Today's Learning Goal(s):

By the end of the class, I will be able to:

a) Identify the difference between a horizontal and vertical transformation.
b) Find the vertex given: $f(x) = ax^2$; or $f(x) = (x - h)^2$; or $f(x) = x^2 + k$

MCF 3MI

3.1.4 Exploring Transformations of Quadratic Functions

$$f(x) = a(x - h)^2 + k$$

Date: Mar. 7/18
(Every lesson)

Complete the handout using DESMOS (on your Chromebooks)

a -- complete p. 39 E,F

h -- complete p. 39 C,D

k -- complete p. 38 A,B

Learning Goal(s): a) Identify the difference between a horizontal and vertical transformation.
b) Find the vertex given: $f(x) = ax^2$; or $f(x) = (x-h)^2$; or $f(x) = x^2 + k$

MCF 3MI

3.1.4 Exploring Transformations of Quadratic Functions

$f(x) = a(x-h)^2 + k$

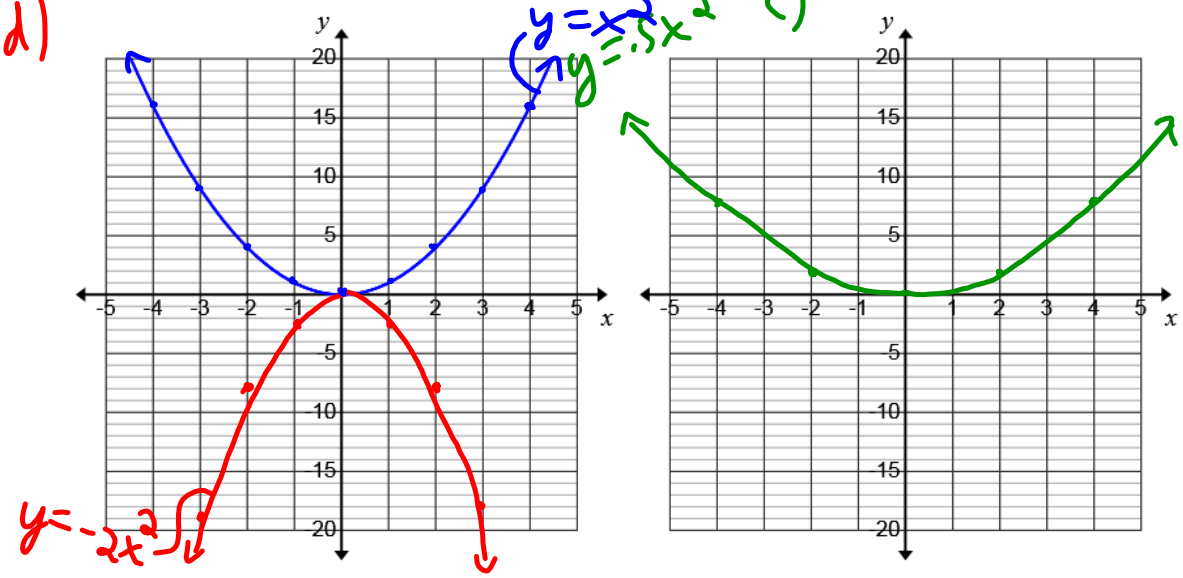
Date: Mar. 7/18

p.39 E,F: Complete the following table using DESMOS on your chromebooks (or prior knowledge of transformations)

Function	value of a in $f(x) = ax^2$	direction of opening	vertex	Axis of symmetry	Congruent to $f(x) = x^2$
(a) $f(x) = x^2$	1	up	(0,0)	x=0	yes
(b) $f(x) = 2x^2$	2	up	(0,0)	x=0	no
* (c) $f(x) = 0.5x^2$	0.5	up	(0,0)	x=0	no
* (d) $f(x) = -2x^2$	-2	down	(0,0)	x=0	NO
(e) $f(x) = -0.5x^2$	-0.5	down	(0,0)	x=0	NO

Sketch and label at least 2 of the above functions. $f(x) = x^2$ is shown. (c & d are good choices)

d)



c) $y = 0.5x^2$

MG over ups $a = -2$

1	-2
2	-8
3	-18

MG over ups $y = 0.5x^2$ $a = \frac{1}{2}$

1	$\frac{1}{2}$
2	2
3	$\frac{9}{2}$
4	8

p.39 C,D: Complete the following table using DESMOS on your chromebooks (or prior knowledge of transformations)

