I. V. Factorable Trinomials

* Look for two numbers whose product is a
  the last term and whose sum is the middle term. Those two numbers are your binomials.

A) \( x^2 + 7x + 12 \)
   \[ \text{Sum of factors of 12:} \ 3, 4 \]
   \[ (x+3)(x+4) \]

B) \( x^2 - 12x + 20 \)
   \[ \text{Factors of 20:} \ -10, -2 \]
   \[ (x-10)(x-2) \]

C) \( x^2 - 2x - 35 \)
   \[ \text{Factors of 35:} \ 5, -7 \]
   \[ (x+5)(x-7) \]

D) \( x^2 + 4x - 12 \)
   \[ \text{Sum of factors of -12:} \ 6, -2 \]
   \[ (x+6)(x-2) \]

E) \( x^2 + 2x + 1 \)
   \[ (x+1)^2 \]

F) \( x^2 - 8x + 16 \)
   \[ (x-4)^2 \]

Factor a perfect trinomial

G) \( 9y^2 - 22y + 128 \)
   Factor out 2
   \[ 2(4y^2 - 112y + 64) \]
   \[ 2(7y - 8)^2 \]

H) \( x^2 + 3x + 5 \)
   * There are no integers whose product of 5 and sum of 3. Therefore, it's prime.