# Visual Guided Practice   Name: _____

Learning Target: I will factor quadratic expressions to reveal the zeros of a function.

Note: *All quadratic expressions and functions assessed with Delta Math have 1 as the leading coefficient.*

1. We Do Together/Reflect

a. The factored form of the **expression**, $x^2 + 7x + 12$, is represented as a rectangle using algebra tiles. Label the factors of the array.
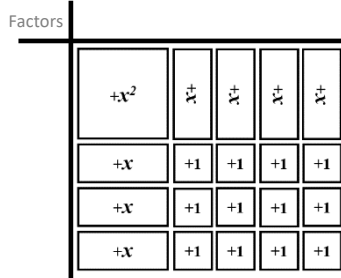
b. Find the value of x when each **factor** is equal to zero. *These values are called the **zeros** of the function.*

$x + 3 = 0$ $x + 4 = 0$

□ □   □ □

$x =$ □ $x =$ □

c. The function, $f(x) = x^2 + 7x + 12$, is graphed below. Find each **x-intercept,** or the **zeros** of the function.

(□ , □)
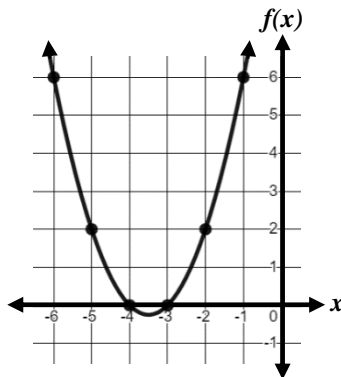
and

(□ , □)

d. $x^2 + 7x + 12$ can be factored to find **zeros** of the function without using a graph or tiles.

- List each factor pair of the 3ʳᵈ term. (12) → Factors of 12
- Find the factors with a **sum** equal to the coefficient of the 2ⁿᵈ term. (7)

    1 • 12
    2 • 6
    3 • 4

- Substitute to write the **algebraic factors**.

    $x^2 + 7x + 12 = (x + \boxed{})(x + \boxed{})$

- Solve to find each **zero** of the function.

$x + 3 =$ □ $x + 4 =$ □

□   □

$x =$ □   and $x =$ □

2-4. You Do Together

2. Use the array below to find the algebraic factors and zeros of the expression $x^2 + 2x - 15$.

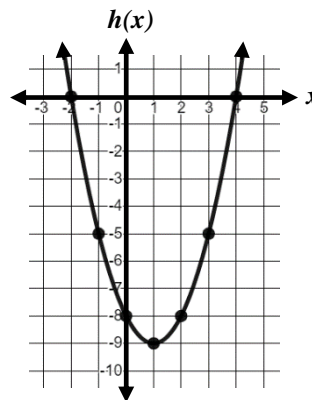**Factors:**

$(x + \boxed{})$

and

$(x + \boxed{})$
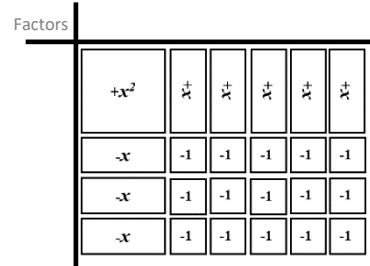
$x + \boxed{} = 0$ $x + \boxed{} = 0$

Zeros: $x =$ □   and $x =$ □

3. Find the zeros of the function $h(x) = x^2 - 2x - 8$ that is represented in the graph below.

Zeros of $h(x)$:

$x =$ □

and

$x =$ □

4. Factor the expression to find the zeros of the function $k(x) = x^2 - 3x - 10$.

- Find the factors of □ whose sum is □ .

    1 • -10
    2 • -5
    5 • -2
    10 • -1

- Find the zeros of the function k(x).

$x + \boxed{} = \boxed{}$ $x + \boxed{} = \boxed{}$

Zeros of $k(x)$: $x =$ □   and $x =$ □

DELTA MATH

Learning Target: I will factor quadratic expressions to reveal the zeros of a function.

Note: All quadratic expressions and functions assessed with Delta Math have 1 as the leading coefficient.

