1. Fill in the missing numbers.

$6.14 = 5 + \square + 0.04$

1 mark

2. I have **3.7kg** of modelling clay.

We use **2kg**.

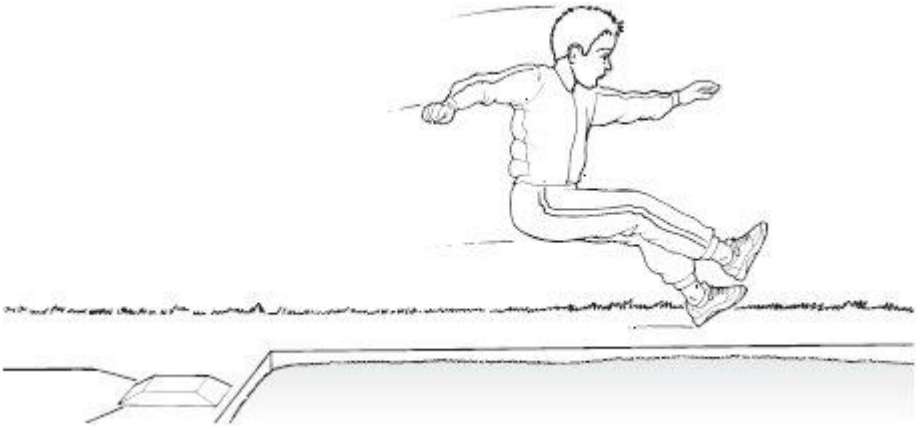
How much will be left?

kg

1 mark

3. Ilaria jumped **3.19m** in a long jump competition.

Emma jumped **3.12m**.



How much further did Ilaria jump than Emma?

m

1 mark

4. Maya cycled **7.3km** to get to her friend's house.

She then cycled a further **0.6km** to the park.

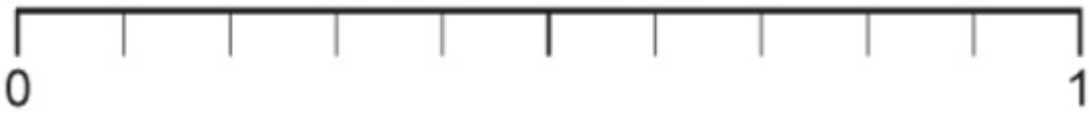
How far did Maya cycle altogether?

km

1 mark

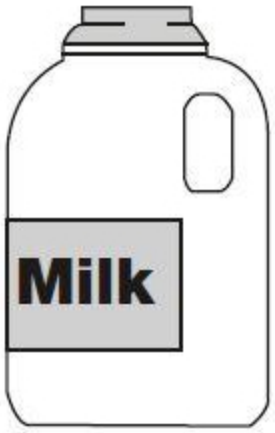
5. Place each of these numbers on the number line.

0.6 0.16 0.91 0.09 0.69



2 marks

6. I will use **0.65 litres** of milk for one recipe, and **0.23 litres** of milk for another.



How much milk will I use altogether?

litres

1 mark

7. The table shows how far some children jumped in a long-jump competition.

Name	Distance jumped (m)
Jamal	3.04
Reyna	3.4
Faisal	2.85
Ilaria	3.19
Charlie	3.09
Kagendo	2.9

a. Who jumped the furthest and won the competition?

1 mark

b. Who came third in the competition?

1 mark

c. How much further did Kagendo jump then Faisal?

1 mark

d. How much further did Ilaria jump than Charlie?

1 mark

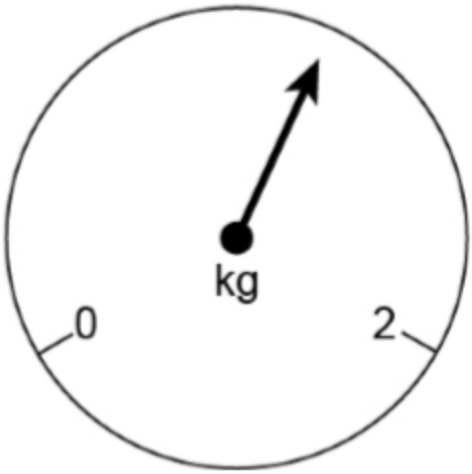
8. Fill in the missing symbols (<, > or =).

0.3	☐	0.5
0.03	☐	0.50
0.50	☐	0.5
9	☐	9.00
140	☐	1.40
0.2	☐	0.15
0.11	☐	0.09
1.01	☐	1.1
3	☐	2.99

2 marks

9. Here is a weighing scale.

Estimate the mass in kilograms that the arrow is pointing to.



kg

1 mark

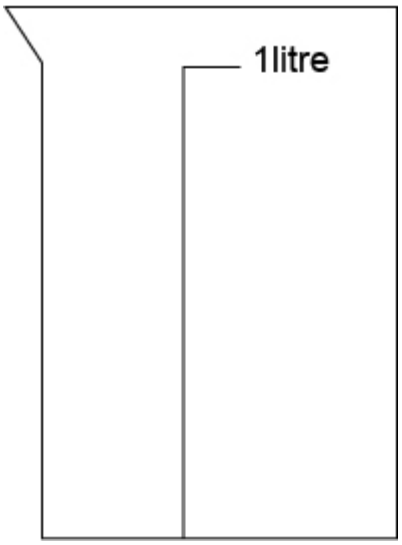
10. Fill in the missing numbers.

