(78) *(a)* Write down the expansion of $(1+x)^6$ in ascending powers of x up to and including the term in x^3. [2]

(b) By substituting an appropriate value for x in your expansion in *(a)*, find an approximate value for $0{\cdot}99^6$. Show all your working and give your answer correct to four decimal places. [3]

June 10

(79) Use the binomial theorem to express $\left(1+\sqrt{3}\right)^5$ in the form $a+b\sqrt{3}$, where a, b are integers whose values are to be found. [5]

Jan 11

(80) *(a)* Use the binomial theorem to expand $(3+2x)^4$, simplifying each term of the expansion. [4]

(b) In the binomial expansion of $\left(1+\frac{x}{4}\right)^n$, the coefficient of x^2 is five times the coefficient of x.
Given that n is a positive integer, find the value of n. [4]

June 11

(81) *(a)* Use the binomial theorem to expand $\left(x+\frac{3}{x}\right)^4$, simplifying each term of the expansion. [4]

(b) The coefficient of x^2 in the expansion of $(1+2x)^n$ is 760. Given that n is a positive integer, find the value of n. [3]

Jan 12

(82) Using the binomial theorem, write down and simplify the first four terms in the expansion of $(1-2x)^6$ in ascending powers of x. [4]

June 12

(83) In the binomial expansion of $(a+4x)^5$, where $a \neq 0$, the coefficient of the term in x^2 is twice the coefficient of the term in x. Find the value of a. [4]

Jan 13