

2.4 More Factoring:Binomial Common Factoring:Ex 1: Factor $4x(3x-2) + 5(3x-2)$

$$= (3x-2) \left[\frac{4x(3x-2)}{(3x-2)} + \frac{5(3x-2)}{(3x-2)} \right]$$

$$= (3x-2)(4x+5)$$

Ex 2: Factor $7x(x+8) + (x+8)$ Hidden coefficient of 1

$$= (x+8)(7x+1)$$
Factor by Grouping:

$$\boxed{ac + bc} + \boxed{ad + bd}$$

$$= c(a+b) + d(a+b)$$

$$= (a+b)(c+d)$$

Now you try:

Factor

a) $7x(m+4) - 3(m+4)$

$$= (m+4)(7x-3)$$

b) $3x(x-2) - (x-2)$

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

c) $wx + wy + xz + yz$

$$= w(x+y) + z(x+y)$$

$$= (x+y)(w+z)$$

d) $x^2 + 4x - 3x - 12$

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

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

OR

$$= x^2 + x - 12$$

MAN or BOX method
to factor

Find The Numbers

Product	Sum	#'s
2	3	2, 1
18	9	3, 6
6	5	2, 3
15	8	3, 5
100	20	10, 10
16	-10	-8, -2
36	-12	-6, -6
60	-16	-10, -6
144	-24	-12, -12
42	-13	-6, -7
56	-15	-7, -8
-12	-11	-12, 1
-30	-1	-6, 5
-10	3	-2, 5
-24	5	8, -3
-30	1	6, -5

Factoring by Decomposition

Ex 1: Factor

$$2x^2 + 11x + 12$$

$$= 2x^2 + 8x + 3x + 12$$

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

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

Find two Numbers that

Multiply to +24

AND

Add to +11



M A N

24 11 8, 3

Decompose (break down)

middle term using your Numbers



Factor by grouping



Binomial CF



Ex 2: Factor

$$6x^2 + 13x - 5$$

$$= 6x^2 + 15x - 2x - 5$$

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

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

M A N
-30 13 15, -2

Ex 3: Factor

$$x^2 - 8x + 12$$

$$= x^2 - 6x - 2x + 12$$

$$= x(x-6) - 2(x-6)$$

$$= (x-6)(x-2)$$

M A N
12 -8 -6, -2

when the coefficient
of x^2 is 1
do we need to
factor by grouping?

Ex 4: Factor Fully

$$2x^2 + 18x + 36$$

* if coeffs.
on x^2 is 1
just write it out!

$$= 2(x^2 + 9x + 18)$$

$$= 2(x^2 + 6x + 3x + 18)$$

$$= 2[x(x+6) + 3(x+6)]$$

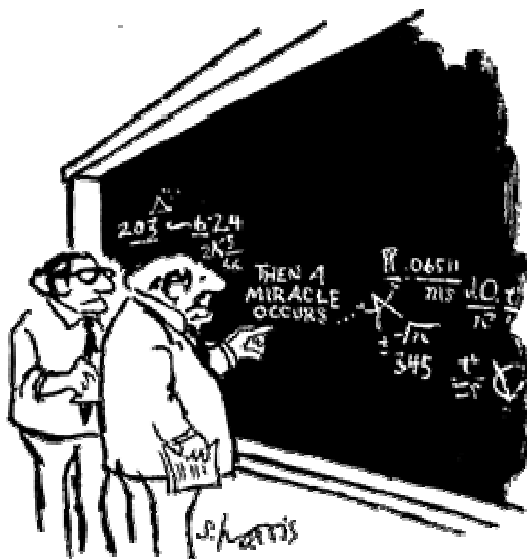
$$= 2(x+6)(x+3)$$

M A N
18 9 6, 3

HMWK

p 100 # 6

p 110 # 5,6,7,9



"I think you should be more explicit here in step two."