			27.9	27.8	27.7

2 marks

11. Estimate the position of **0.7 litres**.

Mark this on this beaker.



1 mark

12. A farmer weighed each of 6 new-born lambs.

Round the mass of each lamb to the nearest whole kilogram.

	Rounded to the nearest whole kilogram
5.19kg	
6.7kg	
4.08kg	
6.1kg	
6.45kg	
4.91kg	

2 marks

13. I need **4.25 metres** of ribbon.

a. How much is this to the **nearest tenth** of a metre?

m

1 mark

b. How much is this to the **nearest** metre?

m

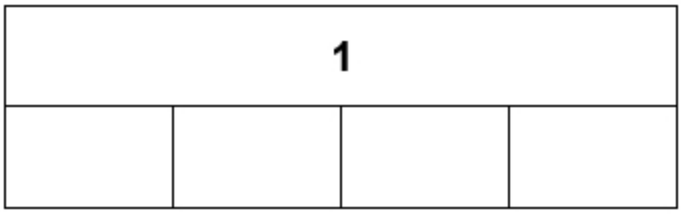
1 mark

c. If ribbon is sold only in **whole metres**, how many metres do I need to buy?

m

1 mark

14. (a) Complete the bar model using **decimal numbers**.



1 mark

(b) Write as many different equations as you can think of to represent the bar model.

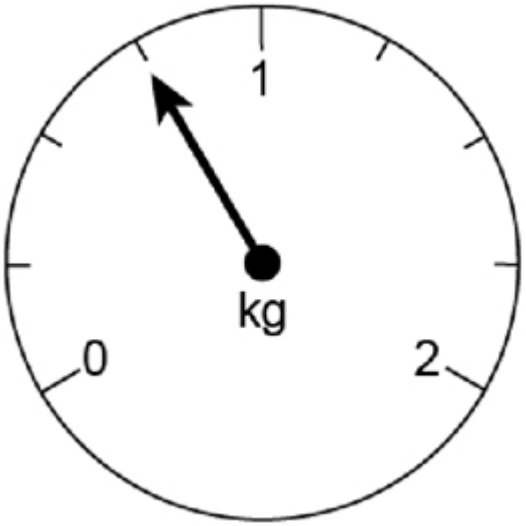
1 mark

15. Fill in the missing numbers.

	7.5	7		6		

2 marks

16.



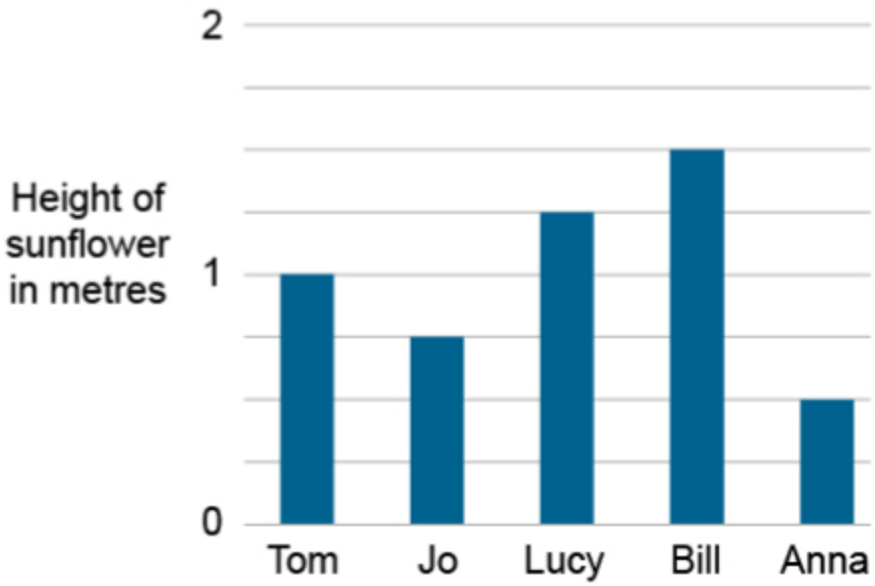
What is the reading on these scales, **in kilograms**?

kg

1 mark

17. **5** children have been growing sunflowers.

The bar chart shows how tall each child's sunflower has grown.



How tall is each flower?

Tom's sunflower is ____ m tall.

Jo's sunflower is ____ m tall.

Lucy's sunflower is ____ m tall.

Bill's sunflower is ____ m tall.

Anna's sunflower is _____ m tall.

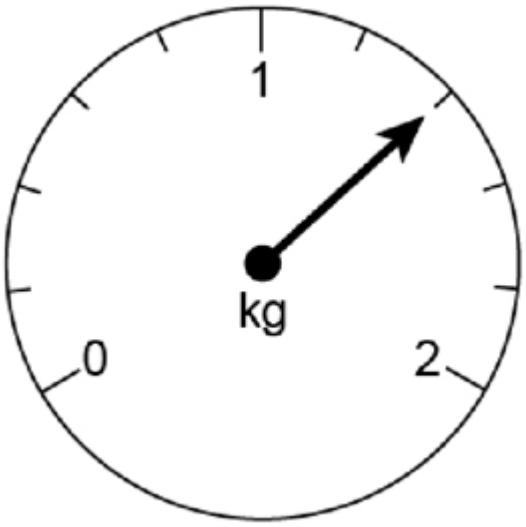
2 marks

18. Fill in the missing numbers.

2.5		3			3.75

2 marks

19.

