Factor each of the following.

a) $x^2 - 11x + 28$

$= (x-4)(x-7)$

M 28
A −11
N −4, −7

28
1, 28
2, 14
4, 7

b) $12x^2 - 5x - 2$

$= 12x^2 + 3x - 8x - 2$
$= 3x(4x+1) - 2(4x+1)$
$= (4x+1)(3x-2)$

M −24
A −5
N −8, 3

24
1, 24
2, 12
3, 8
4, 6

4.6 More Trinomial Factoring

Recall: Factor $21 - 10q + q^2$

$= q^2 - 10q + 21$

$= (q-3)(q-7)$

Working Forwards - notice the patterns:

Ex.1 Expand

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

$= x^2 - 5xy + 3xy - 15y^2$

$= x^2 - 2xy - 15y^2$

b) $(x^2 - 3)(x^2 - 7)$

$= x^4 - 7x^2 - 3x^2 + 21$

$= x^4 - 10x^2 + 21$

Ex.2 Factor

a) $x^4 + x^2 - 20$

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

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

M -20
A 1
N 5, -4

b) $x^2 + 8xy + 7y^2$

$= (x+1y)(x+7y)$

M 7
A 8
N 1, 7

How can we check to see if our factoring is correct?

c) $12m^2 - 10mn - 12n^2$

$= 2(6m^2 - 5mn - 6n^2)$

$= 2(6m^2 - 9mn + 4mn - 6n^2)$

$= 2[3m(2m-3n) + 2n(2m-3n)]$

$= 2(2m-3n)(3m+2n)$

36
1, 36
2, 18
3, 12
4, 9
6, 6

M -36
A -5
N -9, 4

Quick Method

$ax^2 + bx + c$

$2x^2 - x - 6$

$= (x-2)(2x+3)$ M -12

A -1

N $\frac{2x}{-4}$ $\frac{2x}{3}$

$\frac{x}{-2}, \frac{3x}{2}$

1. Find two numbers that multiply to ac and add to b.
2. Write two fractions with *a* as the numerator and the numbers as the denominators.
3. Reduce the fractions, keeping the signs where they are, and write as the coefficients of the binomials.

NON-QUICK

$= 2x^2 - 4x + 3x - 6$

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

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

Ex. 2 Factor completely

a) $3x^2 - 10x + 8$

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

M 24

A -10

N $\frac{3x}{-4}, \frac{3x}{-6}$

$\frac{3x}{-4}$ $\frac{x}{-2}$

24

1, 24

2, 12

3, 8

4, 6

b) $6x^2 - 5x - 4$

$= (3x-4)(2x+1)$

M -24

A -5

N $\frac{6x}{-8}$ $\frac{6x}{3}$

$\frac{3x}{-4}$ $\frac{2x}{1}$

24

1, 24

2, 12

3, 8

4, 6

FBUHL
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