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A LEVEL MATHS

(40) Binomial Expansion (Using Pascal's Triangle)

WORKING AT D/E

(1) Use Pascal's Triangle to expand $(2+x)^4$ in ascending powers of x.

(2) Using Pascal's Triangle, find the term in x^3 in the expansion of $(1-2x)^5$

(3) Show that the term in x in the expansion of $(1+x)(2+x)^4$ is $48x$

WORKING AT B/C

(1) Using Pascal's Triangle, show that the coefficient of the term in x^2 in the expansion of $(3-2x)^5$ is 1080

(2) Use Pascal's Triangle to show that there is no term in x^2 in the expansion of $(1+x)(1-x)^3$

(3) In the expansion of $(a+2x)^4$ where a is a constant, the term in x^2 is 216.

Show, using the binomial expansion, find the possible values of a.

WORKING AT A*/A

(1) In the expansion of $(1+x^{-1})(1+x)^4$, show that the coefficient of the term in x^2 is 10.

(2) In the expansion of $(p+qx)^4$ where p and q are positive constants, the term independent of x is 81 and the term in x^3 is $\frac{4}{9}$.

Find the values of p and q.

(3) (a) Show that the expansion of $(1+\sqrt{2})^4$ can be written in the form $a+b\sqrt{2}$

(b) Without any further expansions, explain why

$$(1+\sqrt{2})^4+(1-\sqrt{2})^4=2a$$