

Simple & Compound Interest, Growth & Decay

Simple Interest / Compound Interest / Depreciation / Exponential Growth & Decay

Easy (7 questions)	/20
Medium (10 questions)	/30
Hard (12 questions)	/41
Total Marks	/91

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Easy Questions

- 1 Eric invests £2800 in a savings account for 5 years.
The account pays simple interest at a rate of 1.5% per year.

Work out the total amount of interest Eric gets by the end of the 5 years.

(2 marks)

- 2 SaveBest Bank pays 2.4% compound interest on its basic savings account.

Alexa invests £600 in the savings account.

Calculate the value of Alexa's investment after 2 years.

(3 marks)

- 3 Charlene invests £7800 into a bond which pays 6.2% compound interest.

Work out the total interest that will have been paid on the investment by the end of 3 years.

Give your answer to the nearest pound.

(3 marks)

- 4 Ethan invests \$6400 at a rate of 2.6% per year simple interest.

Calculate the total value of his investment at the end of 3 years.

\$

(3 marks)

- 5 Jamie invests \$12000 at a rate of 5% per year compound interest.

Calculate the value of his investment at the end of 3 years.

\$

(3 marks)

- 6 Jan invests \$800 at a rate of 3% per year simple interest.

Calculate the value of her investment at the end of 4 years.

\$

(3 marks)

- 7 Sam invests \$4500 into a savings account which pays 3.5% compound interest each year.

Find the total amount in the account after 6 years.

(3 marks)

Medium Questions

- 1** Lukas invests £350 in a savings account.
At the end of 4 years he has received a total of £53.20 simple interest.

Work out the annual rate of simple interest.

(3 marks)

- 2** A city has a population of 215 000 people.

The population of the city increases by 1.5% each year.

What is the population of the city after 3 years?

(3 marks)

- 3** The value of a new TV is £850.
The value of the TV depreciates by 12% each year.

Work out the value of the TV after 2 years.

(3 marks)

- 4 Trina invests \$16000 at a rate of 5% per year compound interest.

Work out the value of her investment at the end of 4 years.

\$.....

(2 marks)

- 5 Gino invests \$6000 for 5 years at a rate of 1.2% per year compound interest.

Calculate the value of his investment at the end of the 5 years. Give your answer correct to the nearest dollar.

\$

(3 marks)

- 6 Lucia invests \$5000 at a rate of 4.5% per year compound interest.

Calculate the value of her investment at the end of 7 years.

\$

(2 marks)

- 7 Ella invests \$4000 for 3 years at a rate of 1.2% per year compound interest.

Calculate the value of her investment at the end of the 3 years.

\$.....

(3 marks)

- 8 Javier invests \$750 for 3 years at a rate of 1.8% per year compound interest.

Calculate the value of his investment at the end of the 3 years.

\$

(3 marks)

- 9 Hawa invests \$750 at a rate of 3.5% per year compound interest.

Calculate the value of his investment at the end of 3 years.

\$

(3 marks)

- 10 (a) Santandave have two types of accounts.

Both accounts pay compound interest.

Cash Savings Account	Shares Account
Interest	Interest
2.3% per annum	3.7% per annum

Aimee invests £1500 in the Cash Savings Account.

Jade invests £1000 in the Shares Account.

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

(4 marks)

(b) In the third year, the rate of interest for the shares account is changed to 5% per annum.

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

(1 mark)

Hard Questions

- 1 Sarah invests £16 000 in a savings account.
She gets 2.5% compound interest per annum.

After n years Sarah has £17 230.25

Work out n .

(2 marks)

- 2 Two samples of bacteria are prepared in a laboratory.

Sample A contains 100 bacteria.

The number of bacteria in the sample increase by 60% each hour.

Sample B contains 3000 bacteria.

The number of bacteria in the sample decreases at a rate of 19% per hour.

After 5 hours, which sample contains more bacteria.

You must show all your working.

(3 marks)

- 3 Heather wants to invest £35 000 in a bank for 4 years.

Bank A offers 3% compound interest.

Bank B offers 5.1% interest for the first year and 2.5% compound interest for the remaining 3 years.

Which bank will give Heather the most interest at the end of the 4 years.

You must show all your working.

(3 marks)

- 4 \$12000 is invested at a rate of $n\%$ per year simple interest.
At the end of 3 years the value of the investment is \$12900.

Find the value of n .

$n = \dots\dots\dots$

(3 marks)

- 5 Sonia wants to invest \$5000 for 6 years.

Bank A pays compound interest at a rate of 3.5% per year.

Bank B increases the \$5000 by 22% at the end of 6 years.

Which bank will give Sonia the most money at the end of 6 years and by how much?
You must show all your working.

Bank A

Bank B

Bank will give \$ more money.

(5 marks)

- 6** Riya invests \$30000 at a rate of 2.5% per year compound interest.

Calculate the value of her investment at the end of 7 years.
Give your answer correct to the nearest dollar.

\$

(3 marks)

7 (a) Six years ago a farmer invested \$3750 at a rate of 4% per year compound interest.

i) Calculate the total value of his investment after the 6 years. Give your answer correct to the nearest dollar.

\$ [3]

ii) The farmer wants to spend his investment on buying goats. Goats cost \$126 each.

Work out the maximum number of goats he can buy **and** the amount of money left over.

Number of goats

Amount of money left over \$ [4]

(7 marks)

(b) The farmer grows carrots.

In 2018 the selling price for carrots was \$96 per tonne.

In 2019 this selling price increased by 18%.

Work out the increase in the selling price from 2018 to 2019.

\$

(1 mark)

- 8 Paula invests \$600 at a rate of $r\%$ per year simple interest.
At the end of 10 years, the total interest earned is \$90.

Find the value of r .

$r = \dots\dots\dots$

(2 marks)

- 9 \$8400 is invested for 2 years at a rate of 3.5% per year compound interest.
Work out the total amount of interest earned by the end of the 2 years.

\$.....

(3 marks)

- 10 Harry invests \$800 for 2 years at a rate of 3% per year compound interest.

Calculate the amount of interest he receives at the end of the 2 years.

\$

(3 marks)

- 11 Tomas borrows \$5000 for 3 years at a rate of 2.5% per year compound interest.
He pays back the whole amount, with interest, at the end of 3 years.

Calculate the total amount of money he pays back at the end of the 3 years.

\$

(3 marks)

12 Cody is aiming to save \$2000 in total.

They invest \$1750 in a savings account which pays 6.5% interest each year.

How many years will it take for the balance in the account to reach at least \$2000?

(3 marks)