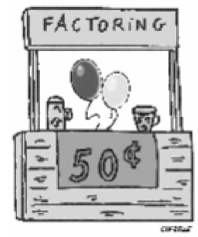
MBF 3C1 Name: ______________________

Factoring: Multiple Methods



When factoring, always

i. common factor if possible
ii. factor using appropriate method (difference of squares or sum & product)
iii. check your answer to see any factors can be factored further

Example 1

a. $3x^2 + 21x + 36$

$3\left(\frac{3x^2}{3} + \frac{21x}{3} + \frac{36}{3}\right)$

sum Product

$= 3(x^2 + 7x + 12)$

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

b. $2x^2 - 50$

$2\left(\frac{2x^2}{2} - \frac{50}{2}\right)$

$= 2(x^2 - 25)$ diff. of sq.

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

c. $4x^2 - 8x - 60$

$4\left(\frac{4x^2}{4} - \frac{8x}{4} - \frac{60}{4}\right)$

$= 4(x^2 - 2x - 15)$

sum Prod

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

Example 2

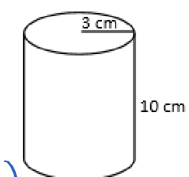
The surface area of a cylinder is given by the formula $SA = 2\pi r^2 + 2\pi rh$.

a. Factor the expression for the surface area.

$2\pi r\left(\frac{2\pi r^2}{2\pi r} + \frac{2\pi rh}{2\pi r}\right)$

$SA = 2\pi r(r + h)$

b. A cylinder has radius 3 cm and height 10 cm. Use both the original expression and the factored expression to find the surface area of this cylinder to the nearest square centimetre.



original

$SA = 2(3.14)(3)(10)$

$= 2(3.14)(9) + 188.4$

$= 56.52 + 188.4$

$= 244.92$

factored

$SA = 2(3.14)(3)(3+10)$

$= 2(3.14)(3)(13)$

$= 244.92$

c. Why would the factored form of the formula be more useful than the original form?

Factored form is more easier to use, less steps to worry about in BEDMAS order of operations