HIGHER

2.4 Arithmetic and Geometric Sequences and Series: 10-minute Pack

Total Marks

EDEXCEL 4MA1 · Calculator allowed · about 10 minutes

Name: _____ Date: ____ / ____ / _____

Answer ALL questions. Show all your working.

1 A shop reduces the price of an item by £6 each week. The price is £90 at week 1. Treating the weekly prices as an arithmetic sequence, find the price at week 10 and state the units.

(Total for Question 1 is 2 marks)

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2 An arithmetic sequence models weekly savings: first term £20, common difference -£2 (weekly withdrawal). Calculate the sum of the first 10 terms and give the units.

(Total for Question 2 is 2 marks)

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3 Calculate the sum of the first 8 terms of the arithmetic sequence 3, 7, 11, ... using the arithmetic series formula. State your answer as an exact integer.

(Total for Question 3 is 2 marks)

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4 A geometric sequence used to model population has first term a = 6 and common ratio r = 1/3. Find the general nth term $a_n = ar^{n-1}$ and evaluate a_4, giving an exact fractional answer.

(Total for Question 4 is 2 marks)

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Mark scheme · 2.4 Arithmetic and Geometric Sequences and Series: 10-minute Pack

Question 1

uses $a_n = a + (n - 1)d$ with $a = 90$, $d = -6$ and $n = 10$ **M1**

$a_{10} = 90 + 9(-6) = £36$ cao **A1**

Answer: £36

Question 2

uses $S_{10} = 10/2(2*20 + 9*(-2))$ **M1**

$S_{10} = £110$ cao **A1**

Answer: £110

Question 3

uses $S_n = n/2(2a + (n - 1)d)$ with $n = 8$, $a = 3$, $d = 4$ **M1**

$S_8 = 8/2(2*3 + 7*4) = 4(6 + 28) = 136$ cao **A1**

Answer: 136

Question 4

writes $a_n = 6*(1/3)^{n - 1}$ and substitutes $n = 4$ **M1**

$a_4 = 6*(1/3)^3 = 6*(1/27) = 2/9$ cao **A1**

Answer: $a_n = 6*(1/3)^{n-1}$, $a_4 = 2/9$

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