Rounding, Bounds and Error Intervals (H)

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

Name:	
Total Marks:	

1. The inside of a large industrial container has a height of 3 metres, measured correct to the nearest 10 cm.

   It is used to hold a single stack of flat metal plates.

   Each metal plate has a thickness of 4 centimetres, measured correct to the nearest millimetre.

(a) Find the greatest possible number of these plates that could be stacked in the container.

[3]

 (b) Damian states that it may not be possible to stack 73 of these plates in the container.

   Show that Damian is correct.

[3]

2. $m = \dfrac{\sqrt{s}}{t}$

   s = 3.47 correct to 3 significant figures

   t = 8.132 correct to 4 significant figures

   By considering bounds, work out the value of m to a suitable degree of accuracy.

   Give a reason for your answer.

[5]

3. Safety rules on a campsite require Sarah to set up her barbecue at least 4 m from her tent.

She decides to measure this distance using her stride length.

Sarah knows that her stride length is 0.8 m, rounded to the nearest 0.1 m.

Find the minimum number of strides Sarah will need to take to guarantee that her barbecue is a safe distance from her tent.

.... [3]

4. A box is a cuboid with dimensions 27 cm by 15 cm by 20 cm
These dimensions are to the nearest centimetre.

DVD cases are cuboids with dimensions 1.5 cm by 14.3 cm by 19.2 cm
These dimensions are to the nearest millimetre.
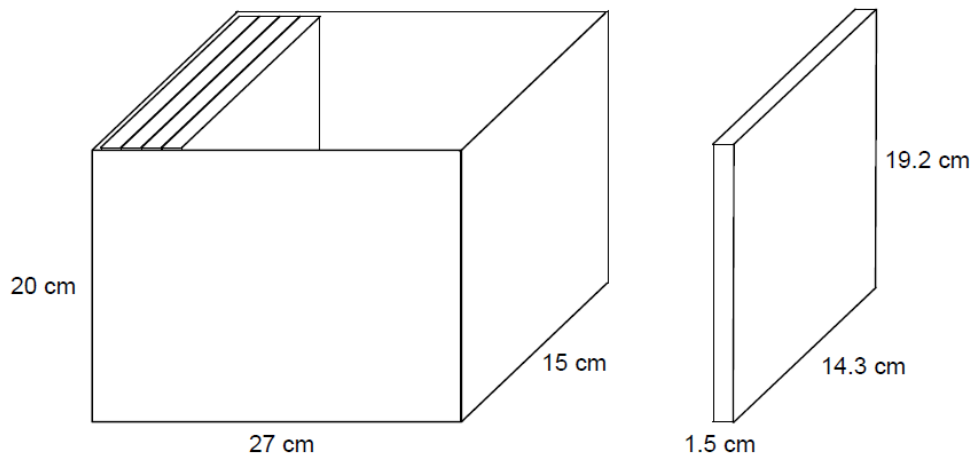
Show that 17 DVD cases, stacked as shown, will definitely fit in the box.

[4]

5. a) The attendance at a football match was 67 500, correct to the nearest hundred.

(i) What was the highest possible attendance?

a)(i) .... [1]

(ii) What was the lowest possible attendance?

(ii) .... [1]

b) A distance, d, was given as 6.73m, truncated to 2 decimal places.

Complete the error interval for the distance, d.

.... ≤ d < ....

[2]

6. The length, L cm, of a line is measured as 13 cm correct to the nearest centimetre.

Complete the following statement to show the range of possible values of L

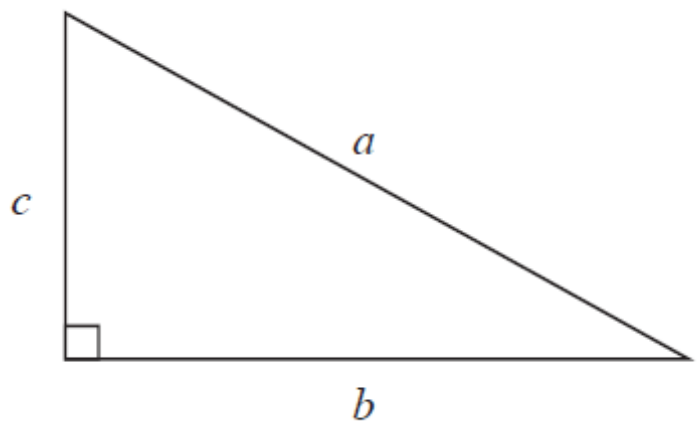.......................... ≤L < ....

