Place value and rounding

- Reading and writing powers of 10
- Multiplying and dividing integers and decimals by 0.1 and 0.01
- Rounding numbers to the nearest 10, 100 and 1000
- Rounding decimals to the nearest whole number
- Rounding numbers to 1 or 2 decimal places

Keywords

You should know

explanation 1 online

1 Work out these calculations.

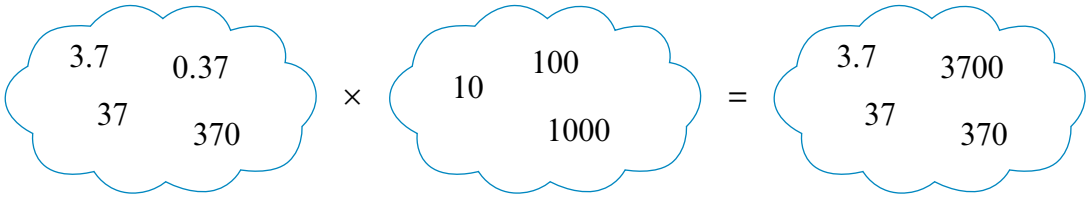
a 42×10	**b** 0.27×100	**c** 33×10	**d** 0.09×10
e 5.1×1000	**f** 19.2×100	**g** 0.88×100	**h** 9012×100
i 0.17×100	**j** 10×42.5	**k** 57.41×1000	**l** 100×0.006

2 Find the value of each missing number.

a $10 \times \square = 45$	**b** $8.7 \times \square = 8700$
c $\square \times 0.007 = 0.7$	**d** $\square \times 100 = 0.123$
e $10 \times \square = 63.2$	**f** $\square \times 1000 = 12.3$

Remember that × and ÷ are inverse operations.

3 Select one number from each bubble to make a true statement.
For example, $37 \times 10 = 370$.



Make as many different statements as you can.

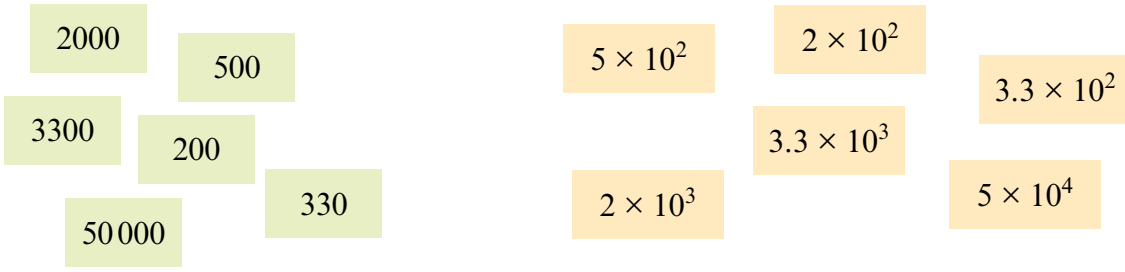
explanation 2

4 Write these numbers as multiples of 10. The first one has been done for you.

a $10^2 = 10 \times 10$ **b** 10^6 **c** 10^4

d 10^5 **e** 10^7 **f** $10^2 \times 10$

5 Each number has been rewritten using the powers of ten. Match the boxes.



6 Write these numbers using powers of 10. The first one has been done for you.

a three hundred = $3 \times 100 = 3 \times 10^2$

b four thousand **c** nine hundred **d** two thousand

e five hundred **f** eight thousand **g** ten thousand

7 One million is 10^6. Write these numbers as powers of 10.

a ten million **b** one hundred million **c** one thousand million

explanation 3

8 Work these out.

a $750 \div 10$ **b** $35\,000 \div 1000$ **c** $72\,000 \div 100$

d $6400 \div 10$ **e** $5700 \div 100$ **f** $970\,000 \div 1000$

9 Work out these calculations.

a $7.2 \div 10$ **b** $36 \div 100$ **c** $0.81 \div 10$ **d** $0.05 \div 10$

e $1.49 \div 100$ **f** $88.5 \div 1000$ **g** $450 \div 100$ **h** $0.57 \div 1000$

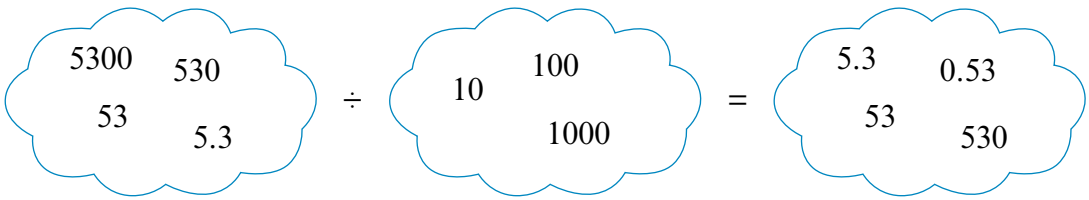
i $879 \div 1000$ **j** $1123 \div 10$ **k** $74.5 \div 1000$ **l** $8023 \div 10$

10 Find the value of each missing number.

a $70 \div \square = 0.7$ **b** $860 \div \square = 0.86$ **c** $450 \div \square = 45$

d $\square \div 100 = 0.23$ **e** $90 \div \square = 0.09$ **f** $\square \div 1000 = 1.9$

11 Select one number from each bubble to make a true statement.
For example, $530 \div 10 = 53$.



Make as many different statements as you can.

