

## Bell Ringer

Identify and state the pattern, factor, and then solve the equation.

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Perfect Square Trinomial Addition

$$3(4x^2 + 28x + 49) = 0$$

$$3(2x+7)^2 = 0$$

$$x = -\frac{7}{2}$$

## Factoring with the Distributive Property

To factor using the distributive property, consider

- 1) Factoring out the GCF.
- 2) Standard method of factoring when  $a = 1$  and box method when  $a > 1$ .
- 3) Factoring looking for patterns like difference of two squares and perfect square trinomials.

**MUST FACTOR COMPLETELY**

Factor out the GCF.

1.  $5n^3 - 20n$

$$\begin{array}{cccc} 5 & \cdot & n & \cdot & n & \cdot & n \\ 5 & \cdot & 2 & \cdot & 2 & \cdot & n \end{array}$$

GCF =  $5n$  so factor out  $5n$

$$5n(n^2 - 4)$$

$$5n(n+2)(n-2)$$

Factor out the GCF.

$$2. \quad 3x^4 + 6x^2$$

Factor out the GCF.

$$2. 3x^4 + 6x^2$$

$$\text{GCF} = 3x^2$$

$$3x^2(x^2 + 2)$$

Factor out the GCF.

3.  $6y^4 + 14y^3 - 10y^2$

Factor out the GCF.

$$3. 6y^4 + 14y^3 - 10y^2$$

$$\text{GCF} = 2y^2$$

$$2y^2 (3y^2 + 7y - 5)$$



Factor completely; then find the solutions.

$$4. 4x^2 - 36 = 0$$

$$\text{GCF} = 4$$

$$4(x^2 - 9) = 0 \quad \text{Difference of Two Squares}$$

$$4(x+3)(x-3) = 0$$

$$x = -3 \text{ and } 3$$

Factor completely; then find the solutions.

$$5. 24x^3 + 18x^2 = 0$$

Factor completely; then find the solutions.

$$5. 24x^3 + 18x^2 = 0$$

$$\text{GCF} = 6x^2$$

$$6x^2(4x + 3) = 0$$

$$x = -\frac{3}{4} \text{ and } 0$$

why is zero  
a solution?

Factor completely; then find the solutions.

$$6. \quad 8x^2 + 32 = 0$$

Factor completely; then find the solutions.

$$6. \quad 8x^2 + 32 = 0$$

$$\text{GCF} = 8$$

$$8(x^2 + 4) = 0$$

not a difference of  
two squares

therefore, no solutions

$$x^2 + 4 = 0$$

$$x^2 = -4$$

not possible

Factor completely; then find the solutions.

$$7. -7m^3 + 28m^2 - 21m = 0$$

Factor completely; then find the solutions.

$$7. -7m^3 + 28m^2 - 21m = 0$$

$$\text{GCF} = -7m$$

$$-7m(m^2 - 4m + 3) = 0$$

Factor  $a=1$   
method

$$-7m(m-1)(m-3) = 0$$

$$m = 1, 3, \text{ and } 0$$

again, why zero?