Simple, Compound Interest, Depreciation, Growth & Decay (H & F)

A collection of 9-1 Maths GCSE Sample and Specimen questions from AQA, OCR, Pearson-Edexcel and WJEC Eduqas.

Name:	Mel@JustMaths
Total Marks:	Worked Solutions

1. The value of a car £V is given by

$$V = 20\,000 \times 0.9^t$$

where t is the age of the car in complete years.

(a) Write down the value of V when t = 0.

remember.. anything to the power of zero = 1

$V = 20000 \times 0.9^0$

$= 20000 \times 1$

$= 20000$

a) £ 20,000 [1]

(b) What is the value of V when t = 3?

$V = 20000 \times 0.9^3$

b) £ 14,580 [2]

(c) After how many complete years will the car's value drop below £10 000?

3 years $V = 20000 \times 0.9^3 = 14580$

4 years $20000 \times 0.9^4 = 13122$

5 years $20000 \times 0.9^5 = 11809.80$

6 years $20000 \times 0.9^6 = 10628.82$

7 years $20000 \times 0.9^7 = 9565.94$

c) 7 years [2]

2. Here are the interest rates for two accounts.

Account A	Account B
Interest: 3% per year compound interest.	Interest: 4% for the first year, 3% for the second year and 2% for the third year.
No withdrawals until the end of three years.	Withdrawals allowed at any time.

Derrick has £10 000 he wants to invest.

(a) Calculate which account would give him most money if he invests his money for 3 years.

Give the difference in the interest to the nearest penny.

A.

10000×1.03^3

£10927.27

B

$10000 \times 1.04 \times 1.03 \times 1.02$

$= 10,926.24$

$10927.27 - 10926.24$

$= £1.03$

a) Account ..... A ..... by ..... 103 ..... p [5]

(b) Explain why he might not want to use Account A.

it doesn't allow you to make withdrawals in the first 3 years.

[1]

3. Toby invested £7500 for 2 years in a savings account.

He was paid 4% per annum compound interest. 1.04

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

$7500 \times 1.04 \times 1.04$

$= £8112$

£ ..... 8112 ..... [2]

CREDITS AND NOTES

Question	Awarding Body
1	OCR
2	OCR
3	Pearson Edexcel
4	
5	

Notes:

These questions have been retyped from the original sample/specimen assessment materials and whilst every effort has been made to ensure there are no errors, any that do appear are mine and not the exam board s (similarly any errors I have corrected from the originals are also my corrections and not theirs!).

Please also note that the layout in terms of fonts, answer lines and space given to each question does not reflect the actual papers to save space.

These questions have been collated by me as the basis for a GCSE working party set up by the GLOW maths hub - if you want to get involved please get in touch. The objective is to provide support to fellow teachers and to give you a flavour of how different topics "could" be examined. They should not be used to form a decision as to which board to use. There is no guarantee that a topic will or won't appear in the "live" papers from a specific exam board or that examination of a topic will be as shown in these questions.

Links:

AQA http://www.aqa.org.uk/subjects/mathematics/gcse/mathematics-8300

OCR http://ocr.org.uk/gcsemaths

Pearson Edexcel http://qualifications.pearson.com/en/qualifications/edexcel-gcses/mathematics-2015.html

WJEC Eduqas http://www.eduqas.co.uk/qualifications/mathematics/gcse/

Contents:

This version contains questions from:

AQA – Sample Assessment Material, Practice set 1 and Practice set 2

OCR – Sample Assessment Material and Practice set 1

Pearson Edexcel – Sample Assessment Material, Specimen set 1 and Specimen set 2

WJEC Eduqas – Sample Assessment Material