1. We Do Together/Reflect

a. The factored form of the **expression**, $x^2 + 8x + 12$, is represented as a rectangle using algebra tiles. Label the factors of the array.
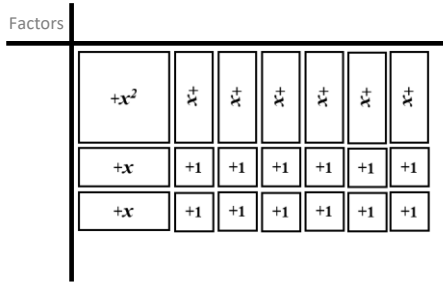
Factors

+x^2	+x +x +x +x +x +x
+x	+1 +1 +1 +1 +1 +1
+x	+1 +1 +1 +1 +1 +1

b. Find the value of x when each **factor** is equal to zero. *These values are called the **zeros** of the function.*
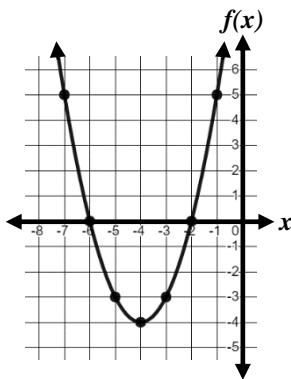
$x + 6 = 0$ □ □ $x + 2 = 0$ □ □

$x =$ □ $x =$ □

c. The function, $f(x) = x^2 + 8x + 12$, is graphed below. Find each **x- intercept,** or the **zeros** of the function.

f(x)

(□ , □)

and

(□ , □)

d. $x^2 + 8x + 12$ can be factored to find **zeros** of the function without using a graph or tiles.

- List each factor pair of the 3rd term. (12) → Factors of 12
- Find the factors with a **sum** equal to the coefficient of the 2nd term. (8) →

  1 • 12
  2 • 6
  3 • 4

- Substitute to write the **algebraic factors**.

  $x^2 + 8x + 12 = (x + \boxed{})(x + \boxed{})$

- Solve to find each **zero** of the function.

$x + 2 = \boxed{}$ □ $x + 6 = \boxed{}$ □

$x =$ □   and $x =$ □

2-4. You Do Together

2. Use the array below to find the algebraic factors and zeros of the expression $x^2 + 4x - 12$.

Factors

+x^2	x x x x x x
-x	-1 -1 -1 -1 -1 -1
-x	-1 -1 -1 -1 -1 -1

Factors:

$(x + \boxed{})$

and

$(x + \boxed{})$

$x + \boxed{} = 0$ $x + \boxed{} = 0$

Zeros: $x = \boxed{}$ and $x = \boxed{}$
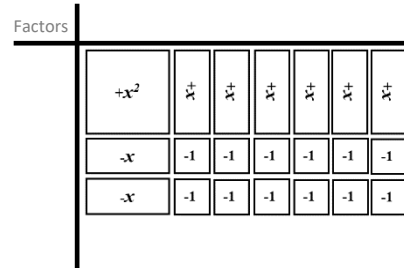
3. Find the zeros of the function $h(x) = x^2 - x - 6$ that is represented in the graph below.

h(x)

Zeros of $h(x)$:

$x = \boxed{}$

and

$x = \boxed{}$
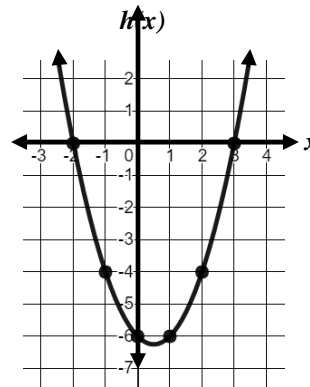
4. Factor the expression to find the zeros of the function $k(x) = x^2 + 5x - 14$.

- Find the factors of □ whose sum is □ .

  1 • -14
  2 • -7
  7 • -2
  14 • -1

- Find the zeros of the function k(x).

$x + \boxed{} = \boxed{}$ $x + \boxed{} = \boxed{}$

Zeros of $k(x)$: $x = \boxed{}$ and $x = \boxed{}$

DELTA MATH — R2I PROGRAM

Name: _____

Form C

**Learning Target:** I will factor quadratic expressions to reveal the zeros of a function.

Note: All quadratic expressions and functions assessed with Delta Math have 1 as the leading coefficient.

