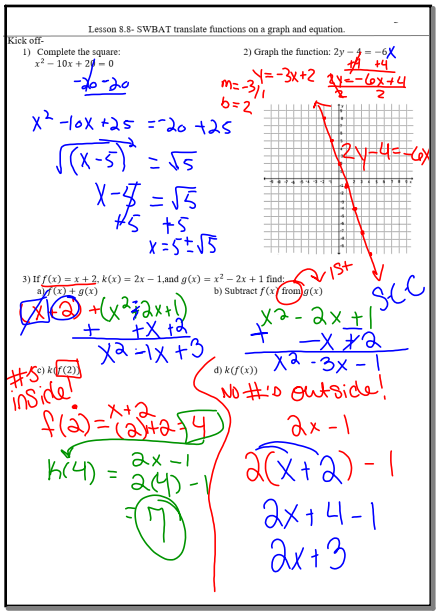
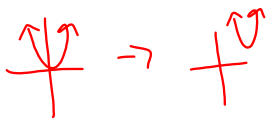


Parent Function- Original functions

Linear function $y = x$

*Quadratic function $y = x^2$

Translating Functions- Slide the graph



Graph the parent function and the translated function for each of the following:

1) $f(x) = x^2 + 2$

Pf: $y = x^2$

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

up 2

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

down 4

3) Graph: $f(x) = (x - 3)^2$

right 3

4) Graph $f(x) = (x + 5)^2$

left 5

VERTICAL Translation

$f(x) = x^2 + k$

If k > 0, then the graph will be translated k units up.

If k < 0, then the graph will be translated |k| units down.

HORIZONTAL Translation

$f(x) = (x - h)^2$

If h > 0, then the graph will be translated h units to the left.

If h < 0, then the graph will be translated |h| units to the right.

*( ) are opposites!

State the horizontal and/or vertical translation for each of the following:

1) $f(x) = (x - 2)^2$

right 2

2) $f(x) = x^2 + 5$

up 5

3) $f(x) = x^2 - 8$

down 8

4) $f(x) = (x + 7)^2$

left 7

5) $f(x) = (x - 5)^2 + 8$

right 5 up 8

6) $f(x) = (x + 8)^2 + 3$

left 8 up 3

7) $f(x) = (x - 2)^2 - 4$

8) $f(x) = (x - 6)^2$

9) $f(x) = (x + 3)^2 - 10$

10) $f(x) = 2x^2 + 5$

11) $f(x) = 2(x + 1)^2 - 3$

12) $f(x) = 3(x - 9)^2 - 7$