

Edexcel Core 2 Sequences and series

Section 2: Geometric sequences and series

Exercise level 2

- The numbers $5x + 1$, $4x - 4$ and $3x - 5$ form three consecutive terms of a geometric sequence.
 - Find the two possible values of x .
 - Find the common ratio corresponding to each possible value of x .
- The infinite recurring decimal $0.\dot{4}\ddot{5} = 0.454545\dots$ can be written as the infinite geometric series $0.45 + 0.0045 + 0.000045 + \dots$
 - Write down the first term and the common ratio of this geometric series.
 - Find the sum to infinity of the series and hence express $0.\dot{4}\ddot{5}$ as an exact fraction in its lowest terms.
- Using the same method as in Question 2, express the recurring decimal $0.\dot{4}\ddot{0}\dot{7}$ as an exact fraction in its lowest terms.
- Aisha works for the same company for 10 years. Her starting salary is £18000, and each year she receives a pay rise of 4%.
 - How much does Aisha earn in the 10th year?
 - How much has she earned in total over the 10 year period?
- A ball is dropped from a height of 2 metres. After each bounce it rebounds to a height 0.8 times the height that it reached after the last bounce.
 - After how many bounces does the ball first rebound to less than 10 cm from the ground?
 - Find the total distance travelled by the ball before it comes to rest.
 - After how many bounces has the ball travelled more than 99% of the total distance it travels before coming to rest?
- A series is $S = 1 - \frac{1}{2} + \frac{1}{4} - \frac{1}{8} + \dots$
 - Find the sum to infinity of the series.
 - Express the odd terms of the series S as a geometric sequence, and find its sum to infinity.
 - Express the even terms of the series S as a geometric sequence, and find its sum to infinity.
 - Show that your solutions in parts (ii) and (iii) confirm your answer in (i).