MME

GCSE MATHEMATICS
AQA | Edexcel | OCR | WJEC

Compound Growth And Decay

Please write clearly in block capitals

Forename:
Surname:

Materials

For this paper you must have:
• mathematical instruments

You *can* use a calculator.

Instructions

• Use black ink or black ball-point pen. Draw diagrams in pencil.
• Fill in the boxes at the top of this page.
• Answer all questions.
• You must answer the questions in the spaces provided. Do not write outside the box around each page or on blank pages.
• Do all rough work in this book. Cross through any work you do not want to be marked.

Information

• The marks for questions are shown in brackets.
• You may ask for graph paper, tracing paper and more answer paper. These must be tagged securely to this answer book.

Advice

• In all calculations, show clearly how you work out your answer.

1(a) Stephanie is given a 7% pay rise. She is currently earning £24 000 a year.

Circle the calculation which works out her new salary.

[1 mark]

$$24000 \times 0.07 \qquad 24000 \times 1.07 \qquad 24000 \div 1.07 \qquad 24000 \div 1.07$$

1(b) Assuming Stephanie gets the same pay rise every year, circle the calculation which calculates Stephanie's salary after 5 years of working there.

[1 mark]

$$1.07 \times 24000^5 \qquad 24000 \times 5^{1.07} \qquad 24000 \times 1.07^5 \qquad 24000^{1.07} \times 5$$

1(c) James starts on a salary of £23500. He gets a raise of 6% every year.

Write down the calculation James would use to calculate his salary after 9 years.

[1 mark]

Answer _____

Turn over for next question

3

Turn over ▶

2(a)   A car loses 4% of its value every year.

In 2019, the car is worth £12,000.

How much will the car be worth in 2024?

[2 marks]

£ _____

2(b)   How much was the car worth in 2018 assuming its rate of loss was consistent?

[2 marks]

£ _____

4

Turn over ►

3 Rebecca invests £1000 at a compound interest rate of $R\%$ per annum.

The value, V, of this investment after n years is given by the formula:

$$V = 1000 \times 1.065^n$$

3(a) Write down the value of R.

[1 mark]

Answer _____

3(b) What will the value of her investment be in $7\ \text{years}$ time?

[2 marks]

Answer _____

3(c) Rebecca wants to double her money.

How long will she have to wait?

[1 mark]

Answer _____

4

4 In 2016, there were 10 000 electric cars in the United Kingdom.

In 2019, there were 150 000 electric cars.

The percentage increase of electric cars, year on year is the same.

Assuming the percentage increase remains the same, how many electric cars would you expect there to be in 2021?

[5 marks]

Answer _____

GCSE Maths Revision Guide

⊘ GCSE Maths Course 9-1 Revision Guide

⊘ Exam Questions Included

⊘ All exam boards - AQA, OCR, Edexcel, WJEC

⊘ Suitable for higher and foundation tiers

Get it at mme.la/guide or scan the barcode

5

Turn over ▶

5   The number of bacteria in a petri dish grew exponentially.

There was 500 in the original bacterial population.

After 5 hours, the number increased to 121500.

Calculate how many bacteria there was after 8 hours.

[3 marks]

_____

_____

_____

_____

_____

_____

_____

_____

Answer _____

Turn over for next question

Turn over ►

3

Turn over ▶

6   A sunflower grows 12% taller each week.

Currently the sunflower is 2 m tall.

Chris estimates the height after 5 weeks using the following calculation:

$$12\% \text{ of } 2 \text{ m is } 24 \text{ cm}$$

$$5 \times 24 \text{ cm } = 120 \text{ cm}$$

$$\text{So the plant is } 200 \text{ cm } + 120 \text{ cm } = 320 \text{ cm}$$

6(a)   Is Chris' estimate an over-estimate or under-estimate?

[1 mark]

Answer _____

6(b)   What is the actual height of the Sunflower after 5 weeks.

[2 marks]

_____

_____

_____

_____

_____

Answer _____

3

Turn over ▶

7   £4000 is invested in a fund which earns 11% compound return per year.

After 5 years, you remove half the balance, leaving the remainder in the fund.

How much would the fund be worth after 10 years.

[4 marks]

Answer _____

End of Questions

END