

8.7 Factoring by Grouping

Algebra 1

What method of factoring?

5-20-14

$5fg^2 + g^2f + 15gf$ GCF = Greatest Common Factor

$30x^2 + 40x$ GCF Factor

$45pq - 27q - 50p + 30$ grouping

* always take out GCF, then factor by grouping!

Quadratic - 2nd Degree polynomial

$x^2 + 2x + 4$

ex 1: $\frac{6x^2}{6} - \frac{6x}{6} - \frac{36}{6}$

GCF: 6

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

$x^2 - x - 6$
a=1 b=-1 c=-6

a.c	b
-6	-1
6 · 1	

Ans: $6(x-3)(x+2)$

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

2 · 3	2 - 3 = -1
2x + -3x = -x	

Ex 2: $\frac{4x^2}{4} + \frac{24x}{4} + \frac{32}{4}$

GCF: 4

$4(x^2 + 6x + 8)$

$x^2 + 6x + 8$

a.c	b
8	6
8 · 1	

$4(x+2)(x+4)$

a=1 b=6 c=8

$\frac{x^2}{x} + \frac{4x}{x} + \frac{2x}{2} + \frac{8}{2}$

4 · 2	4 + 2 = 6
4x + 2x = 6x	

$x(x+4) + 2(x+4)$
 $(x+2)(x+4)$

check: multiply it out
 $4(x+2)(x+4)$

$(4x+8)(x+4)$

$4x^2 + 16x + 8x + 32$

$4x^2 + 24x + 32$ ✓

$$\frac{2x^2}{2} + \frac{14x}{2} + \frac{20}{2} \quad \text{GCF: } 2$$

$$2(x^2 + 7x + 10)$$

$$a=1 \quad b=7 \quad c=10$$

$$(x^2 + 5x) + (2x + 10)$$

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

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

a.c		b
10		7
5 · 2		5 + 2 = 7

$$5x + 2x = 7x$$

$$\text{Ans: } 2(x+2)(x+5)$$

#16
stand form

$$12x - 45 + 9x^2 \quad \text{GCF: } 3$$

$$\text{Ans: } 3(3x-5)(x+3)$$

GCF
abc

$$\frac{9x^2}{3} + \frac{12x}{3} - \frac{45}{3}$$

a.c		b
-45		4
9 · -5		9 · -5 = -45

$$3(3x^2 + 4x - 15)$$

$$a=3 \quad b=4 \quad c=-15$$

$$9x - 5x = 4x$$

$$9x - 5x = 4x$$

$$(3x^2 + 9x) + (-5x - 15)$$

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

HW: WS #2 ODDS 1-30 odd