Warm Up

Factor out the GCF

1) $18x^4 - 12x^3 + 6x^2$

$6x^2(3x^3 - 2x^2 + 1x)$

$2x(9x^3 - 6x^2 + 3x)$

2) $7w^7 - 14w^3 + 21w^5 - 35w + 21$

$7(w^7 - 2w^3 + 3w^5 - 5w + 3)$

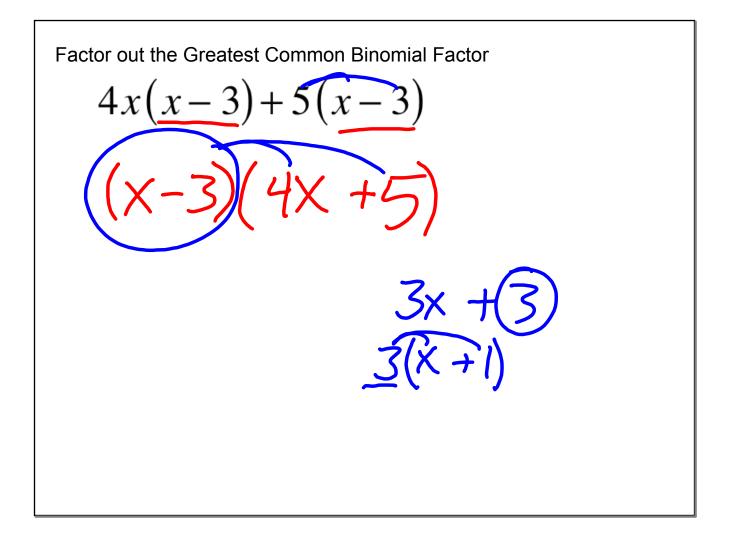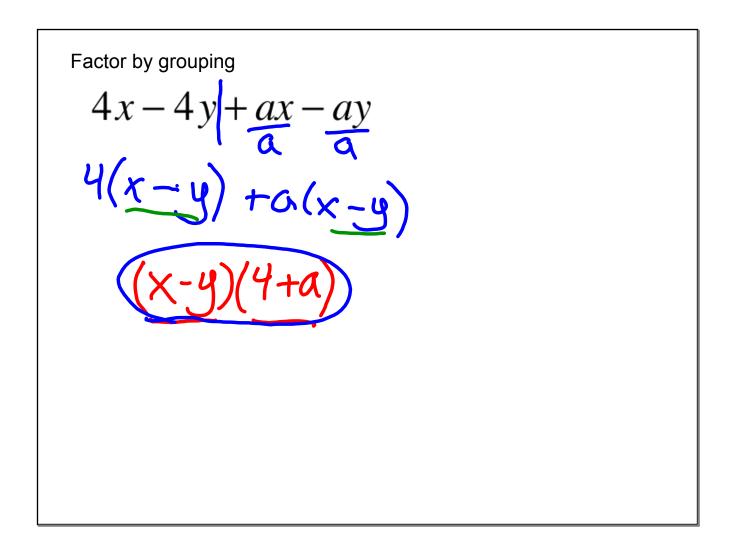# 3-1 Factoring (Grouping)

Objectives:

I can factor an expression by grouping.

Vocabulary: Factors, Greatest Common Factor

Factor out the Greatest Common Binomial Factor

$$4x(x-3)+5(x-3)$$

$$(x-3)(4x+5)$$

$$3x+3$$

$$3(x+1)$$

You Try

Factor out the Greatest Common Binomial Factor

$$4a(\underline{a-3}) + 3(\underline{a-3})$$

$$(A-3)^2(4a+3) = (4a+3)(a-3)$$

$$4x^2 + 3x$$

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

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

$$3 \cdot 2$$
$$2 \cdot 3$$

Factor by grouping

$$6x^2 + 9x - 10x - 15$$

$$\underset{3x}{\quad} \underset{3x}{\quad} \underset{-5}{\quad} \underset{-5}{\quad}$$

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

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

$$(3x-5)(2x+3) \qquad (2x+3)(3x-5)$$

Factor by grouping

$$4x - 4y + \dfrac{ax}{a} - \dfrac{ay}{a}$$

$$4(x - y) + a(x - y)$$

$$(x - y)(4 + a)$$

Factor COMPLETELY by grouping

$$\frac{6x^2}{2x} + \frac{8x}{2x} + \frac{18x}{6} + \frac{24}{6}$$

GCF: $2x$　　　　GCF: 6

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

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

You Try (make sure they do this one)

Factor by grouping

$$6z^2 + 2z + 9z + 3$$

$$2z(3z+1) + 3(3z+1)$$

$$(3z+1)(2z+3)$$

You Try (make sure they do this one)

Factor by grouping

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

$$2x \qquad 2x \qquad x+1$$

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

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