## Questions

**Q1.**

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 = 4 marks)**

(**Q09 1MA1/2H, June 2018**)

**Q2.**

Bill wants to increase 150 by 3%
He writes down

$$150 \times 1.3 = 195$$

Bill's method is wrong.

(a) Explain why.

.....

.....

**(1)**

Sally wants to decrease 150 by 3%

(b) Complete this statement to show how Sally can decrease 150 by 3%

150 × ..... = .....

**(1)**

**(Total for question = 2 marks)**

(**Q18 1MA1/2F, Nov 2018**)

**Q3.**

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

| **Cash savings account** |
| --- |
| Interest |
| 2.5% per annum |

| **Shares account** |
| --- |
| Interest |
| 3.5% per annum |

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 = 5 marks)**

(**Q23 1MA1/2F, Nov 2018**)

**Q4.**

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

| Cash savings account<br>Interest<br>2.5% per annum | Shares account<br>Interest<br>3.5% per annum |
|---|---|

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 = 5 marks)**

(**Q04 1MA1/2H, Nov 2018**)

**Q5.**

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 = 3 marks)**

(**Q25 1MA1/3F, June 2019**)

**Q6.**

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 = 3 marks)**

(**Q02 1MA1/3H, June 2019**)

**Q7.**

Louise invests £*x* in Better Investments for 3 years.
Sadiq invests £*x* in County Bank for 3 years.

| **Better Investments** |
| --- |
| Compound Interest |
| 2.5% per annum |

| **County Bank** |
| --- |
| Compound Interest |
| 2% per annum for the first two years<br>3.5% per annum for each extra year |

At the end of the 3 years, the value of Louise's investment is £344 605

Work out the value of Sadiq's investment at the end of the 3 years.

£ .....

**(Total for question = 4 marks)**

(**Q10 1MA1/2H, Nov 2021**)

**Q8.**

Ella invests £7000 for 2 years in an account paying compound interest.

In the first year, the rate of interest is 3%
In the second year, the rate of interest is 1.5%

Work out the value of Ella's investment at the end of 2 years.

£ .....

**(Total for question = 3 marks)**

(**Q06 1MA1/2H, Nov 2022**)

**Q9.**

Peter invests £4500 in a savings account for 3 years.

He gets 1.8% per year compound interest.

Work out the total amount of interest Peter gets.

£ .....

**(Total for question = 3 marks)**

(**Q26 1MA1/3F, Nov 2024**)

**Q10.**

Rudi invests £4500 in a savings account.

He gets compound interest at a rate of

2.4% for the first year
1.8% for each extra year.

(a) Work out the value of Rudi's investment at the end of 3 years.

£ .....

**(3)**

Bruna buys a car for £7500

The value of the car depreciates by $x$% each year.
At the end of 2 years the value of the car is £4107

(b) Work out the value of $x$.

$x$ = .....

**(3)**

**(Total for question = 6 marks)**

(**Q12 1MA1/3H, Nov 2024**)

**Q11.**

Tariq buys a laptop.

He gets a discount of 5% off the normal price.
Tariq pays £551 for the laptop.

(a) Work out the normal price of the laptop.

£ .....

**(2)**

Joan invests £6000 in a savings account.
The savings account pays compound interest at a rate of

2.4% for the first year
1.7% for each extra year.

(b) Work out the value of Joan's investment at the end of 3 years.

£ .....

**(3)**

**(Total for question = 5 marks)**

(**Q08 1MA1/2H, Nov 2020**)

**Q12.**

Andrew invests £4500 in a savings account for 2 years.
The account pays compound interest at a rate of 3.4% per year.

Calculate how much Andrew has in this savings account at the end of the 2 years.

Â£ .....

**(Total for question = 2 marks)**

(**Q24 1MA1/2F, Nov 2023**)

**Q13.**

Andrew invests £4500 in a savings account for 2 years.
The account pays compound interest at a rate of 3.4% per year.

Calculate how much Andrew has in this savings account at the end of the 2 years.

£ .....

**(Total for question = 2 marks)**

(**Q03 1MA1/2H, Nov 2023**)

**Q14.**

The number of rabbits on a farm at the end of month $n$ is $P_n$
The number of rabbits at the end of the next month is given by $P_{n+1} = 1.2P_n - 50$

At the end of March there are 200 rabbits on the farm.

(a) Work out how many rabbits there will be on the farm at the end of June.

.....

**(3)**

(b) Considering your results in part (a), suggest what will happen to the number of rabbits on the farm after a long time.

.....

.....

**(1)**

**(Total for question = 4 marks)**

(**Q22 1MA1/2H, Nov 2019**)

**Q15.**

Ella invests £7000 for 2 years in an account paying compound interest.

In the first year, the rate of interest is 3%
In the second year, the rate of interest is 1.5%

Work out the value of Ella's investment at the end of 2 years.



£ .....

**(Total for question = 3 marks)**

(**Q23 1MA1/2F, Nov 2022**)

**Q16.**

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.



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**(Total for question = 3 marks)**

(**Q13 1MA1/2H, Nov 2019**)

**Q17.**

Anil wants to invest £25000 for 3 years in a bank.

| **Personal Bank** | **Secure Bank** |
| --- | --- |
| Compound Interest | Compound Interest |
| 2% for each year | 4.3% for the first year<br>0.9% for each extra year |

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



**(Total for question = 3 marks)**

(**Q22 1MA1/2F, June 2017**)

**Q18.**

Anil wants to invest £25000 for 3 years in a bank.

| **Personal Bank** | **Secure Bank** |
| --- | --- |
| Compound Interest | Compound Interest |
| 2% for each year | 4.3% for the first year<br>0.9% for each extra year |

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



**(Total for question = 3 marks)**

(**Q06 1MA1/2H, June 2017**)

**Q19.**

Naoby invests £6000 for 5 years.
The investment gets compound interest of $x$% per annum.

At the end of 5 years the investment is worth £8029.35

Work out the value of $x$.



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**(Total for question = 3 marks)**

(**Q10 1MA1/3H, June 2017**)

**Q20.**

Jack bought a new boat for £12 500

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 $R$.

.....

**(3)**

**(Total for question = 5 marks)**

(**Q09 1MA1/3H, Nov 2017**)

**Q21.**

At the beginning of 2009, Mr Veale bought a company.
The value of the company was £50 000

Each year the value of the company increased by 2%.

(a) Calculate the value of the company at the beginning of 2017

Give your answer correct to the nearest £100

£ .....

**(2)**

At the beginning of 2009 the value of a different company was £250 000
In 6 years the value of this company increased to £325 000

This is equivalent to an increase of $x$% each year.

(b) Find the value of $x$.

Give your answer correct to 2 significant figures.

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**(3)**

**(Total for question = 5 marks)**

(**Q13 1MA1/2H, Nov 2017**)