice about all the graphs and all of the three functions you have plotted in this activity?

4. What items of information from each of the functions can help us if sketching the graph of a function?