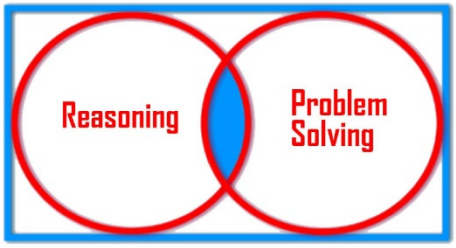
Year 1 (AS)

Binomial Expansion
(Sample Questions)

The Marks shown are for guidance purposes only



fluidmaths.co.uk

Round all decimals to 3 significant figures where applicable

Binomial Series:

$$(a+b)^n = a^n + \binom{n}{1} a^{n-1}b + \binom{n}{2} a^{n-2}b^2 + \binom{n}{r} a^{n-r}b^r + \cdots + b^n$$

For $(n \in \mathbb{N})$

Where $\binom{n}{r} = {}^{n}\mathrm{C}_{r} = \frac{n!}{r!(n-r)!}$

©fluidmaths.co.uk

1	Write the expression $\left(\sqrt{5}+2\sqrt{7}\right)^5$ in the form $p\sqrt{5}+q\sqrt{7}$ where p and q are whole numbers to be found **[4Marks]**

©fluidmaths.co.uk

2	Show that ${}^{n}C_3 - {}^{n}C_2 = \frac{1}{6}(n^3 - 6n^3 + 5n)$ **[4Marks]**

©fluidmaths.co.uk

3	The coefficient of x^3 in the expansion of the expression $(5 + px)^7$ is 7503125. Find the value of p **[3Marks]**

©fluidmaths.co.uk

4	Find the coefficient of the term in x^5 in the expansion of the expression $(2+5x)(1+2x)^8$ **[3Marks]**

©fluidmaths.co.uk

5	Given that $(k+3x)^n = 16384 + 86016x + 193536x^2 + \cdots$ Where k and n are real numbers. Find the values of k and n **[8Marks]**

©fluidmaths.co.uk