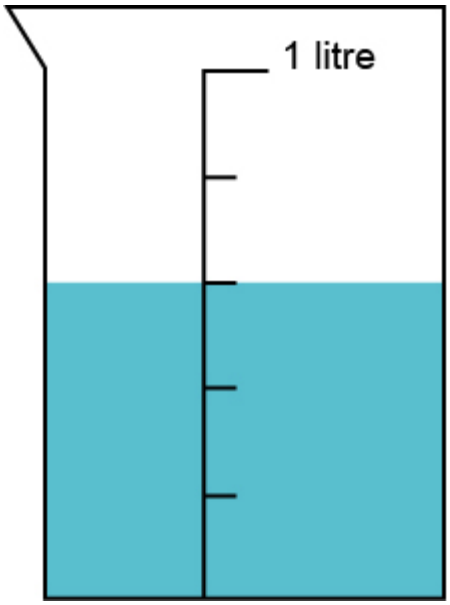


What is the reading on these scales, **in kilograms**?

_____ kg

1 mark

20. Here is a **1 litre** beaker with some liquid in.



How much more liquid, **in litres**, do I need to add to the beaker to make 1 litre?

litres

1 mark

21. A motorway repair team can build **0.2km** of motorway barrier in 1 day.

They worked for **6** working days.

How many kilometres of motorway barrier did they build?

km

1 mark

22. I have a **2 litre** carton of orange juice.

A glass holds **0.25 litres**.

How many glasses can I fill from one carton?

1 mark

23. Fill in the missing numbers.

$1 - 0.2 =$ ☐

$1 - 0.8 =$ ☐

$1 -$ ☐ $= 1 - 0.2 - 0.2$

2 marks

24. **0.25m** of ribbon costs **£1**.

How much does **2m** of ribbon cost?

£

1 mark

25. Fill in the missing numbers.

$5 \times \square$ m = 1m

$4 \times \square$ m = 1m

$5 \times 0.2\text{m} = 4 \times \square$ m

2 marks

26. Fill in the missing numbers.

$1 \div 5 = \square$

$1 \div 5 = 1 - \square$

2 marks

27. Put these volumes in order from smallest to largest.

0.75 litres 1.1 litres 0.3 litres $\frac{1}{5}$ litre 900ml $1\frac{1}{2}$ litres

smallest

1 mark

28. Put these volumes in order from smallest to largest.

0.45 10mm 208cm $2\frac{1}{2}$ m 80cm 0.9m $\frac{1}{2}$ cm

smallest

2 marks

29. Maya needs to post **3** parcels.

The mass of each parcel is shown below.

Parcel	Mass of Parcel
A	3.2kg
B	4,500g
C	$1\frac{1}{2}$ kg

How much do the parcels weigh altogether, **in kilograms**?

kg

1 mark

30. I live **0.4km** away from school.

Every day I walk to school in the morning and home again in the afternoon.

a. How far do I walk each day?

km

1 mark

b. How far do I walk in 5 days?

km

1 mark

31. Circle the numbers that sum to **0.13**.

0.1 0.5 0.05 0.8 0.08 0.3

1 mark

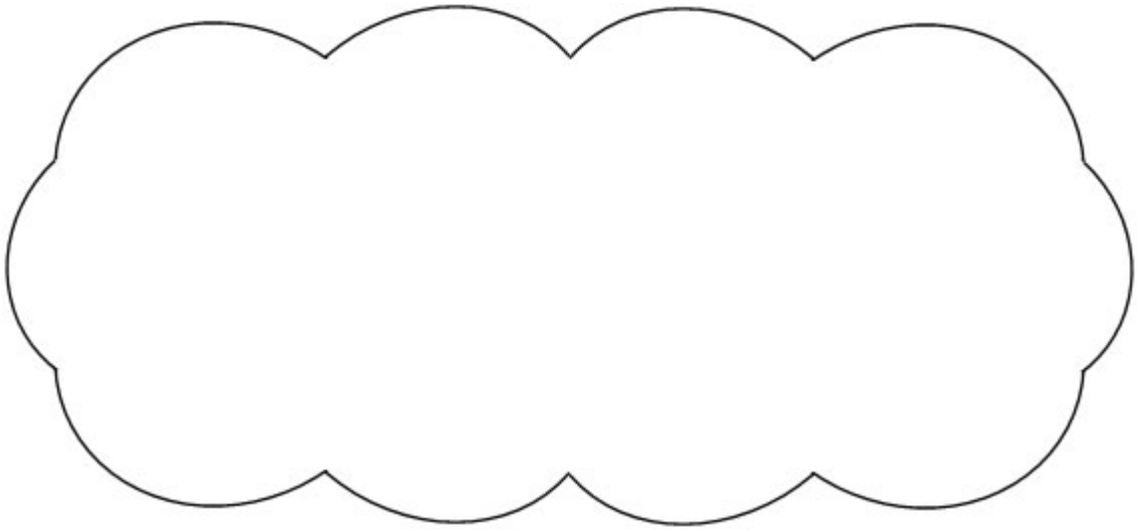
32. 0.4 + 0.5 = 0.45

Is this calculation correct?

