

Unit 9: Factoring Quadratics  
**FACTORIZING COMPLETELY**  
 PreAP Classwork

Name: KEY  
 Date: \_\_\_\_\_ Period: \_\_\_\_\_

When factoring a polynomial ask the following questions:

- What type of polynomial is it?
- ★ 2. - Is there a GCF for all the terms that I can divide out?
- Is it a difference of squares or a perfect square trinomial?
- Do I need the box method? → Is it prime (cannot be factored)?
- ↳ Are my factors correct? (check on calc  
 $y_1 =$   $y_2 =$   
 $2 =$  table  $y_1 = y_2$ ?)

Factor each polynomial, if possible. If the polynomial cannot be factored, write prime.

1.  $42x^2 - 36xy$

$6x(7x - 6y)$

2.  $x^2 - 7x + 6$

$(x-1)(x-6)$

3.  $x^2 - 30x + 225$

$(x-15)(x-15)$   
 $(x-15)^2$

4.  $x^2 + 11x + 6$

$1 \cdot 6$   
 $2 \cdot 3$   
 $11$   
 prime

5.  $3a^2 - 147$

$3(a^2 - 49)$   
 $3(a+7)(a-7)$

6.  $18x^2 - 48x + 32$

$2(9x^2 - 24x + 16)$   
 $2(3x-4)^2$

7.  $2x^3 + 10x^2 + 12x$

$2x(x^2 + 5x + 6)$   
 $2x(x+2)(x+3)$

8.  $5x^2 + 9x - 2$

$(5x+1)(x-2)$

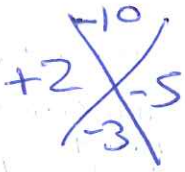
9.  $2x^2 + 20x + 32$

$2(x+8)(x+2)$   
 $2(x^2 + 10x + 16)$

10.  $\frac{6x^2}{6} - \frac{18xy}{6} - \frac{60y^2}{6}$

$6(x-5y)(x+2y)$

$6(x^2 - 3xy - 10y^2)$



	X	-5y
X	X <sup>2</sup>	-3xy
+2y	2xy	-10y <sup>2</sup>

11.  $\frac{50x^2}{2} - \frac{72y^2}{2}$

$2(25x^2 - 36y^2)$  *diff. of squares*

$2(5x+6y)(5x-6y)$

12.  $9x^2 - 25y^2$

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

*difference of squares*

13.  $25 - 4x^2$

$(5-2x)(5+2x)$

*difference of squares*

14.  $a^2b^2 - b^2 + a^2c^2 - c^2$

*difference of squares*

	a <sup>2</sup>	-1
b <sup>2</sup>	a <sup>2</sup> b <sup>2</sup>	-b <sup>2</sup>
c <sup>2</sup>	a <sup>2</sup> c <sup>2</sup>	-c <sup>2</sup>

$(a^2-1)(b^2+c^2)$

$(a+1)(a-1)(b^2+c^2)$

15.  $\frac{3x^3y}{3xy} - \frac{9x^2y}{3xy} + \frac{6xy^3}{3xy} - \frac{15xy^2}{3xy}$

$3xy(x^2 - 3x + 2y^2 - 5y)$

	X	-5y
X	X <sup>2</sup>	-3x
+2y	-3x	+2y <sup>2</sup>

$3xy(x^2 - 3x + 2y^2 - 5y)$



Special Cases:

1. Difference of two squares:  $a^2 - b^2 = (a+b)(a-b)$

Ex:  $100 - 36x^2 = (10+6x)(10-6x)$

2. Perfect square trinomials:  $a^2 + 2ab + b^2 = (a+b)^2 \rightarrow (a+b)(a+b)$

Ex:  $x^2 + 10x + 25 = (x+5)^2$

$a^2 - 2ab + b^2 = (a-b)^2 \rightarrow (a-b)(a-b)$

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