| Name ANSWERS | Class |
|---|---|

MATHS TEACHER HUB

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# Interest and depreciation

## (9 – 1) Topic booklet

# Foundation

**These questions have been collated from previous years GCSE Mathematics papers.**

| **You must have:** Ruler graduated in centimetres and millimetres, protractor, pair of compasses, pen, HB pencil, eraser. | 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.*
- Diagrams are NOT accurately drawn, unless otherwise indicated.
- You must **show all your working out.**
- If the question is a **1F** question you are not allowed to use a calculator.
- If the question is a **2F** or a **3F** question, you may use a calculator to help you answer.

### Information

- 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.

**Answer ALL questions**
**Write your answers in the space provided.**
**You must write down all the stages in your working.**

**13** Abi invests £500 for 4 years in a bank account.
The account pays simple interest at a rate of 2.3% per year.

Work out the total amount of interest Abi has got at the end of 4 years.

£11.50
500 × 1·023 = 511·50

500 + 11·50
+ 11·50
+ 11·50
+ 11·50 = 546

£ 546

Specimen 2 – Paper 2F **(Total for Question 13 is 3 marks)**

**15** Remi invests £600 for 5 years in a savings account.
By the end of the 5 years he has received a total of £75 simple interest.

Work out the annual rate of simple interest.

£75 / 5 years = £15 each year.

600 × [x] = 615

[1·025] = 615 / 600

2·5 %

November 2018 – Paper 2F **(Total for Question 15 is 3 marks)**

**15** £3500 is invested in a bank for 6 years.
The bank pays **simple** interest at a rate of 2.5% per year.

Work out the total amount of simple interest paid.

87.5

3500 × 1.025 = 3587.50

3500 + 87.50
+ 87.50
+ 87.50
+ 87.50
+ 87.50
+ 87.50 = 4025

£ 4525



**(Total for Question 15 is 2 marks)**

**16** Maria invests £4500 in a savings account for 3 years.
The account pays simple interest at a rate of 1.8% per year.

Work out the total amount of interest Maria gets by the end of the 3 years.

81

4500 × 1·018 = 4581

4500 + 81
+81
+81 = 4743

£ 243

November 2019 – Paper 2F **(Total for Question 16 is 2 marks)**

**19** Jenny invests £3000 for 6 years at $y$% simple interest per year.

At the end of the 6 years, Jenny has received a total of £450 in interest.

Work out the value of $y$.

$\frac{£450}{6 \text{ years}}$ = £75 each year

3000 × ☐ = 3075

1.025 = $\frac{3075}{3000}$

$y$ = 2.5

June 2023 – Paper 3F **(Total for Question 19 is 3 marks)**

**22** Anil wants to invest £25 000 for 3 years in a bank.

| **Personal Bank** | **Secure Bank** |
|---|---|
| Compound Interest<br>2% for each year | Compound Interest<br>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.

$25000 \times 1.02^3$

$= £26530.20$

$25000 \times 1.043 = 26075$

$26075 \times 1.009^2$

$= £26546.46$

Secure bank would give the most interest after 3 years.



**(Total for Question 22 is 3 marks)**

**23** 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.

$7000 \times 1.03 = 7210$

$7210 \times 1.015 = 7318.15$

£ 7318.15



**(Total for Question 23 is 3 marks)**

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

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

Ali

$£2000 \times 1.025^3$

$= £2153.78$

$2153.75 - 2000$

$= £153.75$

Ben

$£1600 \times 1.035^3$

$= £1773.95$

$1773.95 - 1600$

$£173.95$

Ben will get the most interest at the end of 3 years.

**(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.

No, Ben would still get more interest.

**(1)**



**(Total for Question 23 is 5 marks)**

**24** 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.

$4500 \times 1.034^2 = 4811.202$

£ 4811.20

November 2023 – Paper 2F **(Total for Question 24 is 2 marks)**

**25** Toby invested £7500 for 2 years in a savings account.
He was paid 4% per annum compound interest.

How much money did Toby have in his savings account at the end of 2 years?

$7500 \times 1.04^2 = 8112$

£ 8112

Specimen 1 – Paper 2F **(Total for Question 25 is 2 marks)**

**25** 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.

$200000 \times 1.015^4 = 212272.71$

$212272.71 - 200000$

$= 12272.71$

£ 12272.71

June 2019 – Paper 3F **(Total for Question 25 is 3 marks)**

**26** A new phone cost £679
The value of the phone decreases at a rate of 4% per year.

Work out the value of the phone at the end of 3 years.

$679 \times 0.96^3 = 600.74$

£ 600.74

June 2022 – Paper 2F **(Total for Question 26 is 3 marks)**

**27** Tamsin buys a house with a value of £150 000
The value of Tamsin's house increases by 4% each year.

Rachel buys a house with a value of £160 000
The value of Rachel's house increases by 1.5% each year.

At the end of 2 years, whose house has the greater value?
You must show how you get your answer.

Tamsin $£150000 \times 1.04^2 = £162240$

Rachel $£160000 \times 1.015^2 = £164836$

Rachels house has a greater value after 2 years.



**(Total for Question 27 is 4 marks)**