Circle **Yes** or **No**.

Yes / No

Explain how you know.



1 mark

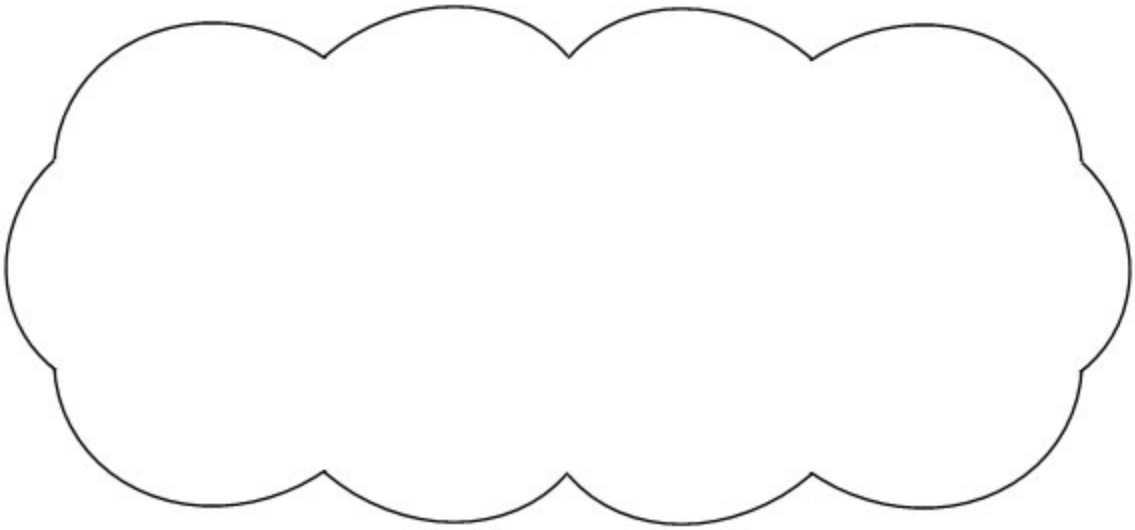
33. 0.73 + 0.27 = 1

Is this calculation correct?

Circle **Yes** or **No**.

Yes / No

Explain how you know.



1 mark

34. I need **0.5kg** of brown flour and **0.7kg** of white flour for a recipe.

What is the total mass of flour that I need?

kg

1 mark

35. The length of a new-born crocodile is about **0.25m**.

The length of an adult female crocodile is about **2.5m**.

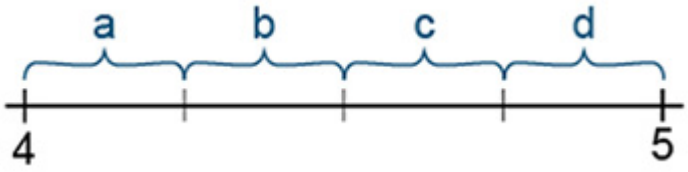
Approximately how many times as long as a new-born crocodile is an adult female crocodile?

times longer

1 mark

36. Position these decimal numbers in the correct sections on the number line.

4.3 4.03 4.09 4.76 4.41 4.69



2 marks

Explain how you know.

1 mark

37. Pupils need to become familiar with the relative positons, on a number line, of numbers with 1 and 2 decimal places. They will need to see number lines with both tenths and intermediate hundredths values marked, and learn, for example, that 0.5 is the same as 0.50 and 3 is the same as 3.0 or 3.00. Pupils should recognise the magnitude and position of a given decimal fraction, irrespective of the precision it is given to, for example, 5 tenths lies between 0.45 and 0.55 on the number line below, whether it is represented as 0.5 or 0.50.

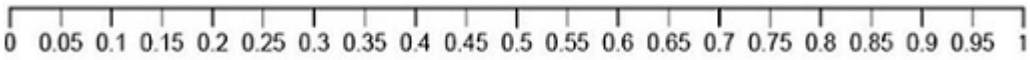


Figure 1 : 0 to 1 number line marked and labelled in intervals of 5 hundredths

Pupils need to be able to identify or place decimal fractions on number lines marked in tenths and / or hundredths. They should use efficient strategies and appropriate reasoning, including identifying the midpoints or working backwards from a whole number or a multiple of one tenth.

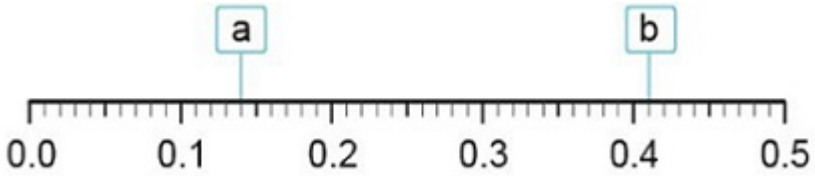


Figure 2 : identifying 0.14 and 0.41 on a 0 to 0.5 number line marked with intervals of hundredths

Language focus

“a is 0.14 because it is 1 hundredth less than the midpoint of 0.1 and 0.2, which is 0.15.”

