Lesson 5

5.1 Homework

Marks Available : 23

Question 1
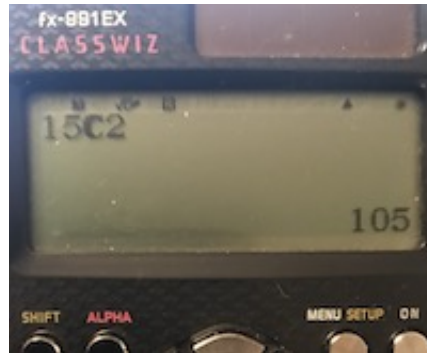
Check that your calculator gives $^{15}C_0 = 1$, $^{15}C_1 = 15$ and $^{15}C_2 = 105$

(**i**)   Use your calculator to write down the value of,

$$^{15}C_3 \qquad\qquad ^{15}C_4 \qquad\qquad ^{15}C_5$$

[3 marks]

(**ii**)   Hence write out the first six terms of the the expansion of,

$$(1 + x)^{15}$$

[2 marks]

Question 2

A-Level Examination Question from January 2006, P2, Q1(a) (Edexcel)

Write down the binomial expansion, in ascending powers of x of $(1 + 6x)^4$

[3 marks]

Question 3

A-Level Examination Question from January 2008, C2, Q3(a) (Edexcel)

Find the first 4 terms of the expansion of $\left(1 + \dfrac{x}{2}\right)^{10}$ giving each term in its simplest form.

Hint :

$$\left(1 + \frac{x}{2}\right)^{10} = {}^{10}C_0 \times (1)^{10} \times \left(\frac{x}{2}\right)^{0}$$

$$+ {}^{10}C_1 \times (1)^{9} \times \left(\frac{x}{2}\right)^{1}$$

$$+ {}^{10}C_2 \times (1)^{8} \times \left(\frac{x}{2}\right)^{2}$$

$$+ {}^{10}C_3 \times (1)^{7} \times \left(\frac{x}{2}\right)^{3}$$

$$+ \dots$$

[4 marks]

Question 4

A-Level Examination Question from January 2010, C2, Q1 (Edexcel)

Find the first 3 terms, in ascending powers of *x*, of binomial expansion of

$$(3 - x)^6$$

and simplify each term.

[4 marks]

Question 5
A-Level Examination Question from October 2016, C12, Q5 (Edexcel)
(a)   Find the first 4 terms, in ascending powers of *x*, of the binomial
expansion of,

$$\left(3 - \frac{ax}{2} \right)^5$$

where *a* is a positive constant. Give each term in its simplest form.

[4 marks]

Given that, in the expansion, the coefficient of *x* is equal to the coefficient of x^3
(b)   find the exact value of *a* in its simplest form

[3 marks]