

Percentages (H & F)

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

Name:	@MATHS NUMERACY
Total Marks:	

1. In a company, the ratio of the number of men to the number of women is 3:2

40% of the men are under the age of 25

10% of the women are under the age of 25

$$\frac{3}{5} = 60\% \quad \frac{2}{5} = 40\%$$

What percentage of all the people in the company are under the age of 25?

men: 40% of 60% = $6 \times 4 = 24\%$

women: 10% of 40% = 4%

$$24 + 4 = 28\%$$

..... 28% [4]

2. In 1999 the minimum wage for adults was £3.60 per hour.

In 2013 it was £6.31 per hour.

Work out the percentage increase in the minimum wage.

Increase in wages = $£6.31 - £3.60 = £2.71$

% increase = $\frac{2.71}{3.60} \times 100 = 75.3\%$ (1dp)

.....% [3]

3. A shop has a sale that offers 20% off all prices.

On the final day they reduce all sale prices by 25%.

Alex buys a hairdryer on the final day.

Work out the overall percentage reduction on the price of the hairdryer.

$$100\% - 20\% = 80\%$$

$$100\% - 25\% = 75\%$$

$$\frac{80}{100} \times \frac{75}{100} = \frac{6}{10} = 60\%$$

$$100\% - 60\% = 40\%$$

.....40% [6]

4. In a school, 60% of the students are girls.

50% of the girls walk to school.

20% of the boys walk to school.

$$100 - 60 = 40\% \text{ boys}$$

What percentage of the students walk to school?

$$50\% \text{ of } 60\% = 30\%$$

$$20\% \text{ of } 40\% = 4 \times 2 = 8\%$$

$$30 + 8 = \underline{\underline{38\%}}$$

[3]

5. A ball is dropped from a height of 50 metres.

After each bounce, the ball reaches 20% of its previous height.

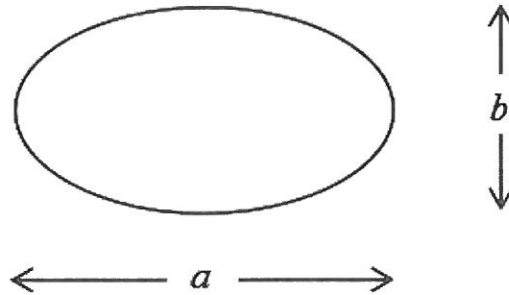
How high does it reach after the second bounce?

$$50 \times 1.2^2 = \underline{\underline{72 \text{ metres}}}$$

[2]

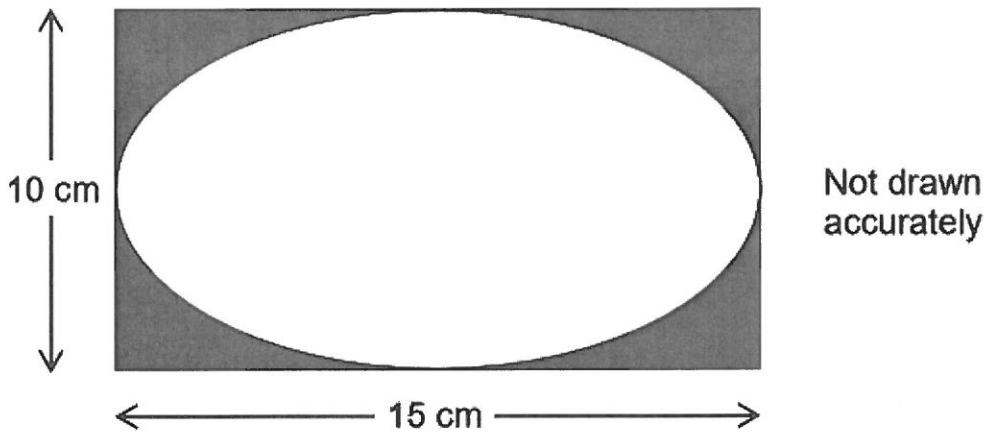
6. The area of an ellipse, width a and height b , is given by

$$\frac{\pi ab}{4}$$



A rectangular photograph measures 15 cm by 10 cm

It is put into a frame as shown.



The part of the photograph that can be seen is an ellipse.

Work out the percentage of the photograph that can be seen.

<p>Area ellipse</p> $= \frac{\pi \times 15 \times 10}{4}$ $= 37.5\pi \text{ cm}^2$	<p>Area rectangle</p> $= 10 \times 15$ $= 150 \text{ cm}^2$	$\frac{37.5\pi \times 100}{150}$ $= \underline{\underline{78.5\%}}$
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[3]

7. A doctor claims that the probability of having regular illness is doubled if you have poor sleep rather than good sleep.

In a survey, 16% of people with poor sleep had regular illness.

Here are the results for people with good sleep.

Good Sleep

	Number of people
Regular illness	24
Not regular illness	276

Comment on the doctor's claim. You must show your working.

$$\% \text{ with regular illness} = \frac{24}{(274+24)} \times 100 = \frac{24}{300} \times 100 = 8\%$$

[3]

$$8\% \times 2 = 16\%$$

The doctor's claim is correct.

CREDITS AND NOTES

Q	Awarding Body	Q	Awarding Body	Q	Awarding Body
1	Pearson Edexcel	5	AQA		
2	AQA	6	AQA		
3	OCR	7	AQA		
4	AQA				

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