“b is 0.41 because it is 1 hundredth more than 0.4.”

Pupils need to be able to estimate the value or position of decimal fractions on unmarked or partially marked numbers lines, using appropriate proportional reasoning, rather than counting on from a start point or back from an end point. For example, here pupils should reason: “8.6 is about *here* on the number line because it’s just over half way”.

Figure 3 : placing 8.6 on an unmarked 8 to 9 number line

Here, pupils should reason: “8.75 is about here on the number line because it’s the midpoint of 8.7 and 8.8.”

Figure 4 : placing 8.75 on an 8 to 9 number line marked only in tenths

Pupils must also be able to identify which whole numbers, or which pair of multiples of 0.1, a given decimal fraction is between. To begin with, pupils can use a number line for support. In this example, for the number 8.61, pupils must identify the previous and next whole number, and the previous and next multiple of 0.1.

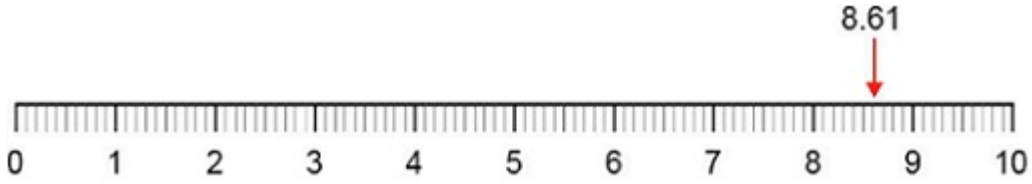


Figure 5 : using a number line to identify the previous and next whole number

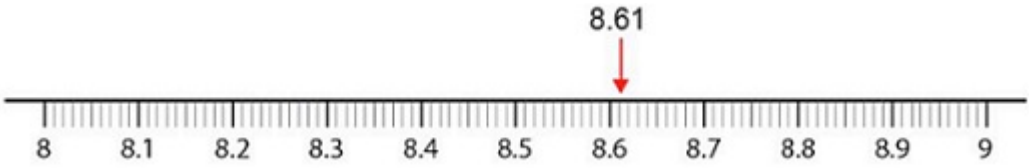


Figure 6 : using a number line to identify the previous and next multiple of 0.1

Language focus

“The previous whole number is 8. The next whole number is 9.”

“The previous multiple of 0.1 is 8.6. The next multiple of 0.1 is 8.7.”

By the end of year 5 pupils need to be able to complete this type of task without the support of a number line.

Pupils should then learn to round a given decimal fraction to the nearest whole number by identifying the nearest of the pair of whole numbers that the decimal fraction is between. Similarly, pupils should learn to round to the nearest multiple of 0.1. They should understand that they need to examine the digit in the place to the right of the unit they are rounding to, for example when rounding to the nearest whole number, pupils must examine the digit in the tenths place. Again, pupils can initially use number lines for support, but should be able to round without that support by the end of year 5.

Figure 7 : identifying the nearest whole number with a number line for support

Language focus

"The closest whole number is 9."

"8.61 rounded to the nearest whole number is 9."

Finally, pupils should also be able to count forwards and backwards from any decimal fraction in steps of 1, 0.1 or 0.01. Pay particular attention to counting over 'boundaries', for example:

- 2.1, 2.0, 1.9
- 2.85, 2.95, 3.05

Making connections

Here, pupils must apply their knowledge that 10 tenths is equal to 1 one (see **5NPV–1**) to understand that each interval of 1 on a number line or scale is made up of 10 intervals of 0.1. Similarly, they must use their knowledge that 10 hundredths is equal to 1 tenth to understand that each interval of 0.1 on a number line or scale is made up of 10 intervals of 0.01. This also links to **5NPV–4**, in which pupils need to be able to read scales divided into 2, 4, 5 and 10 equal parts.

38. Pupils must be able to read, write and interpret decimal fractions with up to 2 decimal places. Pupils should work first with decimal fractions with one significant digit (for example, 0.3 and 0.03). The Gattegno chart is a useful tool here.

1,000	2,000	3,000	4,000	5,000	6,000	7,000	8,000	9,000
100	200	300	400	500	600	700	800	900
10	20	30	40	50	60	70	80	90
1	2	3	4	5	6	7	8	9
0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
0.01	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09

