Student Activity 1a



Tables for each of the functions below are drawn on the next page of this document for $x \in \{-3, -2, -1, 0, 1, 2, 3\}$. Fill out all the tables first so that you can decide on a scale which will suit all the functions when plotting a graph. Plot all the graphs **using the same axes and scales** using the grid given on the next page. Verify the shape of each graph by calculating y values of points, in between those plotted, and comparing the answers with the y values of the same points given by your graph.

Polynomial in the form $f(x) = ax^2$ $a \in N$	State the shape of the graph and whether it opens upwards or	x – intercepts (algebraic method and using the graph)	y – intercept (algebraic method and using	Maximum/ minimum point as an ordered pair and labelled as max or	Real root(s) of f(x)=0	Equation of the axis of symmetry	f (2.7)	Solve f(x) = 8	For what x values is $f(x)$ positive i.e. f(x) > 0.2	For what x values is f(x) negative i.e. f(x) < 0.2	For what x values is f(x) increasing?	For what x values is f(x) decreasing?
	downwards		the graph)	min					J X Y	J X J		
$y = x^2$												
$y = 2x^2$												
$y = 3x^2$												
$y = \frac{1}{2}x^2$												

1. What is the effect of the coefficient "*a*" on the graph of the function $f(x) = ax^2$?

2. Which of the above functions has the greatest rate of change of y with respect to x? How can you check this?

3. Which of the above functions has the smallest rate of change of y with respect to x? How can you check this?

4. What point on the graph does the axis of symmetry pass through?

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	Project	x	$y = x^2$
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Draw all graphs in pancil first and then outline the graph of $y = x^2$ using a black r	parker and use different coloured		
Draw an graph's in perior first and then outline the graph of $y = x^2$ using a black i			
markers to draw the other curves. Label all graphs clearly.			
		x	$v = 2r^2$
28 4 v			y - 2x
20 1 9		-	
26 -			
25 +			
21 🕇			
20 +			
		x	$y = 3x^2$
15 -			
13 T 12 T			
10 +		-	
9 +		x	052
			y = 0.5x
	×		
	2 3 4		
-2 -2			

(x, y)

(*x*, *y*)

(x, y)

(*x*, *y*)