

FINITE GEOMETRIC SERIES

1 Find the sum of the first six terms of the series $4 + 6 + 9 + \dots$

2 Find the sum of the first ten terms of the series $8 - 4 + 2 - \dots$

3 The sum of the first ten terms of the series $2 + 2\sqrt{3} + 6 + \dots$ is:

A $242(\sqrt{3} + 1)$ **B** $162\sqrt{3}$ **C** $244(\sqrt{3} + 1)$ **D** $121(\sqrt{3} + 1)$

FINITE GEOMETRIC SERIES

4 Evaluate the series $16 - 8 + 4 - 2 + \dots + \frac{1}{16}$.

7 How many terms of the series $6 + 3 + \frac{3}{2} + \dots$ must be taken to give a sum of $11\frac{13}{16}$? Indicate whether each statement below is a correct or incorrect step in solving this problem.

(a) $a = 6, r = \frac{1}{2}$ (b) $\frac{189}{16} = 12\left(1 - \frac{1}{2^n}\right)$ (c) $\frac{1}{2^n} = 1 + \frac{63}{64}$ (d) $n = 6$

FINITE GEOMETRIC SERIES

8 Find the sum of the first ten terms of the series $\log_{10} 3 + \log_{10} 6 + \log_{10} 12 + \dots$

9 The sum of the first eight terms of a geometric series is seventeen times the sum of its first four terms. Find the common ratio.

FINITE GEOMETRIC SERIES

- 10** An A0-sized sheet of paper is folded along its long side and then cut to create two sheets of A1-sized paper. Each sheet of A1-sized paper is folded along its long side and then cut to create two sheets of A2-sized paper. This process is repeated many times.
- (a) How many sheets of A3-sized paper are created?
 - (b) You have eleven sheets of A0-sized paper. You cut each sheet into one of the eleven different sizes A0, A1, A2, ... A10, creating as many sheets of each size as possible from each sheet of A0.
 - (i) How many sheets of A10 are created?
 - (ii) You stack all the sheets of paper on top of each other, with the A0 sheet on the bottom and the A10 sheets on top. How many sheets of paper are in the pile?
 - (iii) If a pack of 500 sheets of A4 paper is 55 mm thick, approximately how high is the stack of sheets in part (ii)?