

**Warm Up** Solve the equation.

$$3x^2 + 16x + 5 = 0$$

$$1, 3 \quad \underline{\quad} \quad 1, 5$$

$$(x + 5)(3x + 1) = 0$$

$\underbrace{\hspace{10em}}_{15x} \quad \underbrace{\hspace{2em}}_{1x}$

$$x + 5 = 0$$

$$\begin{array}{r} -5 \\ -5 \end{array}$$

$$x = -5$$

$$3x + 1 = 0$$

$$\begin{array}{r} -1 \\ -1 \end{array}$$

$$\frac{3x}{3} = \frac{-1}{3}$$

$$x = -\frac{1}{3}$$

**Homework Questions?**

48

$$\frac{32x^2}{2} - \frac{48x}{2} + \frac{18}{2}$$

$$2(16x^2 - 24x + 9)$$

$$\frac{-27}{-3} + \frac{3x^2}{-3} = 0$$

$$-3(9 - x^2) = 0$$

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

## Self Scoring Scale

**4-** I can *summarize* the concepts and explain it to others.

**3-** I can *apply* the concepts to answer questions correctly.

**2-** I can *apply* the concepts but with some *mistakes*.

**1-** I *need help* to know how to apply the concepts.

**0-** I *can't* apply the concepts even with help.

# 10.8 Factoring Cubic Polynomials

**Goals:** • Factor cubic polynomials.

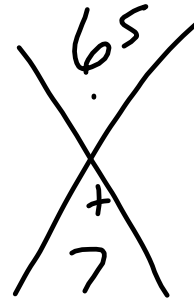
**EQ:** What does factor completely mean?

The Unit Organizer		NAME	DATE
④ BIGGER PICTURE		Mo/Date/Year	
← Algebra 1.5 →			
② LAST UNIT/Experience Quadratic Equations	① CURRENT UNIT <b>Polynomials &amp; Factoring</b>	③ NEXT UNIT/Experience Rational Equations	
⑧ Student Activities or Assignments	⑤ UNIT MAP		
<ol style="list-style-type: none"> <li>1. 10.1</li> <li>2. 10.2</li> <li>3. 10.3</li> <li>4. 10.4</li> <li>5. 10.5</li> <li>6. 10.6</li> <li>7. 10.7</li> <li>8. 10.8</li> </ol>			
⑦ UNIT SELF-TEST QUESTIONS	<ol style="list-style-type: none"> <li>1. When adding &amp; subtracting polynomials, how do you combine like terms?</li> <li>2. How do you use distributive property, FOIL, and diagrams to multiply polynomials?</li> <li>3. What is the method for factoring trinomials?</li> <li>4. How is factoring &amp; the Zero-Product Property used to solve polynomials?</li> </ol>	Factor Solve Calculate Simplify	⑨ UNIT RELATIONSHIPS

# Vocabulary

Prime polynomial:

Not Factorable



Factor a polynomial completely:

÷ by the largest factor (goes into # evenly)

÷ by the smallest power of letter

## Example 1: Factor Completely

Factor  $6x^4 - 18x^3 + 12x^2$  completely.

$$6x^4 = 2 \cdot 3 \cdot x \cdot x \cdot x \cdot x$$

$$18x^3 = 2 \cdot 3 \cdot 3 \cdot x \cdot x \cdot x$$

$$12x^2 = 2 \cdot 2 \cdot 3 \cdot x \cdot x$$

$$\text{GCF} = 2 \cdot 3 \cdot x \cdot x = 6x^2$$

$$\frac{6x^4}{6x^2} - \frac{18x^3}{6x^2} + \frac{12x^2}{6x^2}$$

$$6x^2 ( \underset{1,1}{x^2} - 3x + \underset{1,2}{2} )$$

$$6x^2 (x - 1)(x - 2)$$

-1x      -2x

## Example 2: Factor by Grouping

Factor  $5x^3 + 2x^2 + 5x + 2$  completely.

**Try It** Factor the expression completely.

$$1) \frac{3x^3}{3x} - \frac{18x^2}{3x} + \frac{12x}{3x}$$

$$\frac{x^3}{x^1} \quad 3-1 \quad \textcircled{x^2}$$

$$3x(x^2 - 6x + 4)$$

$$3x(x-2)(x-2)$$

Prime

$$\begin{array}{r} 4 \\ -6 \end{array}$$

$$2) \frac{4x^3}{4x} - \frac{16x}{4x}$$

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

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

~~3)  $2x^3 + 8x^2 + 5x + 20$~~

~~4)  $x^3 + 2x^2 - 9x - 18$~~

$$\frac{14x^3}{7x} - \frac{77x^2}{7x} - \frac{42x}{7x}$$

$$7x(2x^2 - 11x - 6)$$

$$7x(x - 6)(2x + 1)$$

## Summary

**EQ:** What does factor completely mean?

÷ out GCF

largest #

smallest variable w/ power

# 10.8 Homework

p.620 #18-24even,  
36-50even (Skip #42)