

1MA1 Higher themed papers: Compound interest

Write your name here			
Surname	Other names		
Centre Number		Candidate Number	
Pearson Edexcel Level 1/Level 2 GCSE (9–1)			
Mathematics Compound interest			
		Paper Reference 1MA1	
You must have: Ruler graduated in centimetres and millimetres, protractor, pair of compasses, pen, HB pencil, eraser, calculator. Tracing paper may be used.			Total Marks

Instructions

- Use **black** ink or ball-point pen.
- **Fill in the boxes** at the top of this page with your name, centre number and candidate number.
- Answer **all** questions.
- Answer the questions in the spaces provided – *there may be more space than you need.*
- You must **show all your working.**
- Diagrams are **NOT** accurately drawn, unless otherwise indicated.
- If your calculator does not have a π button, take the value of π to be 3.142 unless the question instructs otherwise.

Information

- The total mark for this paper is **34**. There are **9** questions.
- Questions have been arranged in an ascending order of mean difficulty, as found by all students in the June 2017–November 2019 examinations.
- The marks for **each** question are shown in brackets – *use this as a guide as to how much time to spend on each question.*

Advice

- Read each question carefully before you start to answer it.
- Keep an eye on the time.
- Try to answer every question.
- Check your answers if you have time at the end.

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- 1 Anil wants to invest £25 000 for 3 years in a bank.

<p>Personal Bank</p> <p>Compound Interest</p> <p>2% for each year</p>
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<p>Secure Bank</p> <p>Compound Interest</p> <p>4.3% for the first year</p> <p>0.9% for each extra year</p>

Which bank will give Anil the most interest at the end of 3 years?
You must show all your working.

(Total for Question 1 is 3 marks)

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- 2 Katy invests £200 000 in a savings account for 4 years.
The account pays compound interest at a rate of 1.5 % per annum.
Calculate the total amount of interest Katy will get at the end of 4 years.

£.....

(Total for Question 2 is 3 marks)

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3 Jean invests £12 000 in an account paying compound interest for 2 years.

In the first year the rate of interest is $x\%$

At the end of the first year the value of Jean's investment is £12 336

In the second year the rate of interest is $\frac{x}{2}\%$

What is the value of Jean's investment at the end of 2 years?

£.....

(Total for Question 3 is 4 marks)

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- 4** Marie invests £8000 in an account for one year.
At the end of the year, interest is added to her account.
Marie pays tax on this interest at a rate of 20%
She pays £28.80 tax.
Work out the percentage interest rate for the account.

..... %

(Total for Question 4 is 3 marks)

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- 5** Sakira invested £3550 in a savings account for 3 years.
She was paid 2.6% per annum compound interest for each of the first 2 years.
She was paid $R\%$ interest for the third year.
Sakira had £3819.21 in her savings account at the end of the 3 years.
Work out the value of R .
Give your answer correct to 1 decimal place.

.....
(Total for Question 5 is 3 marks)

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- 6** Northern Bank has two types of account.
Both accounts pay compound interest.

<p>Cash savings account Interest 2.5% per annum</p>
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<p>Shares account Interest 3.5% per annum</p>
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Ali invests £2000 in the cash savings account.
Ben invests £1600 in the shares account.

- (a) Work out who will get the most interest by the end of 3 years.
You must show all your working.

(4)

In the 3rd year the rate of interest for the shares account is changed to 4% per annum.

- (b) Does this affect who will get the most interest by the end of 3 years?
Give a reason for your answer.

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(1)

(Total for Question 6 is 5 marks)

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- 7** Jack bought a new boat for £12 500.

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The value, £ V , of Jack's boat at the end of n years is given by the formula

$$V = 12\,500 \times (0.85)^n$$

- (a) At the end of how many years was the value of Jack's boat first less than 50% of the value of the boat when it was new?

.....
(2)

A savings account pays interest at a rate of $R\%$ per year.
Jack invests £5500 in the account for one year.

At the end of the year, Jack pays tax on the interest at a rate of 40%.
After paying tax, he gets £79.20.

- (b) Work out the value of R .

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(3)

(Total for Question 7 is 5 marks)

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8 The number of fish in a lake decreases by x % each year.

Given that the number of fish halves in 8 years, work out the value of x .
Give your answer correct to 1 decimal place.

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(Total for Question 8 is 3 marks)

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- 9** Natasha pays £13 995 for a car.
Lauren pays £14 495 for a car.

Assume that

the rate of depreciation for Natasha's car is 12% per annum
and the rate of depreciation for Lauren's car is 13% per annum.

- (a) Work out whose car will have the greater value at the end of 3 years?
You must show all your working.

(4)

The rate of depreciation assumed for Natasha's car was too low.

- (b) How does this affect the value of her car at the end of 3 years?

.....
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(1)

(Total for Question 9 is 5 marks)

TOTAL MARKS FOR PAPER: 34