Name:	Date:	Period:

6.4 Factoring Polynomials Notes

→ see your 4.1 notes !!!

GCF

$14m^8n^5 - 7m^2n^2$ GCF: $7m^2n^2$

$7m^2n^2(2m^6n^3 - 1)$

Difference of 2 Squares

$72c^4 - 2$

Always look for GCF first

$2(36c^4 - 1)$

$6c^2 \cdot 6c^2 \quad 1 \cdot 1$

$2(6c^2 - 1)(6c + 1)$

Trinomials

$2x^3 + 38x^2 + 68x$

GCF: $2x$

$2x(x^2 + 19x + 34)$

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

$3x^2 + 14x - 5$ ← no GCF

$-15x^2$, $15 \cdot -1x$, $14x$

$(3x^2 - 1x) + (15x - 5)$

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

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

How to factor with 4 Terms

1. GROUP the first 2 terms together and the last 2 terms.
2. FACTOR the GCF for each group.
3. FACTOR the common binomial.

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

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

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

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

difference of 2 squares

2. $(k^3 + 5k^2) - (k - 5)$

$k^2(k + 5) - 1(k + 5)$

$(k^2 - 1)(k + 5)$

$(k + 1)(k - 1)(k + 5)$

FACTORING GUIDE

Always!!!

Check for a **GCF** first!

2 terms

DIFFERENCE OF SQUARES

$a^2 - b^2$

$(a+b)(a-b)$

$4x^2 - 9y^2$

$(2x-3y)(2x+3y)$

GCF WORKED?

Example:

$2x^4 - 16x^3$

$2x^3(x-8)$

cannot factor more

see 4.1 notes

3 terms

TRINOMIALS $(a=1)$

$1x^2 + bx + c$

$x^2 - 9x + 20$

$(x-4)(x-5)$

factors of 20

$-1 \cdot -20$

$-2 \cdot -10$

$-4 \cdot -5$

sum to -9 and prod $+20$

TRINOMIALS $(a>1)$

$4x^2 - 4x - 3$

$-12x^2$: $1 \cdot 12$, $2 \cdot -6$, $3 \cdot 4$

$2x$, $-6x$, $4x$

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

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

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

4 terms

TRY GROUPING!

$(x^3 - 2x^2) + (6x - 12)$

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

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

Always check by multiplying it back together.