[2]

7. Jim rounds a number, x, to one decimal place.

The result is 7.2

Write down the error interval for x.

….. [2]

8.

a is 8.3 cm correct to the nearest mm
b is 6.1 cm correct to the nearest mm

Calculate the upper bound for c.
You must show your working.

….. cm [4]

9. $D = \dfrac{x}{y}$

   $x = 99.7$ correct to 1 decimal place.

   $y = 67$ correct to 2 significant figures.

   Work out an upper bound for D.

   [3]

10. A formula connecting speed (s), distance (d) and time (t) is

$$s = \dfrac{d}{t}$$

   $d = 160$ to 2 significant figures

   $t = 7.2$ to 2 significant figures
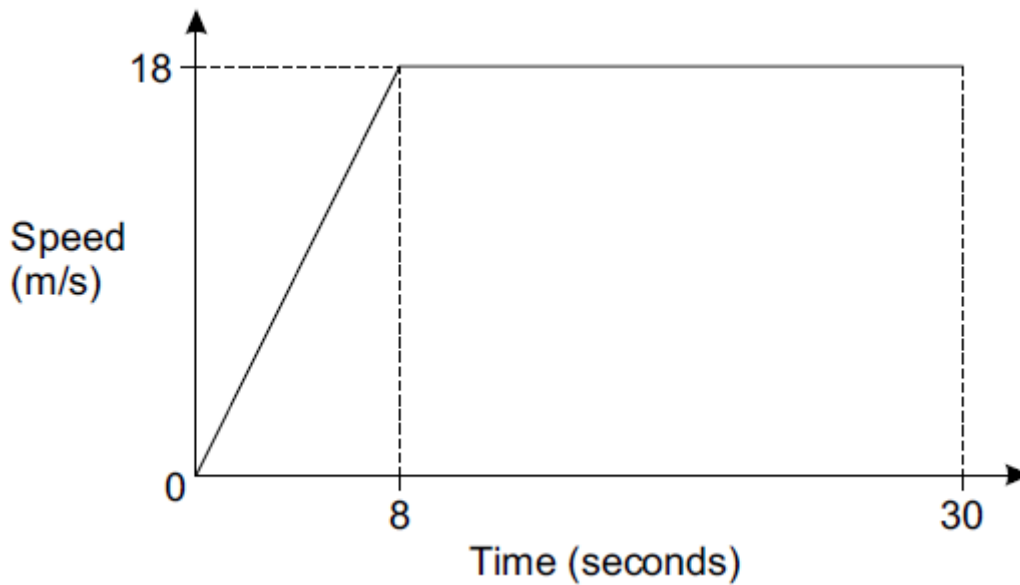
   Work out the upper and lower bounds for s.

   Give your answers to 3 significant figures.

   Upper bound _____

   Lower Bound _____

   [4]

11. The graph shows the speed of a car during the first 30 seconds of its journey.

The speed v of a train is 68 km/h, correct to the nearest km/h.

Write down an inequality to show the error interval for v .

.... [2]

12. Paul won a race with a time of 71.3 seconds.

    This time, t, is to the nearest tenth of a second.

    Complete the error interval due to rounding.

    Answer _____ $\leqslant t <$ _____

[2]

CREDITS AND NOTES

Question	Awarding Body
1	WJEC Eduqas
2	Pearson Edexcel
3	OCR
4	AQA
5	OCR
6	Pearson Edexcel
7	Pearson Edexcel
8	Pearson Edexcel
9	Pearson Edexcel
10	AQA
11	OCR
12	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