4.1 Compound Interest and Depreciation: 10-minute Pack

Total Marks

EDEXCEL 1MA1 · Calculator allowed · about 10 minutes

Name: _____ Date: ____ / ____ / _____

Answer ALL questions. Show all your working.

1 Start with £250. It is increased by 8% and then decreased by 8%. Work out the final amount to 2 decimal places.

(Total for Question 1 is 2 marks)

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2 A pair of trainers cost £400. After 2 years with compound interest they are worth £484. Work out the annual percentage increase.

(Total for Question 2 is 2 marks)

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3 Sarah invests £500 at 4% compound interest. Find how many years it takes for her investment to reach £608. Give your answer to the nearest whole year. Use your calculator and show the method.

(Total for Question 3 is 3 marks)

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4 £600 is invested at a rate of 4% per year compound interest for 5 years. Calculate the total interest earned, giving your answer to the nearest penny.

(Total for Question 4 is 2 marks)

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Mark scheme · 4.1 Compound Interest and Depreciation: 10-minute Pack

Question 1

method: 250 x 1.08 x 0.92	**M1**
£248.40 cao (to 2 dp)	**A1**

Answer:£248.40

Working check: 250 x 1.08 = 270.00; 270.00 x 0.92 = 248.40.

Question 2

method: find factor 484/400 = 1.21, then find annual factor $\sqrt{1.21}$ or $1.21^{1/2}$	**M1**
10% cao	**A1**

Answer:10%

Working check: overall factor = 484/400 = 1.21. Annual factor = $\sqrt{1.21}$ = 1.1 so rate = 10%.

Question 3

method: set up $(1.04)^n$ = 608/500 = 1.216	**M1**
use logs or calculator to find n: n = ln(1.216)/ln(1.04) or equivalent	**M1**
5 years cao (rounded to nearest whole year)	**A1**

Answer:5 years (to nearest whole year)

Working check: 608/500 = 1.216. n = ln(1.216)/ln(1.04) = 4.99 -> 5 years (nearest whole year).

Question 4

600 x 1.04^5 oe, or a correct year-by-year method, to find the total value	**M1**
129.99 (pounds) awrt for the interest earned	**A1**

Answer: £129.99

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