

# How are your Factoring Skills?

Factor each of the following

1.  $15m^5n^3p - 30n^7p^3 + 60m^4n^8p$

2.  $x^2 - 2x - 35$

3.  $270xy^2 - 180x^3y - 90xy$

4.  $5x^2 + 14xy - 3y^2$

5.  $4x^2 - 14x - 8$



1.  $15m^5n^3p^1 - 30n^7p^3 + 60m^4n^8p^5$

Common  
Factoring =  $15n^3p^1(m^5 - 2n^4p^2 + 4m^4n^5p^4)$

Check  $15m^5n^3p^1 - 30n^7p^3 + 60m^4n^8p^5$  ✓

$$2. \quad x^2 - 2x - 35$$

$$= (x-7)(x+5) \quad \begin{array}{l} \underline{-7} \times \underline{5} = -35 \\ \underline{-7} + \underline{5} = -2 \end{array}$$

Check

$$(x-7)(x+5)$$

$$x^2 + \underline{5x} - \underline{7x} - 35$$

$$x^2 - 2x - 35 \quad \checkmark$$

$$3. \quad 270xy^2 - 180x^3y - 90xy$$

$$90xy(3y - 2x^2 - 1)$$

Check  $270xy^2 - 180x^3y - 90xy$  ✓

$$4. \quad 5x^2 + 14xy - 3y^2$$

$$\begin{array}{l} \underbrace{5x^2 + 15xy} \quad \underbrace{-1xy - 3y^2} \quad \begin{array}{l} \underline{15}x - \underline{1} = -15 \\ \underline{15} + \underline{-1} = 14 \end{array} \\ \textcircled{5x}(x + 3y) \quad \textcircled{-1y}(+x + 3y) \\ = (5x - y)(x + 3y) \end{array}$$

5.  $4x^2 - 14x - 8$

$$\begin{aligned} \frac{-16 \times 2}{-16 + 2} &= -32 \\ \frac{-16 + 2}{-16 + 2} &= -14 \end{aligned}$$

$$\frac{4x^2 - 16x}{\phantom{00}} \quad \frac{+2x - 8}{\phantom{00}}$$

$$\frac{4x}{\phantom{00}}(x-4) \quad \frac{+2}{\phantom{00}}(x-4)$$

$$\begin{aligned} &= (4x+2)(x-4) \\ &= 2(x+1)(x-4) \end{aligned}$$

$$\begin{aligned} &(2x-8)(2x+1) \\ &2(x-4)(2x+1) \end{aligned}$$

