

GCSE Edexcel Math 1MA1

Compound Interest

Answers

"We will help you to achieve A Star"



He gets 2.5% per annum compound interest.

Liam invests £6200 for 3 years in a savings account. KEEP MULTIPLYING

How much money will Liam have in his savings account at the end of 3 years?

PERCENTAGE INCREASES (THE BEST WAY!)

TO INCREASE BY, SAY, 3%.

THINK: WE WANT 103%. SO WE 102.59.

MULTIPLY BY 103 (=1.03)

MULTIPLIER

Total Africa 34RS = 6200 x 6025 x 1.025 x 1.025

 $= 6200 \times 1.025^{3}$ = 26676.72



This notice was in a car magazine.

Most new cars lose more than half of their value in the first three years

Paul bought a new car.

The value of the car was £15 000

-> × = = \$7500

In the first year, the value of the car depreciated by 23%.

After the first year, the value of the car depreciated by 18% each year.

Work out if Paul's car lost more than half of its value by the end of three years.

1500000.77 20.82

= {7766.22

THAN 77500.

SO NO IT DION'T LOSE MONE THAN

HARF ITS VALUE

PERCENTAGE DECREASES (THE BEST WAY!) VALUE AFTER BY, SAY, BY, SAY, BY, SO WE MULTIPLY BY 97 (=0.97)

×0.82 TO DEREASE BY 23/

SO MULTIPLY BY 77 (=0-77)

TO DECREASE By 18%.

WE WANT 82%.

SO MULTIPLY BY 82 (=0.82)



Derek invests £154 500 for 2 years at 4% per year compound interest. "KEEP MULTIPLYING"

(b) Work out the value of the investment at the end of 2 years.

PERCENTAGE INCREASES (THE BEST WAY!)

TO INCREASE BY, SAY, 3%.

THINK: WE WANT 103%. SO WE 104%.

MULTIPLY BY 103 (=1.03) MULTIPLE = 1.04

VARUE AFTER 24EARS = 154500 × 1.04 × 1.04

A

1ST YEAR

= £167107.20



The population of a city increased by 5.2% for the year 2014

At the beginning of 2015 the population of the city was 1560000

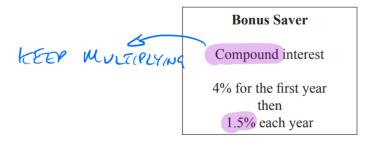
Lin assumes that the population will continue to increase at a constant rate of 5.2% each year.

(a) Use Lin's assumption to estimate the population of the city at the beginning of 2017 Give your answer correct to 3 significant figures.



Peter has £20 000 to invest in a savings account for 2 years.

He finds information about two savings accounts.



Fixed Rate

Compound interest

2.5% each year

Peter wants to have as much money as possible in his savings account at the end of 2 years.

Which of these savings accounts should he choose?



Derek buys a house for £150 000 He sells the house for £154 500 PERCENTAGE CHANGE = ACTUAL CHANGE X 100
ORIGINAL VALUE

(a) Work out Derek's percentage profit.



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

"KEEP MULIPLYING"

Personal Bank

Compound Interest

2% for each year

Secure Bank

Compound Interest

4.3% for the first year 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.

PERCENTAGE INCREASES (THE BEST WAY!) TO INCREASE BY, SAY, 3%.

THINK: WE WANT 103%. SO WE 102%. 1043%. 100.9%.

MULTIPLY BY 103 (=1.03) MULTIPLIER > 1.02 1.009

Total = 25000 × 1.02 × 1.02 × 1.02

= \$26530.20

TOTAL = 25000 × 1.043 × 1.009 × 1.009 = \$26546.46

SINCE \$26546.46 > \$26530.20 THE SELVEBANK GIVES ANIL MME INTEREST



Viv wants to invest £2000 for 2 years in the same bank.

The International Bank

Compound Interest

4% for the first year 1% for each extra year

The Friendly Bank

Compound Interest

5% for the first year 0.5% for each extra year

At the end of 2 years, Viv wants to have as much money as possible.

Which bank should she invest her £2000 in?

PERCENTAGE INCREASES (THE BEST WAY!)

TO INCREASE BY, SAY, 3%.

THINK: WE WANT 103%. SO WE

MULTIPLY BY 103 (=1.03)

NTERNATIONAL

2000 × 104 × 101

= £2100.80

FRIENDLY

2000 x 105 x 100-5

= { 2110.50

VIV SHOULD INVEST IN THE FRIENDLY BANK.



Katie travels to work by train.

