Algebra 1R – Mr. Bo
Unit 12 – Day 6 Notes

Name _____
Date _____

FACTORING COMPLETELY

To factor completely we must go through a factoring checklist **(IN ORDER !!!)**

Checklist:

1. GCF
2. Diff. of Squares
3. trinomial (AC method)

- Sometimes you may need to go through the checklist more than 1 time.

Examples: Factor Completely.

1. $ax^2 - a$

$= a(x^2 - 1)$

$= a(x-1)(x+1)$

2. $20x^3 - 45x$

$= 5x(4x^2 - 9)$

$= 5x(2x-3)(2x+3)$

3. $8x^3 - 50x$

$= 2x(4x^2 - 25)$

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

4. $x^4 - 3x^3 - 40x^2$

$= x^2(x^2 - 3x - 40)$

$= x^2[x^2 - 8x + 5x - 40]$

$= x^2[x(x-8) + 5(x-8)]$

$= x^2(x-8)(x+5)$

5. $2x^2 + 20x - 112$

$2(x^2 + 10x - 56)$

$= 2(x^2 + 14x - 4x - 56)$

$= 2[x(x+14) - 4(x+14)]$

$= 2(x+14)(x-4)$

6. $4x^3 - 8x^2 + 4x$

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

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

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

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

$3(-5) = -15$

7. $6x^3 - 28x^2 - 10x$

$= 2x(3x^2 - 14x - 5)$

$= 2x(3x^2 - 15x + x - 5)$

$= 2x(3x(x-5) + (x-5))$

$= 2x(x-5)(3x+1)$

$2(17) = 34$

8. $4x^2 + 70x + 34$

$= 2(2x^2 + 35x + 17)$

$= 2(2x^2 + 34x + x + 17)$

$= 2(2x(x+17) + (x+17))$

$= 2(x+17)(2x+1)$

$6(7) = 42$

9. $18x^3 + 69x^2 + 21x$

$= 3x(6x^2 + 23x + 7)$

$= 3x(6x^2 + 21x + 2x + 7)$

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

$= 3x(2x+7)(3x+1)$