1. Find the (i) common ratio, (ii) 11th term, and (iii) nth term for each of the following geometric sequences:
   a. 2, 4, 8, 16, 32, 64, 128 …
   b. 10, 30, 90, 270, 810 …
   c. 4, 2, 1, 0.5, 0.25 …
   d. 24, 12, 6, 3 …

2. Determine if the sequence is geometric. If it is, find the common ratio.
   a. −1, 6, −36, 216, ...
   b. −1, 1, 4, 8, ...
   c. 4, 16, 36, 64, ...
   d. −3, −15, −75, −375, ...
   e. −2, −4, −8, −16, …
   f. 1, −5, 25, −125, ...

3. Given the explicit formula for a geometric sequence find the first five terms and the 8th term.
   a. $a_n = 3^{n-1}$
   b. $a_n = 2(\frac{1}{4})^{n-1}$
   c. $a_n = -2.5(4^{n-1})$

4. Use the information provided to find the first 5 terms of the sequence and the general formula
   a. $a_1 = 0.8$, r =.3
   b. $a_4 =$, r =.−5
   c. $a_4 = -12$, $a_5 = -6$
   d. $a_1 = 4$, r = 5

5. Find the sum of the series
   $\frac{1}{2} + \frac{1}{4} + \frac{1}{8} + \frac{1}{16} +$

6. Find the sum of the first 10 terms in the series 250, 100, 40, 16 …

7. Find the first term if the sum of the first 4 terms is $\frac{26}{27}$ and $r = \frac{1}{3}$

8. •Show, by use of a geometric series, that 0.3333... is equal to 1/3

9. A ball is dropped vertically. It reaches a height of 2 m on the first bounce. The height of each subsequent bounce is 90% of the previous bounce.
   a. What height does it reach on the 8th bounce?
   b. What is the total vertical distance travelled by the ball between the 1st and 6th time the ball hits the ground?

10. Annie is starting her first job. She will earn a salary of £26,000 in the first year and her salary will increase by 3% every year.
    a. Calculate how much Annie will earn in her 5th year of work.

    Annie spends £24,800 of her earnings in her first year of work. For the next few years, inflation will cause Annie's living expenses to rise by 5%per year.
    b. (i) Calculate the number of years it will be before Annie is spending more than she earns.
    (ii) By how much will Annie's spending be greater than her earnings in that year?

11. Park School started in January 2000 with 100 students. Every full year, there is an increase of 6% in the number of students.
    a. Find the number of students attending Park School in (i) January 2001; (ii) January 2003.
    b. Show that the number of students attending Park School in January 2007 is 150.

    Grove School had 110 students in January 2000. Every full year, the number of students is 10 more than in the previous year.
    c. Find the number of students attending Grove School in January 2003.
    d. Find the year in which the number of students attending Grove School will be first 60 % more than in January 2000.

    Each January, one of these two schools, the one that has more students, is given extra money to spend on sports equipment.
    e. (i) Decide which school gets the money in 2007. Justify your answer. (ii) Find the first year in which Park School will be given this extra money.