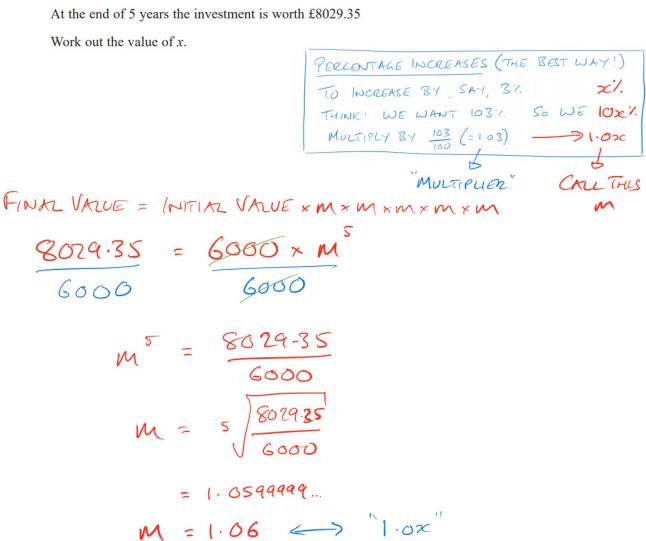
The cost of her weekly train ticket increases by 12.5% to £225

Katie's weekly pay increases by 5% to £535.50

*(b) Compare the increase in the amount of money Katie has to pay for her weekly train ticket with the increase in her weekly pay.



A KEER ON MULTIPLYING" Naoby invests £6000 for 5 years. The investment gets compound interest of x% per annum.





MULTIPLY BY "1.0x"

EACH YEAR

Answer 11

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.

$$M = 6\sqrt{\frac{325000}{25000}}$$



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

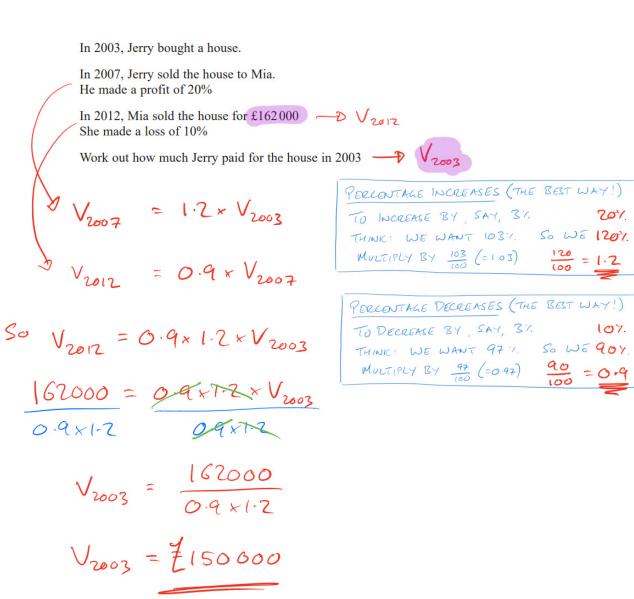
At the end of the year, Jack pays tax on the interest at a rate of 40%.

After paying tax, he gets £79.20

(b) Work out the value of R.

WRITE POWN A STATEMENT: 79.20 IS 60%. OF 2%. OF 5500 $\times 100 \times 100 \text{ 79.20} = \frac{60}{100} \times \frac{R}{100} \times 5500$ $79.20 \times 100 \times 100 = \frac{60}{100} \times \frac{R}{100} \times 5500$ $79.20 \times 100 \times 100 = \frac{60}{100} \times \frac{R}{100} \times 5500$ 60×5500 $R = \frac{79.20 \times (00 \times 100)}{60 \times 5500} = \frac{2.4\%}{100}$







Noah has an amount of money to invest for five years.

Saver Account

4% per annum compound interest. Investment Account

21% interest paid at the end of 5 years.

Noah wants to get the most interest possible.

(b) Which account is best? You must show how you got your answer.

SAVER
AFTER SYRS = ? × 1-04⁵

21% INCREASE

= ? × 1.2166...

So Z1.66% INCREMSE

SINCE 21.66 > 21, THE SAVER IS BETTER



The value of Ibrar's house increases by x% in the third year. At the end of the third year the value of Ibrar's house is £140 000

(b) Work out the value of *x*. Give your answer correct to 3 significant figures.

PERCENTAGE INCREASES (THE BEST WAY!)

TO INCREASE BY, SAY, 3%.

THINK: WE WANT 103%. SO WE

MULTIPLY BY 103 (=1.03)

VALUE AFTER 3 YEARS = VALUE AFTER 24EARS * M 140060 = 145000 x 0.936 x M 145000 x 0.936 145000 x 0.936

1.0315.... = M -> 103.15 1. SO 3.15% WORENSE 2C = 3.15