1. Binominial expansion

1. a) Using binomial expansion, determine the first five terms of the expansion: $\left(2-\frac{1}{x}\right)^8$ (2mks)

   b) Use the expansion above to evaluate $(1.75)^8$ (2mks)

2. (a) Expand and simplify the binomial expression $(2 + x)^5$ upto the term in x^3. (2mks)

   (b) Use your expression to estimate $(1.97)^5$ correct to 4 s.f. (2mks)

3. (a) Expand $(1 - 3x)^5$
   (b) use your expansion to estimate the value of $(0.997)^5$ Correct to 4 d.p.

4. (i) Expand $\left(5 + \frac{X}{2}\right)^5$ upto the term in X^3
   (ii) Use your expansion to estimate the value of $\left(\frac{11}{2}\right)^6$ correct to one decimal place

5. (a) Expand **$(3 + 2x)^6$** up to the fourth term
   (b) Use your expansion to estimate:- **$(3\sqrt{3})^6$**

6 Two dice are thrown once and their sum noted. Find the probability that the sum is odd

7. Find the length PR in a triangle PQR having PQ = 12cm, QR = 8.4cm angle QPR = 35^o and angle PRQ = 75^o leaving your answer correct to decimal places

8. (a) Use binomial expansion to evaluate $(2+\frac{3}{x})^5$ up to the fifth term

   (b) By expressing 9.5 in the form $(2 + \frac{3}{x})$, use the expansion in (a) above to calculate $(9.5)^5$ correct to 3 d.p

9. Use the expansion of $(x - 0.2)^5$ to find the exact value of 9.8^5

10. Solve for **x** in the equation;
    log (x + 24) = 2 log 3 + log (9 – 2x).

11. Expand $\left(1 + \frac{x}{12}\right)^6$ in ascending powers of **x** upto the fourth term.
    Use the four terms to evaluate $\left(\frac{5}{4}\right)^6$ to 4 decimal places.

12. (a) Expand and simplify the binominal expression $(1 + \frac{1}{2}x)^8$
    (b) Use the expansion up to the fourth term to evaluate $(1.05)^8$ to 2 decimal places

13. Expand $(3 + x)^4$ in ascending powers of x. Use the first three terms of the expansion to evaluate $(3.02)^4$, correct to 3 decimal places