

Convert quadratic standard form to root form using factoring trinomials.

$$y = ax^2 + bx + c \quad \text{to} \quad y = a(x - p)(x - q)$$

If a = 1

Example:  $y = 1x^2 - 2x - 48$

1) Write two sets of parentheses for binomials

$$y = 1x^2 - 2x - 48$$
$$y = ( \quad ) ( \quad )$$

2) If a=1, then the first term in both binomials is x

$$y = 1x^2 - 2x - 48$$
$$y = ( x \quad ) ( x \quad )$$

3) Find the positive integer factors of  $|c|$

$$48 = 1 \times 48$$
$$48 = 2 \times 24$$
$$48 = 3 \times 16$$
$$48 = 4 \times 12$$
$$48 = 6 \times 8$$

4) If  $c$  is negative, determine which factors of  $|c|$  have a difference of  $|b|$ , write the factors in the binomials.

$$|b| = 2$$

$$48-1 = 47$$
$$24-2 = 22$$
$$16-3 = 13$$
$$12-4 = 8$$
$$8-6 = 2$$

$$y = 1x^2 - 2x - 48$$
$$y = ( x - 8 ) ( x + 6 )$$

5) If  $c$  is negative, larger factor has the same sign as  $b$ . The other factor has the opposite sign.

$$y = 1x^2 - 2x - 48$$
$$y = ( x - 8 ) ( x + 6 )$$