Math 9B/9CE

Unit 5.5 → Multiplying AND Dividing A Polynomial By A CONSTANT

Remember that:

A constant → is the number that isn't attached to a variable.

↳ A number

In this part of the unit we will be multiplying and dividing a polynomial by a constant.

$4(3x)$

- 4 → constant
- $(3x)$ → monomial

$7(9x-3)$

- 7 → Constant
- $(9x-3)$ → Binomial

$\frac{(23x)}{11}$

- $(23x)$ → constant
- 11 → constant

Before we move on:

PRODUCT = Multiplication

Quotient = Division !

Also → Remember that • numbers go with numbers
• letters go with letters

Example 1

$4(5x)$ • Reads 4 times 5x
OR
5x 4 times

$(5x) + (5x) + (5x) + (5x)$

$20x$

So $4(5x) = 20x$

[Multiply the number or constant by each term in polynomial]

Example 2

Constant multiplies each term in polynomial

$4(-3x + 6) \rightarrow -12x + 24$

Example 3

Remember there is a 1 here!

$-4(-b^2 + 2b - 2)$

$4b^2 - 8b + 8$

TO DIVIDE → WE PROCEED EXACTLY THE SAME WAY!

that is:

the constant divides each individual Term in the polynomial

Example 1

$$\frac{8x^2 - 6}{2} = \frac{8x^2}{2} - \frac{6}{2} = 4x^2 - 3$$

2 divides $8x^2$; 2 divides 6

Example 2

$$\frac{-3m^2 + 15mn - 21n^2}{-3}$$

-3 divides $-3m^2$; -3 divides $15mn$; -3 divides $-21n^2$

$$\frac{-3m^2}{-3} + \frac{15m}{-3} - \frac{21m^2}{-3}$$

$$m^2 - 5m + 7n^2$$