From Yesterday

x^2+4x+3

$(x+1)(x+3)$ M: 3   Λ: 4

Find two numbers that multiply to 3 and add to 4.....

a) $x^2 - 4x - 5$
M: -5
A: -4

$= (x+1)(x-5)$ $\frac{3}{1,3}$

$\frac{-5}{1,-5}$

b) $x^2 - 9x + 18$
$= (x-3)(x-6)$
M: 18
A: -9
N: -3, -6

$\frac{18}{1,18}$
$2,9$
$3,6$

And a few tricky ones...

$x^2 + 0x - 9$

c) $y = x^2 - 9$
$= (x+3)(x-3)$
M: -9
A: 0
N: 3, -3

d) $y = x^2 + 7x$
$= (x+0)(x+7)$
$= x(x+7)$
M: 0
A: 7
N: 0, 7

2.8 Factoring $ax^2 + bx + c$

today we will add one more step...factoring ax^2+bx+c
where "a" is a common factor
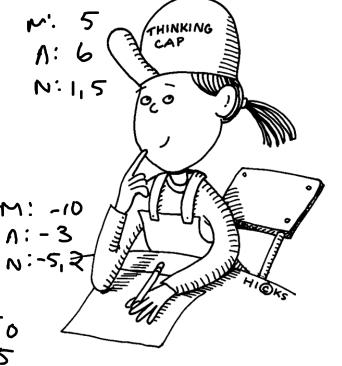
<u>Ex 1</u>: Factor fully

a) $2x^2 + 12x + 10$

$$= 2\left(x^2 + 6x + 5\right)$$
$$= 2(x+1)(x+5)$$

M: 5
A: 6
N: 1, 5

b) $3x^2 - 9x - 30$

$$= 3\left(x^2 - 3x - 10\right)$$
$$= 3(x-5)(x+2)$$

M: -10
A: -3
N: -5, 2

$$\frac{-10}{1,10}$$
$$2,5$$

Now you try:
  Fully factor.

a) $2x^2 - 20x + 6$

$= 2(x^2 - 10x + 3)$

DONE!

b) $3x^2 + 21x - 180$

$= 3(x^2 + 7x - 60)$

$= 3(x-5)(x+12)$

M: -60
A: 7
N: -5, 12

Check

$3(x-5)(x+12)$

$= 3(x^2 + 12x - 5x - 60)$

$= 3(x^2 + 7x - 60)$

$= 3x^2 + 21x - 180$

✓

-60
1, 60
2, 30
3, 20
4, 15
5, 12
6, 10

3

Ex. 2   tricky ones
Fully factor.

a) $-3x^2 + 75$

$$= -3(x^2 - 25)$$
$$= -3(x-5)(x+5)$$

M : -25
A : 0
N : -5, 5

b) $2x^2 - 10x$

$$= 2(x^2 - 5x)$$
$$= 2(x+0)(x-5)$$
$$= 2(x)(x-5)$$

M: 0
A: -5
N: -5, 0

$$= 2x(x-5)$$

<u>Ex 3</u>:   Using factoring to simplify the following formula

$$SA_{cylinder}= 2\pi r^2 + 2\pi rh$$

$$= 2\pi r\left(r + h\right)$$

$$3 \qquad 10$$

If a cylinder has a radius of 3cm and a height of 10cm, find the surface area.

<u>Method 1:</u>
Using original expression

$$= 2\pi(3)^2 + 2\pi(3)(10)$$

<u>Method 2:</u>
Using factored expression

$$= 2\pi(3)(3+10)$$

Homework
p.259 #1-6 eoo (DO NOT expand. To check you can use the back of the book)
7, 8a, 8b (Calculate the SA of <u>one</u> container using the given equation then the equation in factored form. Are the answers the same?), 9a

FACTORING QUIZ....Next Lesson!!!