explanation 4a explanation 4b

12 Work these out without using a calculator. The first one has been done for you.

a $23 \times 0.1 = 23 \times \frac{1}{10} = 23 \div 10 = 2.3$

b 99×0.1 **c** 149×0.1 **d** 8×0.1 **e** 765×0.1 **f** 55×0.1

13 Work these out without using a calculator.
The first one has been done for you.

a $6 \div 0.1 = 6 \div \frac{1}{10} = 6 \times 10 = 60$

b $27 \div 0.1$ **c** $246 \div 0.1$ **d** $104 \div 0.1$ **e** $19 \div 0.1$ **f** $143 \div 0.1$

14 Work these out without using a calculator.

a 9×0.01 **b** 6581×0.01 **c** 62×0.01

d 78×0.01 **e** 139×0.01 **f** 11×0.01

15 Work these out without using a calculator.

a $321 \div 0.01$ **b** $54 \div 0.01$ **c** $8 \div 0.01$

d $857 \div 0.01$ **e** $9 \div 0.01$ **f** $36 \div 0.01$

16 Match each calculation to its answer.

23 × 0.01	23 ÷ 0.1	2300	2.3
23 ÷ 0.01	23 × 0.1	0.23	230

17 Find the missing number in each calculation.

a 4 × 0.1 = ☐ **b** 16 × ☐ = 1.6 **c** ☐ × 0.1 = 0.7

d 6 × 0.01 = ☐ **e** 23 × ☐ = 0.23 **f** ☐ × 0.01 = 3.4

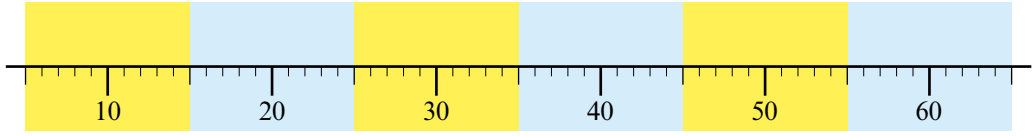
g 5 ÷ 0.1 = ☐ **h** ☐ ÷ 0.1 = 14 **i** 15 ÷ ☐ = 1500

explanation 5a explanation 5b explanation 5c online

18 Round each number to the nearest 10. Use the number line to help you.

a 13 **b** 27 **c** 45 **d** 58

e 42 **f** 6 **g** 64 **h** 15



19 Round each number to the nearest 100.

a 820 **b** 333 **c** 498 **d** 1234

e 1654 **f** 2780 **g** 4669 **h** 7099

20 4355 baby girls were named Ruby in 2007. Round this number to the nearest thousand.

21 This table lists the heights of some mountains.
Round each one to the nearest thousand metres.

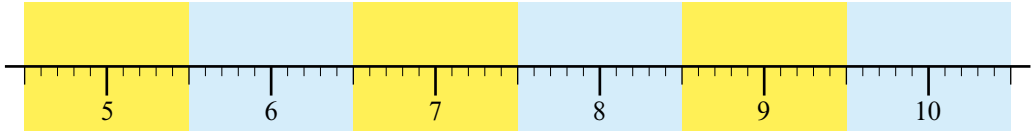
Mountain	Height (metres)
Mount Everest	8848
Mount Kilimanjaro	5895
Ben Nevis	1344
Mount Fuji	3776
Mont Blanc	4808

explanation 6a | explanation 6b | explanation 6c | online

22 Round these decimals to the nearest whole number.
Use the number line to help you.

a 5.4 **b** 6.7 **c** 5.5 **d** 9.48

e 6.75 **f** 7.52 **g** 10.47 **h** 8.5

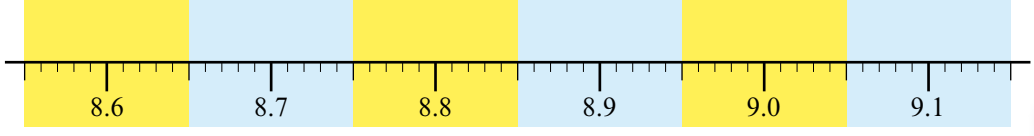


23 Jafar bought two DVDs for £17.95
How much did he spend to the nearest ten pounds?

24 Round each number to 1 decimal place. Use the number line to help you.

a 8.93 **b** 8.66 **c** 9.04 **d** 8.74

e 8.75 **f** 9.048 **g** 8.863 **h** 9.119



25 Round each number to two decimal places.

a 41.671 **b** 80.0453 **c** 1.007

d 30.0045 **e** 3.333 **f** 6.666 666

g 9.999 999 **h** 100.0045 **i** 56.997

Rounding is useful when you don't need to know the exact number.

26 Use a calculator to work out each calculation.
Round your answers to two decimal places.

a $2 \div 3$ **b** $9 \div 11$ **c** $17 \div 11$

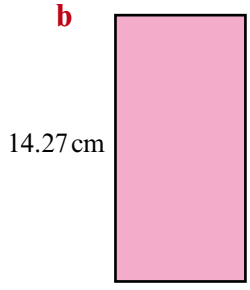
d $14 \div 17$ **e** $3 \div 16$ **f** $11 \div 9$

27 Use a calculator to work out the area of each rectangle. Round your answer to the nearest whole number.

Remember that
area of a rectangle = base × height

a

b



28 The Emirates Stadium has a seating capacity of 60 355. Round this number to

a the nearest ten **b** the nearest hundred **c** the nearest thousand

29 The table shows distances from London to four other cities.
Each distance is written to two decimal places.

City	Distance from London (kilometres)
Barcelona	1137.67
Copenhagen	955.13
Istanbul	2496.39
Paris	340.55

Round each distance to the nearest ten kilometres.