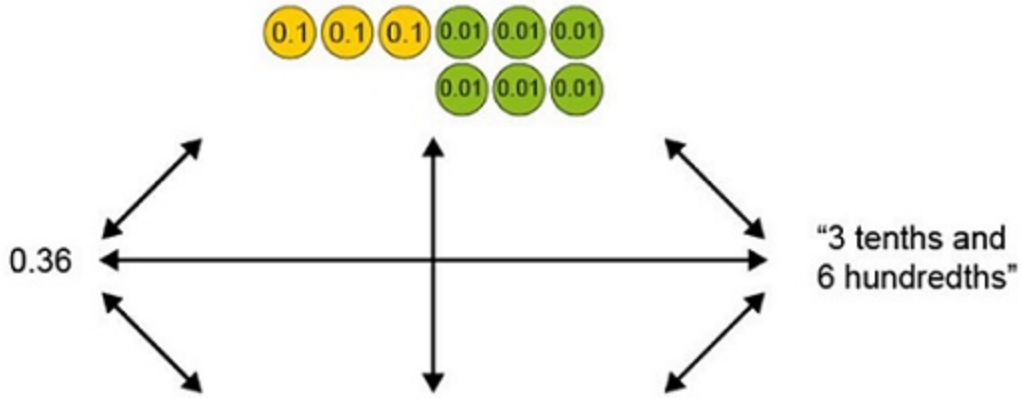
Figure 1 : Gattegno chart showing thousands, hundreds, tens, ones, tenths and hundredths

The number 300 is spoken as “three hundred” rather than as “three-zero-zero”, and this helps pupils to identify the value of the 3 in 300. However, decimal fractions are usually spoken as digits, for example, 0.03 is spoken as “zero-point-zero-three” (or “nought-point-nought-three”) rather as “three hundredths”. As such, pupils need to practise speaking decimal fractions in both ways and learn to convert from one to the other.

Language focus

“Three hundredths is zero-point-zero-three.”

Pupils must then learn to work with decimal fractions with 2 significant digits (for example, 0.36). For any given decimal fraction of this type, pupils must be able to connect the spoken words (zero-point-three-six), the value in decimal notation (0.36), describing the number of tenths and hundredths (3 tenths and 6 hundredths) and visual representations (such as place-value counters and the Gattegno chart).



1,000	2,000	3,000	4,000	5,000	6,000	7,000	8,000	9,000
100	200	300	400	500	600	700	800	900
10	20	30	40	50	60	70	80	90
1	2	3	4	5	6	7	8	9
0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
0.01	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09

Figure 2 : 4 different represenations of 0.36

Pupils should be able to identify the place value of each digit in numbers with up to 2 decimal places. They must be able to combine units of hundredths, tenths, ones, tens, hundreds and thousands to compose numbers, and partition numbers into these units. Pupils need to experience variation in the order of presentation of the units, so that they understand that 0.4 + 3 + 0.02 + 50 is equal to 53.42, not 43.25.

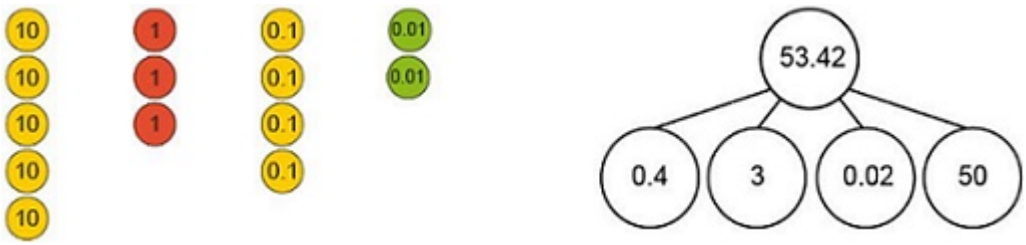


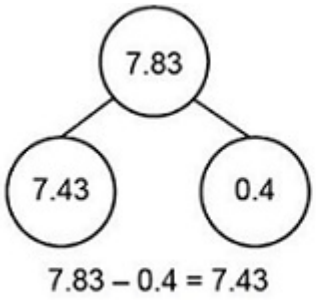
Figure 3 : representations of the place-value composition of 53.42

Pupils also need to solve problems relating to subtraction of any single place-value part from the whole number, for example:

53.42 − 3 = ☐

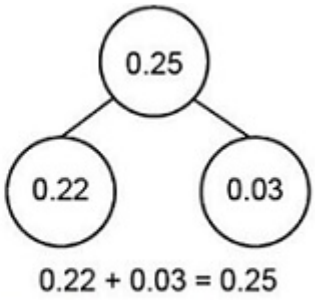
53.42 − ☐ = 53.02

As well as being able to partition numbers in the ‘standard’ way (into individual place-value units), pupils must also be able to partition numbers in ‘non-standard’ ways and carry out related addition and subtraction calculations, for example:



7.83 – 0.4 = 7.43

Figure 4: partitioning 7.83 into 7.43 and 0.4



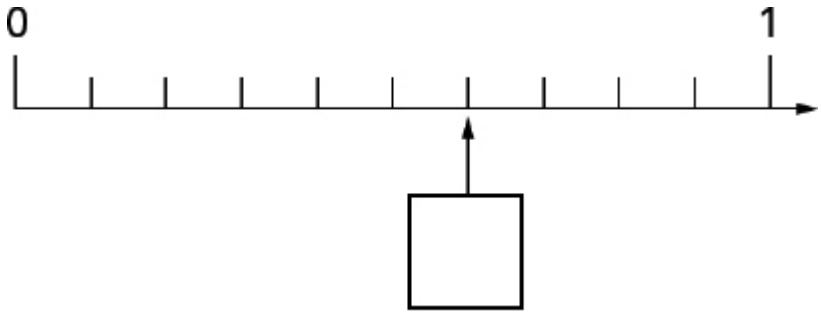
0.22 + 0.03 = 0.25

Figure 5: partitioning 0.25 into 0.22 and 0.03

You can find out more about fluency and recording for these calculations here in the calculation and fluency section: **Number, place value and number facts: 5NPV–2 and 5NF–2**

39. Here is part of a number line.

Write in the missing number.



