

Place Value and Ordering Numbers

Solutions

For AQA GCSE Mathematics (8300) • Foundation tier

Each question is shown in grey, followed by the working, one step per line. The final answer is in a box. *Marks* shows how the marks are usually given in the exam, and **Tip** points out a common mistake.

1 (2 marks)

- (a) Write the number 40 307 in words.

Split the number into thousands and the rest: $40\,307 = 40\text{ thousand and }307$

40 thousand is “forty thousand”.

307 is “three hundred and seven”.

Answer: forty thousand, three hundred and seven

- (b) Write the number two million, fifty thousand and six in figures.

Two million = 2 000 000

Fifty thousand = 50 000

Six = 6

Add them: $2\,000\,000 + 50\,000 + 6 = 2\,050\,006$

Answer: 2 050 006

Tip: Build the number in parts and add them. Then check the number of digits: a number in the millions has 7 digits.

2 (1 mark)

What is the value of the 7 in the number 3.078?

Circle your answer.

Options: 7 tens, 7 tenths, 7 hundredths, 7 thousandths

After the decimal point the columns are tenths, hundredths, thousandths.

In 3.078 the 0 is in the tenths column.

The 7 is in the hundredths column.

Answer: 7 hundredths

Tip: Count the columns after the decimal point: 1st = tenths, 2nd = hundredths, 3rd = thousandths. A 0 still takes up a column.

3 (2 marks)

(a) Write down the number the arrow is pointing to.



There are 5 equal gaps from 40 to 60.

Each gap is $20 \div 5 = 4$

The arrow is 3 gaps along from 40.

$40 + 3 \times 4 = 52$

Answer: 52

Tip: Count the gaps between the marks, not the marks themselves. Then work out what one gap is worth: here it is 4, not 1 or 2.

(b) Write down the number the arrow is pointing to.



There are 10 equal gaps from 7.2 to 7.3.

The whole gap is $7.3 - 7.2 = 0.1$

Each small gap is $0.1 \div 10 = 0.01$

The arrow is 6 gaps along from 7.2.

$$7.2 + 6 \times 0.01 = 7.26$$

Answer: 7.26

Tip: The answer is not 7.8: the marks go up in hundredths, because the gap from 7.2 to 7.3 is only 0.1.

4 (1 mark)

Circle the value of the digit 5 in 20.465

Options: 5, $\frac{5}{10}$, $\frac{5}{100}$, $\frac{5}{1000}$

After the decimal point the columns are tenths, hundredths, thousandths.

In 20.465 the 4 is tenths, the 6 is hundredths and the 5 is thousandths.

So the 5 is worth $\frac{5}{1000}$.

Answer: $\frac{5}{1000}$

Tip: The 5 is the last digit, but that does not make it worth 5. It is in the 3rd column after the decimal point, so it is 5 thousandths.

5 (1 mark)

Circle the largest number.

Options: 0.45, 0.5, 0.405, 0.451

Compare the tenths digit first.

0.5 has 5 tenths.

0.45, 0.405 and 0.451 each have only 4 tenths.

So 0.5 is the largest.

Answer: 0.5

Tip: More digits does not mean bigger. Write 0.5 as 0.500 so all the numbers have the same number of decimal places.

6 (2 marks)

Write these numbers in order of size.

Start with the smallest number.

0.3 0.28 0.305 0.03 0.301

Give every number 3 decimal places by adding zeros:

0.300, 0.280, 0.305, 0.030, 0.301

Now compare them like whole numbers: 300, 280, 305, 30, 301

In order: 30, 280, 300, 301, 305

Answer: 0.03, 0.28, 0.3, 0.301, 0.305

Marks: 2 marks for all five in the correct order. 1 mark for one number in the wrong place.

7 (2 marks)

Write these numbers in order of size.

Start with the smallest number.

-4 2 -7 0 -1.5

Picture a number line: the further left, the smaller the number.

Negative numbers are all smaller than 0.

-7 is further left than -4 , and -4 is further left than -1.5

Then comes 0, then 2.

Answer: $-7, -4, -1.5, 0, 2$

Tip: With negative numbers, the bigger the number after the minus sign, the smaller the number: -7 is smaller than -4 .

Marks: 2 marks for all five in the correct order. 1 mark for one number in the wrong place.

8 (3 marks)

Write $<$ or $>$ in each box.

0.6 0.59

-3 -5

1.07 1.7

$0.6 = 0.60$, and 60 hundredths is more than 59 hundredths.

So $0.6 > 0.59$

-3 is to the right of -5 on a number line.

So $-3 > -5$

1.07 has 0 tenths and 1.7 has 7 tenths.

So $1.07 < 1.7$

Answer: $>, >, <$

Tip: The sign points to the smaller number (the small end). Read it as “is greater than” ($>$) or “is less than” ($<$) from left to right.

Marks: 1 mark for each correct box.

9 (3 marks)

(a) Work out 3.6×100

Multiplying by 100 moves each digit two places to the left.

3.6 becomes 360.

Answer: 360

(b) Work out $52 \div 1000$

Dividing by 1000 moves each digit three places to the right.

52 becomes 0.052

Answer: 0.052

(c) Work out 0.7×10

Multiplying by 10 moves each digit one place to the left.

0.7 becomes 7.

Answer: 7

10 (1 mark)

Circle the number that is 100 more than 9 950

Options: 9 960, 10 050, 10 950, 19 950

Add 100: $9950 + 100 = 10\,050$

The hundreds digit goes past 9, so 1 is carried into the thousands.

Answer: 10 050

11 (1 mark)

Freya says,

‘0.36 is bigger than 0.4 because 36 is bigger than 4’

Is she correct? Tick a box.

Give a reason for your answer.

Write both numbers with 2 decimal places: 0.36 and 0.40

0.40 is more than 0.36

Or: 0.4 has 4 tenths, but 0.36 has only 3 tenths.

So Freya is wrong. More digits does not make a decimal bigger.

Answer: No, $0.4 = 0.40$ which is more than 0.36

12 (2 marks)

Here are five cards.

1	3	4	7	.
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Using each of the cards once, write down the largest number less than 500

The number must be less than 500.

A 3-digit number starting with 7 would be more than 500, so start with 4 (the biggest digit that works).

Make the whole-number part as big as possible: put the next biggest digits next, 7 then 3.

That gives 473.

Then put the decimal point and the last card, 1.

Answer: 473.1

Marks: 1 mark for any number that starts with 4. 1 mark for 473.1.

13 (1 mark)

Write down a number that is greater than 2.4 and less than 2.41

Write 2.4 as 2.400 and 2.41 as 2.410

Any number between 2.400 and 2.410 works.

For example, 2.405

Answer: any number between 2.4 and 2.41, e.g. 2.405

14 (2 marks)

You are given that $23 \times 47 = 1081$

(a) Work out 2.3×4.7

$$2.3 = 23 \div 10 \text{ and } 4.7 = 47 \div 10$$

$$\text{So } 2.3 \times 4.7 = 23 \times 47 \div 100$$

$$= 1081 \div 100$$

$$= 10.81$$

Check: $2 \times 5 = 10$, so about 10 is sensible.

Answer: 10.81

(b) Work out $10\,810 \div 47$

$$10\,810 = 1081 \times 10$$

$$\text{We know } 1081 \div 47 = 23$$

$$\text{So } 10\,810 \div 47 = 23 \times 10$$

$$= 230$$

Answer: 230