

Worksheet: Factoring Binomials

1. Factor the following completely:

a. $\frac{x^2 + 2x}{x \cdot x}$

$$= \boxed{x(x+2)}$$

b. $\frac{x^2 + x}{x \cdot x}$

$$= \boxed{x(x+1)}$$

c. $\frac{3x^2 - 6x}{3x \cdot 3x}$

$$= \boxed{3x(x-2)}$$

d. $\frac{-4x^3 + 2x^2}{-2x^2 \cdot -2x^2}$

$$= \boxed{-2x^2(2x-1)}$$

e. $x^2 - 9$

$$= \boxed{(x+3)(x-3)}$$

f. $x^2 - 36$

$$= \boxed{(x+6)(x-6)}$$

$$\text{g. } \frac{4x^4 - x^2}{x^2 \cdot x^2}$$

$$= x^2(4x^2 - 1)$$

$$= \boxed{x^2(2x+1)(2x-1)}$$

$$\text{h. } x^4 - 81$$

$$= (x^2 + 9)(x^2 - 9)$$

$$= \boxed{(x^2 + 9)(x+3)(x-3)}$$

$$\text{i. } \frac{-5x^2 + 20}{-5 \cdot -5}$$

$$= -5(x^2 - 4)$$

$$= \boxed{-5(x+2)(x-2)}$$

$$\text{j. } \frac{-8x^3 - 64}{-8 \cdot -8}$$

$$= \boxed{-8(x^3 + 8)}$$

$$\text{k. } x^2 - 49$$

$$= \boxed{(x+7)(x-7)}$$

$$\text{l. } \frac{2x^4 - 162}{2 \cdot 2}$$

$$= 2(x^4 - 81)$$

$$= 2(x^2 + 9)(x^2 - 9)$$

$$= \boxed{2(x^2 + 9)(x+3)(x-3)}$$