Multiplying a Polynomial by a Monomial ..... The Distributive Law

Introduction: Evaluate; $3(2 + 2)$ using BEDMAS

$= 3(4)$

$= 12$

Is there another method that would yield the same answer?

$3(2+2)$

$= 6+6 = 12$

Which method above would be the preferred method?

Bedmas

Now, if the question was simplify $3(2x + 2)$, which of the above methods cannot be used? Why?

method 1

unlike terms

Therefore, $3(2x + 2)$ This is called the Distributive law.

$= 6x + 6$

More Examples:

1. Expand (simplify):

(a) $2(3a - 2b)$ $= 6a - 4b$

(b) $-4(m^2 - 3m + 2)$ $= -4m^2 + 12m - 8$

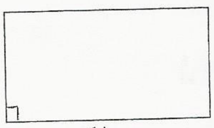
(c) $2a^3(3a^2 - 7a)$ $= 6a^5 - 14a^4$

(d) $(5y - 2x + 1)(2x^2)$ $= 10x^2y - 4x^3 + 2x^2$

2. Find expressions for the perimeter, P, and the area, A, for each of the following figures.

(a)

2t + 1



3t

$P = 2(l + w)$ or $P = 2l + 2w$ $A = lw$

$P = 2(3t + 2t + 1)$

$= 2(5t + 1)$

$= 10t + 2$

or $P = 2(3t) + 2(2t + 1)$

$= 6t + 4t + 2$

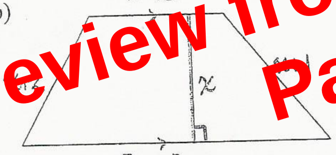
$= 10t + 2$

$a = 3t(2t + 1)$

$= 6t^2 + 3t$

(b)

x − 2



3x − 2

$P = s_1 + s_2 + s_3 + s_4$

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

$= x + 2 + x - 2 + x + 1 + 3x - 2$

$= 6x - 1$

$A = \frac{h(a + b)}{2}$

$a = \frac{x(x - 2 + 3x - 2)}{2}$

$= \frac{x(4x - 4)}{2}$

$= \frac{4x^2 - 4x}{2}$

$= \frac{4x^2}{2} - \frac{4x}{2}$

$= 2x^2 - 2x$