

1. 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

2. 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**?

| |
|--|
| |
|--|

1 mark

3. I have already swum **750m**.



How much further do I need to go to swim **2km**?

| |
|--|
| |
|--|

1 mark

4. 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

5. Complete these conversions between units to make them correct.

$$2,250\text{ml} = \boxed{} \text{ litres}$$

$$5\frac{1}{2} \text{ cm} = \boxed{} \text{ mm}$$

$$650\text{cm} = \boxed{} \text{ m}$$

$$4\frac{1}{2} \text{ kg} = \boxed{} \text{ g}$$

2 marks

6. Complete these conversions between units to make them correct.

$$\frac{3}{4} \text{ km} = \boxed{} \text{ m}$$

$$165\text{p} = \boxed{} \text{ £}$$

$750\text{g} = \boxed{} \text{ kg}$

$3.4\text{m} = \boxed{} \text{ cm}$

2 marks

7. Complete these conversions between units to make them correct.

$1.8 \text{ litres} = \boxed{} \text{ ml}$

$£8.12 = \boxed{} \text{ p}$

$21\text{mm} = \boxed{} \text{ cm}$

$8,300\text{m} = \boxed{} \text{ km}$

2 marks

8. Pupils should first memorise the following unit conversions:

$1\text{km} = 1,000\text{m}$

$1\text{m} = 100\text{cm}$

$1\text{cm} = 10\text{mm}$

$1 \text{ litre} = 1,000\text{ml}$

$1\text{kg} = 1,000\text{g}$

$£1 = 100\text{p}$

It is essential that enough time is given to this foundational stage before moving on. Practical experience of these conversions will help pupils to avoid common errors in recalling the correct power of 10 for a given conversion. For example, they can walk 1km while counting the number of metres using a trundle measuring wheel.

Once pupils can confidently recall these conversions, they should apply them to whole number conversions, from larger to smaller units and vice versa, for example, £4 = 400p and 8,000g = 8kg. Pupils must then learn to convert from and to fraction and decimal-fraction quantities of larger units, within 1, for example 0.25km = 250m. They should be able to carry out conversions that correspond to some of the common 2, 4, 5 and 10 part measures intervals, as exemplified below for kilometre–metre conversions.

| Distance in km expressed as a fraction | Distance in km expressed as a decimal fraction | Distance in metres |
|---|--|--------------------|
| $\frac{1}{5}$ km | 0.2km | 200m |
| $\frac{1}{4}$ km | 0.25km | 250m |
| $\frac{1}{2}$ km | 0.5km | 500m |
| $\frac{3}{4}$ km | 0.75m | 750m |
| $\frac{1}{10}$ km | 0.1km | 100m |
| all other multiples of $\frac{1}{10}$ km, for example, $\frac{7}{10}$ km | 0.7km | 700m |

For finding $\frac{3}{4}$ of a unit, pupils should have sufficient fluency in the association between $\frac{3}{4}$ and 0.75, 75 and 750 that they should not need to first work out $\frac{1}{4}$ and multiply by 3.

For all conversions, pupils should begin by stating the single unit conversion rate as a step to the fraction or decimal-fraction conversion.

Language focus

“1m is 100cm.”

“So $\frac{3}{4}$ m is 75cm.”

Pupils should learn to derive other common conversions over 1. To convert, for example, 3,700 millilitres to litres, they should not need to think about dividing by 1,000 and moving the digits 3 places. Instead they should be able to use single unit conversion rates and their understanding of place value.

Language focus

“1,000ml is 1 litre.”

“So 3,000ml is 3 litres, and 3,700ml is 3.7 litres.”

For pounds and pence, and metres and centimetres, pupils should also be able to carry out conversions that correspond to 100 parts, for example, 52p = £0.52, and 43cm = 0.43m.

Language focus

“100p is £1.”

“So 50p is £0.50, and 52p is £0.52.”

Pupils can use ratio tables for support.

| | | | | | |
|-----------------|-------|---------|------------|------|-------|
| 1m | 100cm | 1,000ml | 1 litre | 100p | £1 |
| | | | | | |
| $\frac{3}{4}$ m | 75cm | 3,700ml | 3.7 litres | 52p | £0.52 |

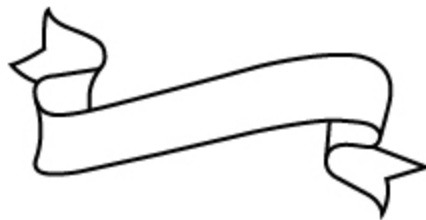
Pupils must learn to solve measures problems involving different units by converting to a common unit.

