1.4 Pure: Sequences and Series (incl. Binomial Expansion): 10-minute Pack

EDEXCEL 9MA0 · Calculator allowed · about 10 minutes

Total Marks

Name: _____ Date: ____ / ____ / _____

Answer ALL questions. Show all your working.

1 An arithmetic sequence has first term 5 and common difference 3. Find the 10th term.

(Total for Question 1 is 1 mark)

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2 Ferndale Ltd's annual profit forms a geometric sequence. In year 1 the profit is £12000, and the profit grows by 8% each year, so the common ratio is r = 1.08.

(a) Find the profit in year 8, giving your answer to the nearest pound. **(2)**

(b) Find the total profit made over the first 10 years, giving your answer to the nearest pound. **(3)**

(c) State one limitation of using this geometric model to predict Ferndale Ltd's profit far into the future. **(1)**

(Total for Question 2 is 6 marks)

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3 Write down the value of 5C2 (5 choose 2).

(Total for Question 3 is 1 mark)

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Mark scheme · 1.4 Pure: Sequences and Series (incl. Binomial Expansion): 10-minute Pack

Question 1

32 cao **B1**

Answer: 32

Question 2

(a) uses $u_n = a\,r^{n-1}$ with n=8 **M1**

(a) awrt 20566 **A1**

(a) Answer: £20566 (nearest pound)

(b) correct use of $S_n = a(r^n - 1)/(r-1)$ with n=10 **M1**

(b) correct value of r^{10} used (awrt 2.1589) **M1**

(b) awrt 173839 **A1**

(b) Answer: £173839 (nearest pound)

(c) valid limitation, e.g. profit cannot keep growing at a constant percentage rate indefinitely / markets saturate / real profits are affected by unpredictable factors not captured by a constant ratio **B1**

(c) Answer: e.g. constant 8% growth is unrealistic long-term as markets saturate.

Question 3

10 cao **B1**

Answer: 10

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