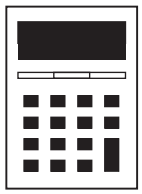
GCSE MATHEMATICS

Standard Form



Use a calculator where appropriate

These questions have been taken or modified from previous AQA GCSE Mathematics Papers.

Instructions

- Use black ink or black ball-point pen. Draw diagrams in pencil.
- Answer **all** questions.
- You must answer the questions in the spaces provided.
- If your calculator does not have a π button, take the value of π to be 3.14 unless another value is given in the question.

Information

- The marks for questions are shown in brackets.
- The quality of your written communication is specifically assessed in questions that are indicated with an asterisk (*).

Advice

- Read each question carefully before you start to answer it.
- In all calculations, show clearly how you work out your answer.
- Use the number of marks for the question as a guide to the amount of time you need to spend.
- Look at previous parts of the question, e.g. a), b), c) i) as there may be information there you need to answer later parts.
- Check your answer is realistic and appropriate.
- For calculator decimal numbers always write your full calculator display in the working out area and then, if you need to, round the answer on the answer line.

This booklet was curated and modified using AQA examination papers between 2010-2017, for thecalculatorguide.com , where you can find many more booklets on further topics. All questions used are reproduced for educational purposes only.

1 (a) Write 0.000 583 in standard form.

[1 mark]

Answer _____

1 (b) Write 9.416×10^5 as an ordinary number.

[1 mark]

Answer _____

1 (c) Divide 7200 million by 300
Give your answer in standard form.

[3 marks]

Answer _____

2 The table shows the populations of some countries.

Country	**Population**
Denmark	5.59×10^6
France	6.35×10^7
Greece	1.14×10^7
Malta	4.19×10^5
Netherlands	1.68×10^7
Russia	1.43×10^8
Spain	4.68×10^7

2 (a) Which of these countries has the lowest population?

Answer ..... *(1 mark)*

2 (b) Which of these countries has a population approximately three times that of Denmark?

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Answer ..... *(2 marks)*

3 a is the number 4×10^3

3 (a) Write a as an ordinary number.

Answer ..... *(1 mark)*

3 (b) Work out the value of a^2.
Give your answer in standard form.

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Answer ..... *(2 marks)*

3 (c) Work out the reciprocal of a.
Give your answer in standard form.

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Answer ..... *(3 marks)*

4 Here is a list of numbers.

1 000 000 4.6×10^4 63 000 5×10^3 1.7×10^5

Work out the range.
Write your answer in standard form.

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Answer ..... *(4 marks)*

5 In standard form, one third of x is 8×10^{-3}

Work out the value of x.
Give your answer in standard form.

[2 marks]

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Answer .....

6 I decrease a number by 26%

The answer is 9×10^{-7}

What number did I start with?
Give your answer in standard form.

[3 marks]

Answer _____

7 Here is a list of numbers

0.005 $\quad 6.4 \times 10^{-3}$ $\quad 0.000\,07$ $\quad 4.2 \times 10^{-4}$

7 (a) Work out the median.
Give your answer in standard form.

[3 marks]

Answer _____

7 (b) Two more numbers are included in the list.

0.005 $\quad 6.4 \times 10^{-3}$ $\quad 0.000\,07$ $\quad 4.2 \times 10^{-4}$ $\quad 0$ $\quad 1$

How does this affect the median?
Circle your answer.

[1 mark]

decreases $\quad$ stays the same $\quad$ increases

8 (a) Circle the answer to $9.6 \times 10^8 \div 4$

[1 mark]

9.6×10^2 2.4×10^2 2.4×10^8 9.6×10^4

8 (b) Work out $(4 \times 10^{-3}) \times (9 \times 10^{14})$

Give your answer in standard form.

[2 marks]

Answer _____

9 (a) Work out $2.3 \times 10^6 - 3 \times 10^5$

Give your answer in standard form.

[2 marks]

Answer _____

9 (b) You are given $8 \times 10^a \times 4 \times 10^4 = 3.2 \times 10^{12}$

Work out the value of a.

[2 marks]

Answer _____

10 (a) Work out $2 \times 10^6 \times 8 \times 10^4$

Give your answer in standard form.

[2 marks]

Answer _____

10 (b) Work out $\dfrac{2 \times 10^6}{8 \times 10^4}$

Give your answer as an ordinary number.

[2 marks]

Answer _____

11 (a) Write 93 000 000 in standard form.

Answer ..... *(1 mark)*

11 (b) Work out $\dfrac{4 \times 10^7}{8 \times 10^2}$

Give your answer in standard form.

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Answer ..... *(2 marks)*

11 (c) When written in standard form a number is $n \times 10^n$
When written as an ordinary number it has four digits.

Write down a possible value of n.

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Answer ..... *(1 mark)*

12 (a) A human cell nucleus has a diameter of 0.000 001 metres.

Write this number in standard form.

Answer ..... *(1 mark)*

12 (b) There are up to 5×10^{13} cells in a human body.

Write 5×10^{13} as an ordinary number.

Answer ..... *(1 mark)*

12 (c) A patient has a disease.
She has 4^3 body cells affected on day 1.

The number of affected cells doubles every day.
The disease becomes serious when 2^{10} body cells are affected.

On which day does the disease become serious?
You **must** show your working.

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Day ..... *(3 marks)*

13 In July 2015 the population of the UK was estimated to be 6.46×10^7

13 (a) The total land area of the UK is 2.44×10^5 square kilometres.

What was the average number of people per square kilometre in the UK in July 2015?

[2 marks]

Answer _____

13 (b) The population of the UK is estimated to increase by 0.54% per year.

Use this information to estimate the population of the UK in July 2017
Give your answer in standard form, correct to 3 significant figures.

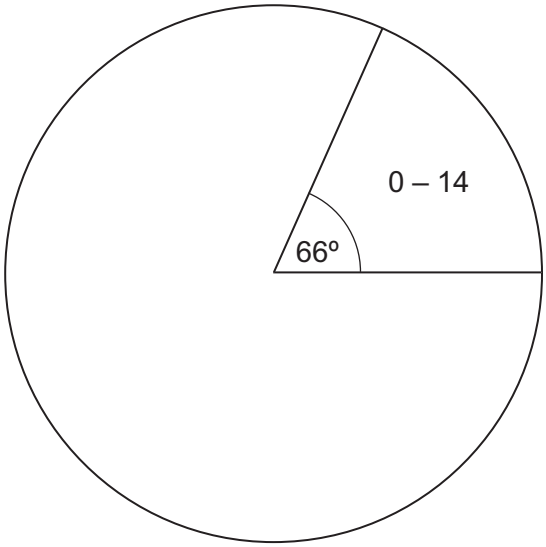
[4 marks]

Answer _____

14 In 2011 there were 3.22×10^7 females in the UK.
This was 51% of the whole population.

The pie chart shows an estimate of the males aged 0 – 14 years old in 2011.

Male population in 2011



Source: http://www.ons.gov.uk

Use this information to work out the number of males aged 0 – 14 years old in 2011.
Write your answer in standard form.

[6 marks]

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Answer .....