MPM 1DI Unit 2
Polynomials
(Chapter 3 in Textbook!)

Day 1 -
What is a Polynomial?
and
Working with Exponents

First, a couple of definitions:

Term: " a number or variable or the product of a number
and a variable"

E.g. 4 ,   x   ,   4x , $15x^2y$ are each terms

Polynomial: "an expression containing one or more terms"

E.g. $4x^2y + 3x - 5$

NOTE: a POLYNOMIAL cannot have a
variable in the denominator of a fraction.

E.g. $\frac{4}{x}$ is not a term in a polynomial (though it is a term)

Types of Polynomials:

Polynomials are classified by the number of terms:

Name	Number of Terms	Example
Monomial	1	$\times$
Binomial	2	$2y + c$
Trinomial	3	$2y + c + x$

like term - Some variable Some exponent

Degree of Polynomials:

The degree of a polynomial refers to:

Example: What is the degree of:

a) $5x^2$ b) 4^1 c) $3x^2y^1$ d) $5xy + 3x^2 - 2x^3y^5$

   $= 2$ $= 1$ $= 3$ $= 8$

Example 1: Expand and then Evaluate:

$-\frac{3}{7} \times -\frac{3}{7} \times -\frac{3}{7}$ $\dfrac{49}{7}$ over 343

a) $\left(\dfrac{3}{4}\right)^4$ b) $\left(-\dfrac{3}{7}\right)^3$ c) $(0.3)^3$

$= \dfrac{3^4}{4^4}$ $= \dfrac{3\times3\times3}{7\times7\times7}$ $= 0.3\times0.3\times0.3$

$= \dfrac{3\times3\times3\times3}{4\times4\times4\times4} = \dfrac{81}{256}$ $= -\dfrac{27}{343}$ $= 0.027$

Example 2: Solve the following equations involving exponents:

Given the equation $h = (t-5)^3 - t^2 + 3(t-1) - 2$, solve for h when:

i) $t = -3$ $h = (-3-5)^3 - (-3)^2 + 3(-3-1) - 2$

$h = (-8)^3 - (-3)^2 + 3(-4) - 2$

$h = -512 - (9) + 3(-4) - 2$

$h = -512 - (9) - 12 - 2$

$h = -512 - 9 - 12 - 2$

$h = -521 - 12 - 2$

$h = -533 - 2$

$h = -535$

ii) $t = 2$

$16 \times 4 \qquad 15 \times 4 \quad + 4 \times 1$

Example 3: Evaluate each of the following (don't forget
order of operations)

a) $(4^2 - 3^2) + (4^3 - 3^4)$

$= (16 - 9) + (64 - 81)$

$= 7 + -17$

$= -10$

b) $\left(\dfrac{2}{3}\right)^2 + \left(\dfrac{3}{4}\right)^3$

$= \left(\dfrac{2 \times 2}{3 \times 3}\right) + \left(\dfrac{3 \times 3 \times 3}{4 \times 4 \times 4}\right)$

$= \dfrac{4}{9} + \dfrac{27}{64} \qquad \underline{LCD}$

$\begin{array}{r} 64 \\ \times \ 9 \\ \hline 576 \end{array}$

$= \dfrac{4 \times 64}{576} + \dfrac{27 \times 9}{576}$

$= \dfrac{256}{576} + \dfrac{243}{576}$

$= \dfrac{499}{576}$