

Estimation (H)

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

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Total Marks:	

1. There are 1200 students at a school.

Kate is helping to organise a party.

She is going to order pizza.

Kate takes a sample of 60 of the students at the school.

She asks each student to tell her one type of pizza they want.

The table shows information about her results.

NOTE: make sure you can justify the amount, and the sums are correct

Pizza	Number of students
ham	20
salami	15
vegetarian	8
margarita	17

$$20/60 = \frac{1}{3}$$

60

Work out how much ham pizza Kate should order.

Write down any assumption you make and explain how this could affect your answer.

Assuming every student attends the party and they all eat half a pizza each - if less attend or they each eat less than this she will need to order more

$$\frac{1}{2} \times 1200 = 600 \text{ pizzas} \quad \frac{1}{3} \text{ of } 600 = 200 \text{ pizzas}$$

Effectively $\frac{1}{3}$ of the total amount she orders needs to be ham.

[3]

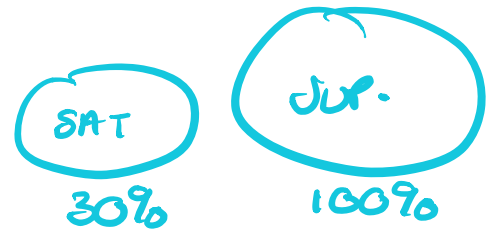
2. The mass of Jupiter is 1.899×10^{27} kg.

The mass of Saturn is 0.3 times the mass of Jupiter.

(a) Work out an estimate for the mass of Saturn.

Give your answer in standard form.

$$3 \times 10^{-1}$$



$$1.899 \times 10^{27} \approx 1.9 \times 10^{27}$$

$$1.9 \times 10^{27} \times 3 \times 10^{-1}$$

$$5.7 \times 10^{26}$$

$$\dots\dots\dots 5.7 \times 10^{26} \text{ kg [3]}$$

$$\begin{array}{r} 1.9 \\ 1.9 \\ 1.9 \\ \hline 5.7 \\ 2 \end{array}$$

b) Give evidence to show whether your answer to (a) is an underestimate or an overestimate.

1.899×10^{27} has been rounded up so my answer will be an overestimate

[1]

3. Work out an estimate for $\sqrt{4.98 \times 2.16 \times 7.35}$

$$4.98 \approx 5$$

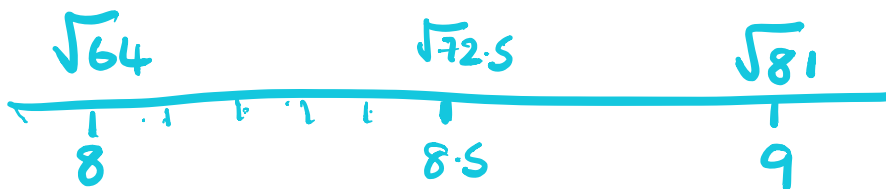
$$2.16 \approx 2$$

$$7.35 \approx 7$$

$$5 \times 2 \times 7 = 70$$

$$\sqrt{70}$$

[3]



$$64 + 81 = 145$$

$$145 \div 2 = 72.5$$

it is approximately
8.4

CREDITS AND NOTES

Question	Awarding Body
1	Pearson Edexcel
2	Pearson Edexcel
3	Pearson Edexcel

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