What you will learn about:
Factoring Trinomials when
The leading coefficient is 1

Factoring when $a = 1$

$$x^2 + bx + c$$

Write the factors as two binomials with the first terms x.

$$(x\ \ )(x\ \ )$$

Find two number m and n that
Multiply to c, $m \cdot n = c$
Add to b, $m + n = b$

Use m and n as the last terms of the factors.
$$(x + m)(x + n)$$

If c is positive then m and n will have the same sign. The sign of b will determine the sign.

If c is negative then m and n will have different signs.

$$\dfrac{-5}{}$$
$$-5 \cdot 1$$
$$\boxed{-1 \cdot 5}$$

Factor: $x^2 + \underline{6x} + \boxed{8}$

$$(x+4)(x+2)$$

$$\dfrac{8}{}$$
$$4 \cdot 2$$
$$8 \cdot 1$$

Factor: $y^2 + 8y + 15$

$$(y+5)(y+3)$$

$$\dfrac{15}{}$$
$$\boxed{5 \cdot 3}$$
$$15 \cdot 1$$

Factor: $u^2 + 11u + 24$

$$(u+3)(u+8)$$

$$\dfrac{24}{}$$
$$2 \cdot 12$$
$$\boxed{3 \cdot 8}$$
$$6 \cdot 4$$
$$24 \cdot 1$$

Factor: $t^2 - 11t + 28$

$$(t-7)(t-4)$$

$$\dfrac{28}{}$$
$$14 \cdot 2$$
$$28 \cdot 1$$
$$7 \cdot 4$$
$$-7 \cdot -4$$

Factor: $z^2 + 4x - 5$

$$(z-1)(z+5)$$

Factor: $h^2 + 4h - 12$

$$(h-2)(h+6)$$

$$\dfrac{-12}{}$$
$$-4 \cdot 3$$
$$-3 \cdot 4$$
$$-6 \cdot 2$$
$$\boxed{-2 \cdot 4}$$
$$-12 \cdot 1$$
$$-1 \cdot 12$$

Factor: $x^2 - 4x - 12$

$(x-6)(x+2)$

$$\frac{-40}{-8 \cdot 5}$$

Factor: $r^2 - 3r - 40$

$(r-8)(r+5)$

Factor: $2x + x^2 - 48 = x^2 + 2x - 48$

$(x-6)(x+8)$

$$\frac{-48}{-6 \cdot 8}$$

Factor: $-7n + 12 + n^2$

Factor: $x^2 + 12xy + 36y^2$

Factor: $x^2 + 12xy + 36y^2$

Factor: $u^2 + 12uv + 28v^2$

Factor: $u^2 - 9uv - 12v^2$

What you will learn about:
Factoring Trinomials when
The leading coefficient is not 1

Factoring trinomials with a GCF

Factor: $2x^2 - 8x - 42$

$2(x^2 - 4x - 21)$

$2(x-7)(x+3)$

$$\frac{-21}{-7 \cdot 3}$$
$-3 \cdot 7$

Factor: $4m^2 - 4m - 8$

$4(m^2 - m - 2)$

$4(m-2)(m+1)$

$$\frac{-2}{-2 \cdot 1}$$
$-1 \cdot 2$

Factor: $5k^2 - 15k - 50$

Factor: $4y^2 - 36y + 56$

Factor: $4u^3 + 16u^2 - 20u$

Factor: $6y^3 + 18y^2 - 60y$