1 mark

40. What number is halfway between 1.5 and 2.4?

1 mark

Mark schemes

1. 6.14 = 5 + 1.1 + 0.04

[1]

2. 1.7 kg

[1]

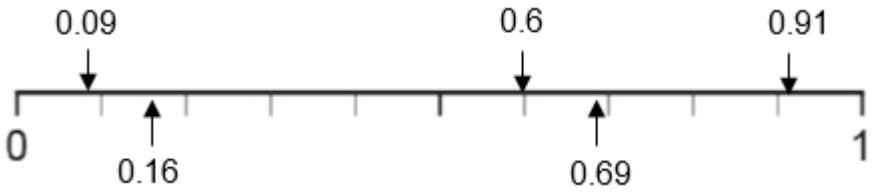
3. 0.07 metres

[1]

4. 7.9 km

[1]

5. Award **TWO** marks for all five correct answers, as shown:



If the answer is incorrect, award **ONE** mark for any three or four correct answers.

Accept answers in the range of ±0.01, provided that the child's answer is not exactly on a multiple of 0.1, unless it is the correct answer given to placing 0.6,

Up to 2m

[2]

6. 0.88 litres

[1]

7. a. Reyna

1

b. Charlie

1

c. 0.05 m

1

d. 0.1 m

1

[4]

8. Award **TWO** marks for all five correct answers, as shown:

0.3	<	0.5	0.03	<	0.05	0.50	=	0.5
9	=	9.00	0.2	>	0.15	0.11	>	0.09
1.01	<	1.1	3	>	2.99	140	>	1.40

If the answer is incorrect, award **ONE** mark for any seven or eight correct answers

Up to 2m

[2]

9. Answer in the range of 1.15kg and 1.25kg inclusive.

[1]

10. Award **TWO** marks for all correct as shown:

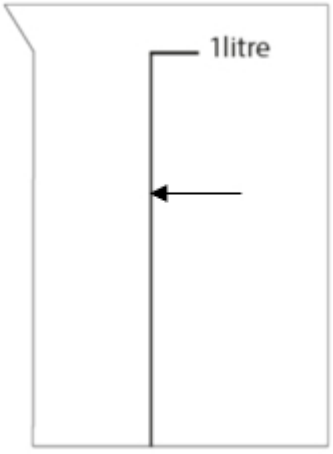
28.2	28.1	28	27.9	27.8	27.7

If the answer is incorrect, award **ONE** mark for any two correct answers.

Up to 2m

[2]

11. Arrow to show 0.7 litres, as shown:



Arrow should be closer to 0.75 litres than 0.5 litres for award of the mark. Accept 0.6 – 0.8 L inclusive.

[1]

12. Award **TWO** marks for all values correct as shown:

	Rounded to nearest whole kilogram
5.19 kg	**5 kg**
6.7 kg	**7 kg**
4.08 kg	**4 kg**
6.1 kg	**6 kg**
6.45 kg	**6 kg**
4.91 kg	**5 kg**

If the answer is incorrect, award **ONE** mark for five numbers correctly rounded.

Up to 2m

[2]

13. Award **TWO** marks for all four correct answers.

a. 4.3 metres

1

b. 4 metres

1

c. 5 metres

1

[3]

14. Award **TWO** marks for numbers and calculations completed correctly, as shown:

1			
0.25	**0.25**	**0.25**	**0.25**

0.25 × 4 = 1 1 ÷ 0.25 = 4 0.25 + 0.25 + 0.25 + 0.25 = 1

4 × 0.25 = 1 1 ÷ 4 = 0.25

If all five calculations have not been recorded, award **ONE** mark for completing the bar model correctly and at least 2 correct calculations.

Up to 2m

[2]

15. Award **TWO** marks for all correct as shown:

8	7.5	7	6.5	6	5.5	5

If the answer is incorrect, award **ONE** mark for any three correct answers.

Up to 2m

[2]

16. 0.75 kg

[1]

17. Award **TWO** marks for all five correct answers, as shown:

Tom's flower =	**1 metre**
Jo's flower =	**0.75 metres**
Lucy's flower =	**1.25 metres**
Bill's flower =	**1.5 metres**
Anna's flower =	**0.5 metres**

If incorrect, award **ONE** mark for four correct answers.

Up to 2m

[2]

18. Award **TWO** marks for all correct as shown:

2.5	2.75	3	3.25	3.5	3.75

If the answer is incorrect, award **ONE** mark for any two correct answers.

Up to 2m

[2]

19. 1.4 kg

[1]

20. 0.4 litres

Also accept $\frac{4}{10}$ *litre.*

*Do **NOT** accept equivalent number of millilitres.*

[1]

21. 1.2 km

[1]

22. 8

[1]

23. Award **TWO** marks for each row of correct answers, as shown:

$1 - 0.2 =$ [0.8] $1 - 0.8 =$ [0.2] $1 -$ [0.4] $= 1 - 0.2 - 0.2$

If incorrect, award **ONE** mark for two correct.

