Test - Iteration, growth and decay

Year: Year 11 · Duration: 45 minutes · /20

Name:	Date:	**Mark: /20**

Question	1	2	3	4	5	Total
marks	4	4	4	4	4	**20**
Mark						

Show your working.

Question 1 (4 marks)

Question 1 – Compound interest

Joe invests £3 500 at 2.8% compound interest per year for 3 years.

a. Work out the value of the investment after 3 years. (3 marks)
b. Work out the total interest. (1 mark)

Question 2 (4 marks)

Question 2 – Depreciation

A van is worth £24 000 and its value falls by 15% each year.

a. Work out the value after 4 years. (3 marks)
b. Write the percentage fall over 4 years to 1 decimal place. (1 mark)

Question 3 (4 marks)

Question 3 – Reverse percentage

After a 12% increase the price of a ticket is £67.20.

a. Work out the original price. (2 marks)
b. The price was then reduced by 12%. Does it return to the original price? Explain with numbers. (2 marks)

Question 4 (4 marks)

Question 4 – Iteration (Higher)

Use $x_{n+1} = \sqrt[3]{x_n + 3}$ with $x_0 = 1.5$ to solve $x^3 = x + 3$.

a. Work out x_1, x_2 and x_3 to 3 decimal places. (3 marks)
b. Show that the equation has a root between 1.6 and 1.7. (1 mark)

Question 5 (4 marks)

Question 5 – Problem: simple and compound

Hana invests £800 at 6% per year for 3 years. Her brother invests £800 at 6% simple interest.

a. Work out the amount for Hana (compound interest). (2 marks)
b. Work out the amount for her brother and the difference. (2 marks)