Day 2 lesson Notes

INVESTIGATING VERTEX FORM: $y = a(x - p)^2 + q$

↑ ↑ ↑ constants or numbers

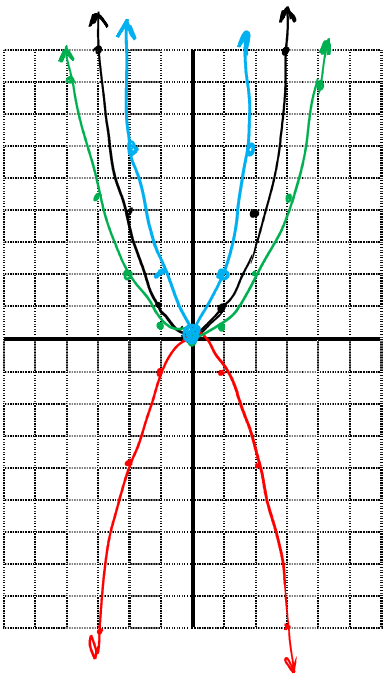
A) EFFECTS OF PARAMETER "a"

COMPARING $y = x^2$ and $y = ax^2$

- Graph the following on the same grid (use colors)

	$y = x^2$	$y = -x^2$	$y = \frac{1}{2}x^2$	$y = 2x^2$
vertex	(0,0)	(0,0)	(0,0)	0,0
AOS (Axis of symmetry)	y axis x=0	Yaxis	Yaxis	Yaxis
x-int	(0,0)	(0,0)	(0,0)	0,0
y-int	(0,0)	(0,0)	(0,0)	0,0
Summary:	"Sue Average" Parabola	− a makes it open DOWN	½ made it wider Vertical Compression	2 made it skinnier Vertical Expansion

over 1 up 2, over 1 up 6, over 1 up 10

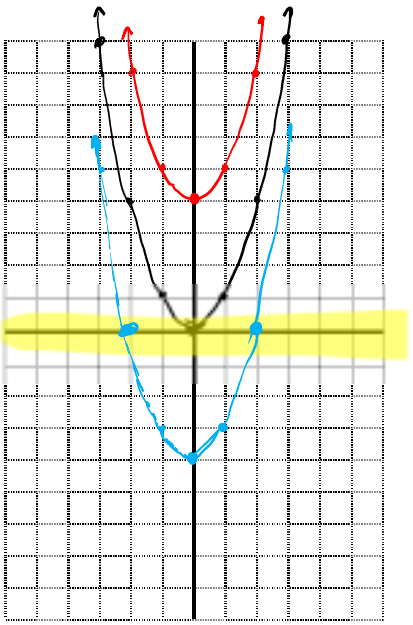


B) EFFECTS OF PARAMETER "q"

COMPARING $y = x^2$ and $y = x^2 + q$ ➔

- Graph the following on the same grid (use colors)

	$y = x^2$	$y = x^2 + 4$	$y = x^2 - 4$
vertex		(0,4)	(0,-4)
AOS		Yaxis	y axis
x-int	see above	none	(2,0) (-2,0)
y-int		(0,4)	(0,-4)
Summary:		"4" shifts the graph up 4 units	-4 shifted the vertex down

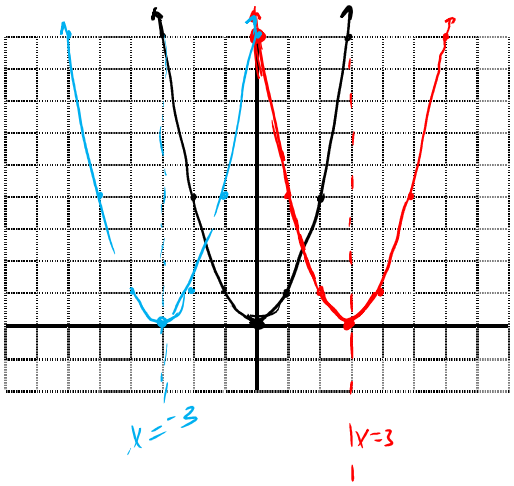


C) EFFECTS OF PARAMETER "p"

COMPARING $y = x^2$ and $y = (x - p)^2$ ➔

- Graph the following on the same grid (use colors)

	$y = x^2$	$y = (x - 3)^2$	$y = (x + 3)^2$
	$y = (x-0)^2$	$p = 3$	$y = (x-(-3))^2$, $p = -3$
Vertex		(3,0)	(-3,0)
AOS		$x = 3$	$x = -3$
x-int		(3,0)	(-3,0)
y-int		(0,9)	(0,9)
Summary:	see above	The 3 shifted vertex to the right 3 units	The -3 shifted it left!



Summary:uuuuu

$a > 0$ ↑
$a < 0$ ↓

$$y = a(x - p)^2 + q$$

- $a > 1$: vertical expansion "stretched skinny"
- $-1 < a < 1$: vertical compression "squished fatter"
- p: shifts vertex left or right; $-p$ →, $+p$ ←
- q: shifts vertex up or down; $-q$ ↓, $+q$ ↑