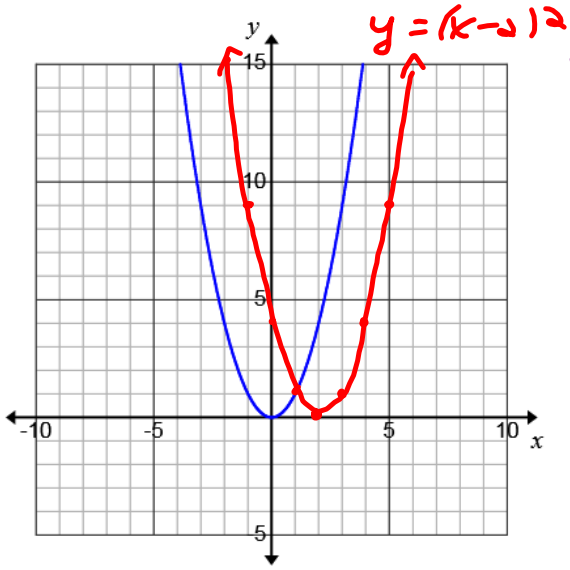
Function	value of h in $f(x)=(x-h)^2$	direction of opening	vertex	Axis of symmetry	Congruent to $f(x)=x^2$
(a) $f(x)=x^2$	$(x-0)^2$ 0	up	(0,0)	x=0	yes
(b) $f(x)=(x-2)^2$	2	up	(2,0)	x=2	yes
(c) $f(x)=(x-4)^2$	4	up	(4,0)	x=4	yes
(d) $f(x)=(x+2)^2$	-2	up	(-2,0)	x=-2	yes
(e) $f(x)=(x+4)^2$	h=-4	up	(-4,0)	x=-4	yes

$(x-(-4))^2$

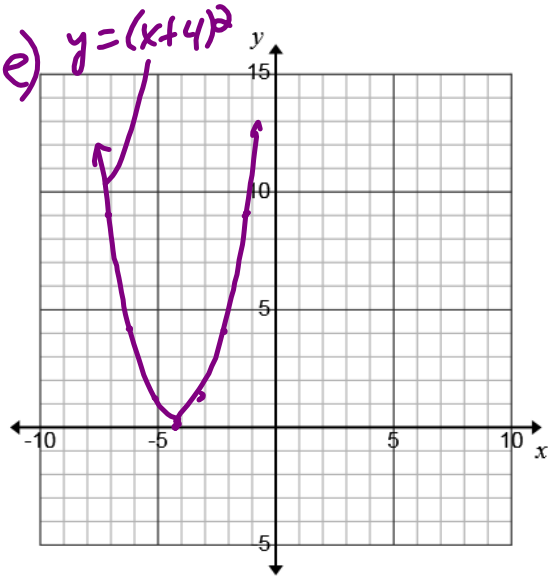
p.39 C,D: (Continued)

Sketch and label at least 2 of the above functions. $f(x)=x^2$ is shown. (b & e are good choices)

b) $y=(x-2)^2$



e) $y=(x+4)^2$

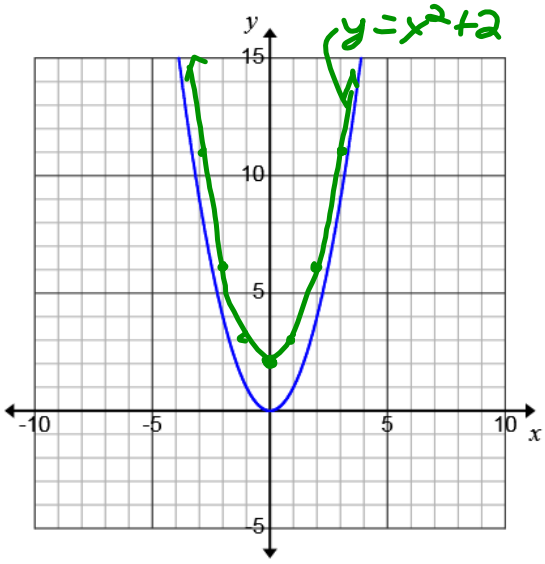


p.38 A,B: Complete the following table using DESMOS on your chromebooks (or prior knowledge of transformations)

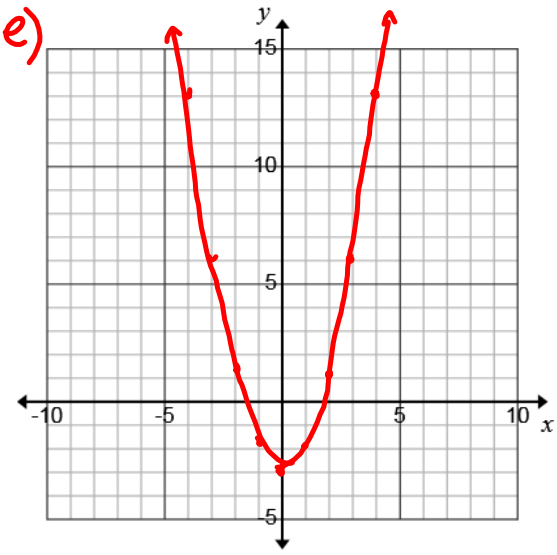
Function	value of k in $f(x)=x^2+k$	direction of opening	vertex	Axis of symmetry	Congruent to $f(x)=x^2$
(a) $f(x)=x^2$	0	up	(0,0)	x=0	yes
(b) $f(x)=x^2+2$	2	up	(0,2)	x=0	yes
(c) $f(x)=x^2+4$	4	up	(0,4)	x=0	yes
(d) $f(x)=x^2-1$	-1	up	(0,-1)	x=0	yes
(e) $f(x)=x^2-3$	-3	up	(0,-3)	x=0	yes

Sketch and label at least 2 of the above functions. $f(x)=x^2$ is shown. (b & e are good choices)

b)



e)



Practice: p. 40 # 1
pp. 47-49 # 1, 2, 9

1a) 4 right

$\therefore y=(x-4)^2$