Up to 2m

[1]

24. £8

[1]

25. Award **TWO** marks for each row of correct answers, as shown:

$5 \times$ [0.2] $m = 1m$ $4 \times$ [0.25] $m = 1m$ $5 \times 0.2\ m = 4 \times$ [0.25] m

If incorrect, award **ONE** mark for two correct.

Up to 2m

[1]

26. Award **TWO** marks for each row of correct answers, as shown:

$1 \div 5 =$ [0.2] $1 \div 5 = 1 -$ [0.8]

If incorrect, award **ONE** mark for one correct.

Up to 2m

[2]

27. Award **ONE** mark for correct order, as shown:

1/5 litre	0.3 litres	0.75 litres	900 ml	1.1 litres	1.5 litres
(0.2 litres)			*(0.9 litres)*		
Smallest					**Largest**

*All capacities must be in the correct order for the award of **ONE** mark.*

Accept responses that include converted units (as shown underneath).

[1]

28. Award **ONE** mark for correct order, as shown:

10 mm	$\frac{1}{2}$ cm	0.45 m	80 cm	0.9 m	208 cm	$2\frac{1}{2}$ m
(0.1 cm)	*(0.5 cm)*	*(45 cm)*		*(90 cm)*		*(250 cm)*
Smallest						**Largest**

*All capacities must be in the correct order for the award of **ONE** mark.*

Accept responses that include converted units (as shown underneath).

[1]

29. 9.2 kg or $9\frac{1}{5}$ kg or or $9\frac{200}{1000}$ kg or $9\frac{2}{10}$ kg

***Do not** accept equivalent answer in grams.*

[1]

30. a. 0.8 km **1**

b. 4 km **1**

[2]

31. Two numbers circled as shown:

0.1 0.5 (0.05) 0.8 (0.08) 0.3

Accept alternative unambiguous indications, eg numbers ticked, crossed or underlined.

[1]

32. Indicates **No** and gives a correct explanation, e.g.:

- $\begin{array}{r} 0.4 \\ +\ 0.5 \\ \hline 0.9 \end{array}$
- '0.4 + 0.9 = 0.9
- '4/10 + 5/10 = 9/10
  4 tenths + 5 tenths = 9 tenths = 0.9'

[1]

33. Indicates **Yes** and gives a correct explanation, e.g.:

- $\begin{array}{r} 0.73 \\ +\ 0.27 \\ \hline 1.00 \\ {\scriptstyle 1\ 1} \end{array}$

  '0.7 + 0.2 = 0.9

- 0.03 + 0.07 = 0.10
  0.73 + 0.27 = 1'

- 73/100 + 27/100 = 100/100 = 1
  '73 hundredths + 27 hundredths = 100 hundredths which simplifies to 1 whole.'

[1]

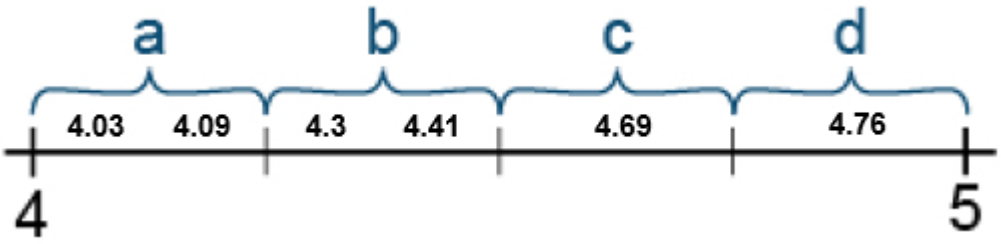
34. 1.2 kg

[1]

35. 10 times longer

[1]

36. Award **THREE** marks for all numbers correctly positioned on the number line, as shown, with a correct explanation of why each number belongs in each section, e.g.



Up to 2m

- ‘The number line is separated into quarters and so the divisions jump in intervals of 0.25. The numbers in section a must be greater than 4 and smaller than 4.25. The numbers in b must be greater than 4.25 but smaller than 4.5 etc.’
- ‘The number line jumps in steps of 0.25. To order these decimals, you need to look at the number of tenths and hundredths.’
- ‘4.3 and 4.41 belong in section *b* because the intervals jump up in quarters and these numbers are greater than 4.25 and less than 4.5.’
- ‘4.03 and 4.09 belong in section a because they are greater than 4 but less than 4.25'.
- ‘4.69 belongs in section c because it is greater than 4.5 but less than 4.75.
- 4.76 belongs in section d because it is greater than 4.75 but less than 5.’

1 mark

If incorrect, award **ONE** mark for four or five correctly positioned decimals and **ONE** mark for a correct explanation.

Do not *accept vague or incomplete explanations, e.g.,*

- The number line is divided into quarters.
- The decimals must lie between each division.
- The decimals must be larger or smaller than each mark on the number line.

Up to 3m

[3]

39. 0.6

Accept .6 ***OR*** *6/10* ***OR*** *6 tenths* ***OR*** *equivalent.*

[1]

40. 1.95

[1]