

Warm Up**week 10**Solve the equation by factoring.

$$8x^2 + 2x - 3$$

$$\begin{array}{l} 1, 8 \\ 2, 4 \end{array}$$
$$\underline{\underline{\quad}} \quad 1, 3$$

$$(2x - 1)(4x + 3)$$

$-4x$ $6x$

$$(4x + 3)(2x - 1)$$

Homework Questions?

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.

10.7 Factoring Special Products

Goals: • Factor special products.

EQ: What are the first 12 perfect squares?

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

Vocabulary

Perfect square trinomial:

1st and Last terms are perfect squares
in a trinomial

Perfect Squares

0, 1, 4, 9, 16, 25, 36, 49, 64,
 81, 100, 121, 144, 169, 196, 225

FACTORIZING SPECIAL PRODUCTS

Difference of Two Squares Patterns

$$a^2 - b^2 = (a+b)(a-b)$$

Example:

$$\sqrt{9x^2 - 25} = (3x + 5)(3x - 5)$$

$9x^2 + 0x - 25$

Perfect Square Trinomial Pattern

$$a^2 + 2ab + b^2 = (a+b)(a+b) = (a+b)^2$$

Example:

$$x^2 + 14x + 49 = (x + 7)^2$$

$$x^2 - 12x + 36 = (x - 6)^2$$

$$\begin{array}{ccc} & 49 & \\ & / \quad \backslash & \\ 7 & & 7 \\ & \backslash \quad / & \\ & 14 & \end{array}$$

$$\begin{array}{ccc} & 36 & \\ & / \quad \backslash & \\ (x+7)(x+7) & -6 & -6 \\ & \backslash \quad / & \\ & 12 & \end{array}$$

$$\begin{array}{ccc} & 36 & \\ & / \quad \backslash & \\ (x-6)(x-6) & -6 & -6 \\ & \backslash \quad / & \\ & 12 & \end{array}$$

Example 1: Factor the Difference of Two Squares

a) $\sqrt{m^2 - 49}$

$$(m + 7)(m - 7)$$

b) $9x^2 - 16$

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

c) $16p^2 - 25$

$$(4p + 5)(4p - 5)$$

d) $x^2 - 27$

can't factor
b/c 27 is NOT
a perfect square

Example 2: Factor Perfect Square Trinomials

a) $x^2 + 10x + 25$

$$\begin{array}{r} 25 \\ \times \\ 5 \\ + \\ 5 \\ \hline 10 \end{array}$$

$$(x+5)(x+5) \checkmark$$

5x
5x

b) $c^2 + 8c + 16$

$$(c+4)(c+4) \checkmark$$

4c
4c

c) $9y^2 - 12y + 4$

$$\begin{array}{r} 19 \\ \times \\ 3 \\ \hline 33 \end{array}$$

$$\begin{array}{r} 14 \\ \times \\ 2 \\ \hline 28 \end{array}$$

$$(3y-2)(3y-2) \checkmark$$

-6y
-6y

Try It Factor the expression.

1) $t^2 - 4 = t^2 + 0t - 4$

$$(t+2)(t-2) \checkmark$$

2t
-2t

2) $49y^2 - 25$

$$(7y+5)(7y-5) \checkmark$$

35y
-35y

3) $4a^2 + 12a + 9$

$$(2a+3)(2a+3) \checkmark$$

6a
6a

4) $y^2 - 18y + 81$

$$(y-9)(y-9) \checkmark$$

-9y
-9y

Example 3: Factor Out a Constant First

$$\text{a) } \frac{27}{3} - \frac{75x^2}{3}$$

$$3(9 - 25x^2) \quad \checkmark$$

$$3(3+5x)(3-5x)$$

15x -15x

$$\text{b) } \frac{2c^2}{2} + \frac{8c}{2} + \frac{8}{2}$$

$$2(c^2 + 4c + 4)$$

$$2(c+2)(c+2)$$

2c 2c

$$\text{c) } \frac{5y^2}{5} - \frac{35y}{5} + \frac{90}{5}$$

$$5(y^2 - 7y + 18)$$

$$\begin{array}{c} 18 \\ -9 \quad \times \quad 2 \\ -7 \end{array}$$

prime

10.7 Homework

10.7 p.613 #2-10, 18-48 even

(20, 24 Prime)

ex: $-49 + m^2$

$$(m^2 - 49) \rightarrow (m+7)(m-7)$$