1. We Do Together/Reflect

a. The factored form of the **expression**, $x^2 + 6x + 8$, is represented as a rectangle using algebra tiles. Label the factors of the array.

Factors

$+x^2$	+x	+x	+x	+x
$+x$	+1	+1	+1	+1
$+x$	+1	+1	+1	+1
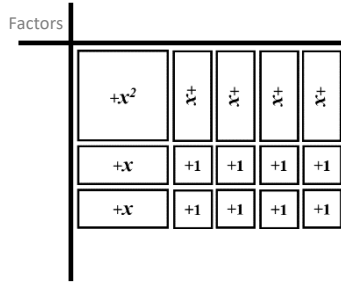
b. Find the value of x when each **factor** is equal to zero.

$x + 2 = 0$ ☐ ☐

$x = $ ☐

$x + 4 = 0$ ☐ ☐

$x = $ ☐

c. The function, $f(x) = x^2 + 6x + 8$, is graphed below. Find each **x- intercept,** or the **zeros** of the function.

$f(x)$

(☐ , ☐)

and

(☐ , ☐)
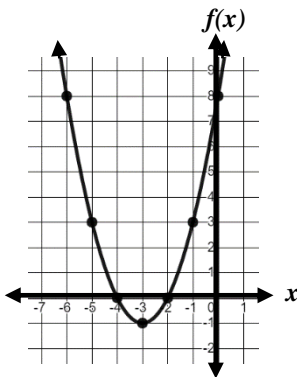
d. $x^2 + 6x + 8$ can be factored to find **zeros** of the function without using a graph or tiles.

- List each factor pair of the 3rd term. (8) → Factors of 8
  1 • 8
- Find the factors with a **sum** equal to the coefficient of the 2nd term. (6) → 2 • 4
- Substitute to write the **algebraic factors**.

  $x^2 + 6x + 8 = (x + $ ☐ $)(x + $ ☐ $)$

- Solve to find each **zero** of the function.

  $x + 2 = $ ☐ ☐

  $x = $ ☐

  $x + 4 = $ ☐ ☐

  and $x = $ ☐

2-4. You Do Together

2. Use the array below to find the algebraic factors and zeros of the expression $x^2 + 3x - 10$.

Factors

$+x^2$	$\pm x$	$\pm x$	$\pm x$	$\pm x$	$\pm x$
$-x$	-1	-1	-1	-1	-1
$-x$	-1	-1	-1	-1	-1

Factors:

$(x + $ ☐ $)$

and

$(x + $ ☐ $)$

$x + $ ☐ $= 0$ $x + $ ☐ $= 0$

Zeros: $x = $ ☐   and $x = $ ☐
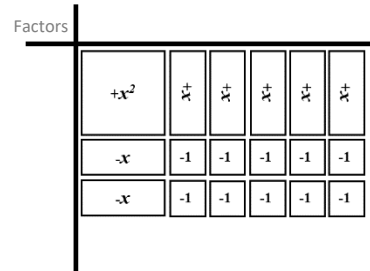
3. Find the zeros of the function $h(x) = x^2 - 3x - 10$ that is represented in the graph below.

$h(x)$

Zeros of $h(x)$:

$x = $ ☐

and

$x = $ ☐
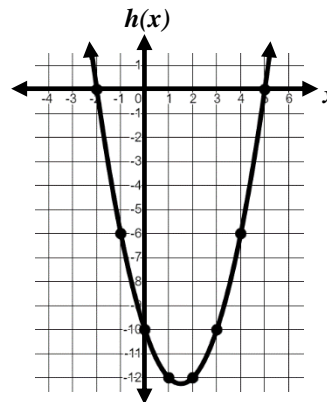
4. Factor the expression to find the zeros of the function $k(x) = x^2 - 2x - 15$.

- Find the factors of ☐ whose sum is ☐ .

  1 • -15
  3 • -5
  5 • -3
  15 • -1

- Find the zeros of the function k(x).

  $x + $ ☐ $= $ ☐ $x + $ ☐ $= $ ☐

Zeros of $k(x)$: $x = $ ☐   and $x = $ ☐