

Programme 1 Calculating Interest

Worksheet 1: Programme Questions

1. Jamie says there are two types of interest. What are they?

2. Katie calculates the simple interest for £50 000 invested over 3 years at 10%. How much interest was earned?

3. How much is the compound interest for this amount, calculated by Jamie?

4. What is the difference in pounds between the two types of interest?

5. What does Richard multiply by in his short cut calculation?

6. In this week's Tick or Trash £500 is invested for 2 years. What is the compound interest rate in the question?

7. As the presenters explain about borrowing and lending, what colour writing do they each have on their T-shirts?

8. Katie calculates how a debt of £85 million would grow with an interest rate of 5%. How many years does she do this for?

9. How does Katie rewrite the calculation using index form?

10. How big is the debt after 10 years?

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Worksheet 2: Tick or Trash

Here are some questions and answers (by Students A and B) on calculating interest. Decide which answers to Tick (correct) and which to Trash (incorrect). Give reasons.

Question 1

£5000 is invested for 3 years at 4% per annum **compound** interest. Work out the **total interest** earned over the three years.

Student A Answer

$$\text{Year 1: } 5000 \times 1.04 = \text{£}5200$$

$$\text{Year 2: } 5200 \times 1.04 = \text{£}5408$$

$$\text{Year 3: } 5408 \times 1.04 = \text{£}5624.32$$

$$\begin{aligned} \text{Total Interest} &= \text{£}5624.32 - \text{£}5000 \\ &= \text{£}624.32 \end{aligned}$$

Student B Answer

$$5000 \times 1.04 \times 1.04 \times 1.04$$

$$= 5000 \times (1.04)^3$$

$$= \text{£}5624.32$$

After 3 years it has earned £5624.32

Question 2

By the end of each year the value of a television has fallen by 12% of its value at the start of that year. The value of a television was £423 at the start of its first year. Work out the value of the television at the end of the **third** year. Give your answer to the nearest penny.

Student A Answer

$$\text{1st year } 423 \times 0.88 = \text{£}372.24$$

$$\text{2nd year } 372 \times 0.88 = \text{£}327.36$$

$$\text{3rd year } 327 \times 0.88 = \text{£}287.76$$

The TV is worth £288

Student B Answer

$$\text{1st year } 423 \times 0.12 = 50.76$$

$$\text{New value } 423 - 50.76 = \text{£}372.24$$

$$\text{2nd year } 372.24 \times 0.12 = 44.6688$$

$$\text{New value } 372.24 - 44.6688 = 327.5712$$

$$\text{3rd year } 327.5712 \times 0.12 = 39.308544$$

$$\text{New value } 327.5712 - 39.308544 = \text{£}288.26266$$

The TV is worth £288.26 after 3 years

Maths 4 Real 2

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Worksheet 3: Exam Practice Questions (Edexcel)

Question 1

National curriculum reference: N4a Date: June 1997 Paper: 3

Shreena put £484 in a new savings account.

At the end of every year, interest of 4.3% was added to the amount in her savings account at the start of that year.

Calculate the total amount in Shreena's savings account at the end of 2 years.

[5]

Question 2

National curriculum reference: N4a Date: June 1995 Paper: 1

Astrid bought a motor car for £10 000 on the First of January 1996.

It lost 15% of its value during 1996 and then 10% during every year from the

First of January 1997. Work out the value of the car on the First of January 1999.

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Question 3

National curriculum reference: N4a Date: June 1998 Paper: 3

£500 is invested for 2 years at 6% per annum compound interest.

(a) Work out the total interest earned over the 2 years. (3 marks)

£250 is invested for 3 years at 7% per annum compound interest.

(b) By what single number must £250 be multiplied to obtain the total amount at the end of the 3 years? (1 mark)

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Question 4

National curriculum reference: N4b Date: November 1998 Paper: 3

A shop is having a sale. Each day, prices are reduced by 20% of the price on the previous day.

Before the start of the sale, the price of a television is £450.

On the first day of the sale, the price is reduced by 20%.

(a) Work out the price of the television on
i) the first day of the sale,
ii) the third day of the sale. (5 marks)

On the first day of the sale, the price of a cooker is £300.

(b) Work out the price of the cooker before the start of the sale. (2 marks)

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Worksheet 3: Exam Practice Questions (Edexcel)

Question 5

National curriculum reference: N4a Date: June 1999 Paper: 6

Ben asked 50 people how much they paid for a new computer.
The results are shown in this frequency table.

Price (£P)	Number of Computers		
$0 < P \leq 500$	7		
$500 < P \leq 1000$	20		
$1000 < P \leq 1500$	11		
$1500 < P \leq 2000$	9		
$2000 < P \leq 2500$	3		

(a) Calculate an estimate for the mean price paid for a new computer. (4 marks)

By the end of the year, the value of a computer falls by 15% of its value at the start of the year.
A new computer has a value of £1200.

(b) Calculate the value by the end of the third year. (4 marks)

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Total = 29