

(28)

Quadratic Transformations

A parent function is the most basic function.

Quadratic Parent Function: $y = x^2$

• Translation (slide/shift):

Vertical Shift: (up) $y = x^2 + 3$

(down) $y = x^2 - 4$

Horizontal Shift: (Right) $y = (x - 2)^2$

* opposite

(left) $y = (x + 7)^2$

* helpful hint: "add to 'y' go high,
add to 'x' go left":

• Dilation (bigger/smaller):

Vertical Stretch: $a > 1$ (Whole #s, Imp. Fractions)
 $y = 3(x)^2$

Vertical Compression: $0 < a < 1$ (Fraction, Decimal)
 $y = \frac{1}{4}(x)^2$

• Reflection (mirror/flip)

$a < 0$ (negative) : reflection across the
X-axis

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