Making connections

To succeed with this criterion, pupils must be fluent in the division of 1,000, 100 and 1 into 2, 4, 5 and 10 equal parts (**4NPV-4**, **3NPV-4** and **5NPV-4** respectively). They must also be able to recall common fraction-decimal equivalents (**5F-3**). The fraction conversions in this criterion are special cases of finding fractions of quantities (**5F-1**).

9. **1m 40cm** of ribbon was cut into equal pieces.

Each piece is **14cm** long.



How many pieces of ribbon are there?

1 mark

10. I need **1kg** of flour to make some bread.

I have **800g**.



How many more grams of flour do I need?

1 mark

11.

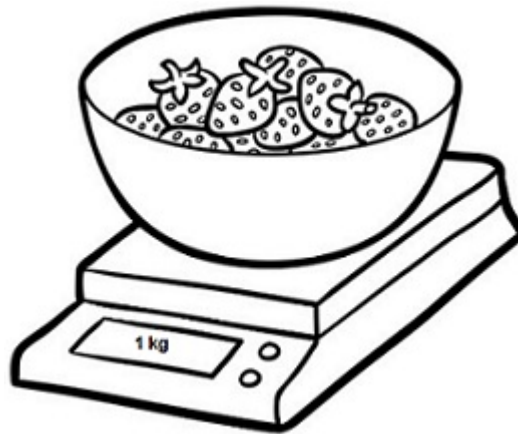


How many **500ml** bottles can I fill from a **3 litre** container of water?

1 mark

12.

1kg of strawberries is shared equally between **5** people.



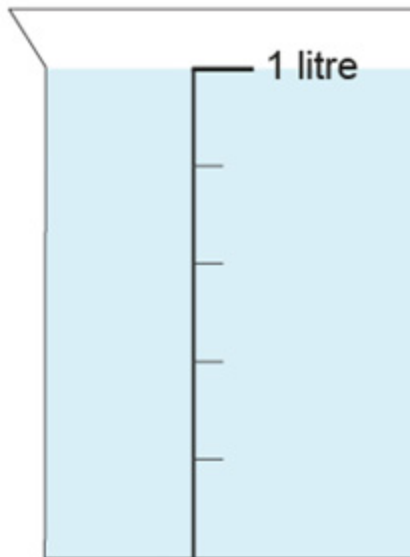
How many grams of strawberries do they each get?

 g

1 mark

13.

The beaker contains 1 litre of water.



If I pour out **600ml**, how much is left?

Draw an arrow on the picture to mark the new water level.

1 marks

14.

On a field trip, the children need to walk **4,200m**.

So far, they have walked **3km**.



How much further do they have to walk?

1 mark

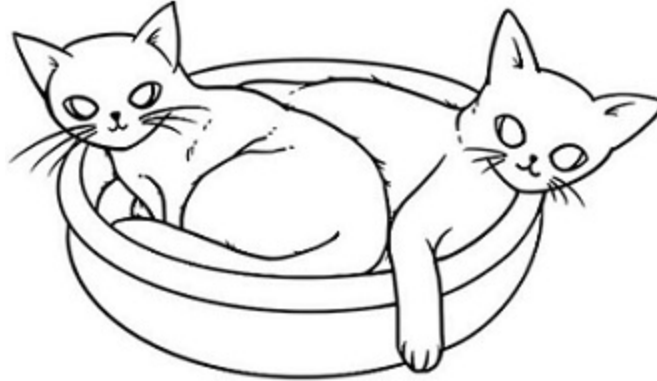
15.

Mr. Davis has 2 cats.

One cat weighs **4,200g**.

The other cat weighs **3,050g**.

Their basket weighs **2kg**.



How much does the basket weigh with both cats inside it?

1 mark

16.

My school field is **100m** long.

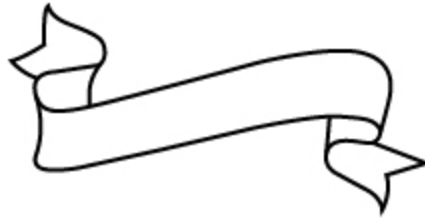


How many times do I have to run its length to run **3km**?

1 mark

17. A dressmaker had **1m** of ribbon.

Then she used **22cm** of it.

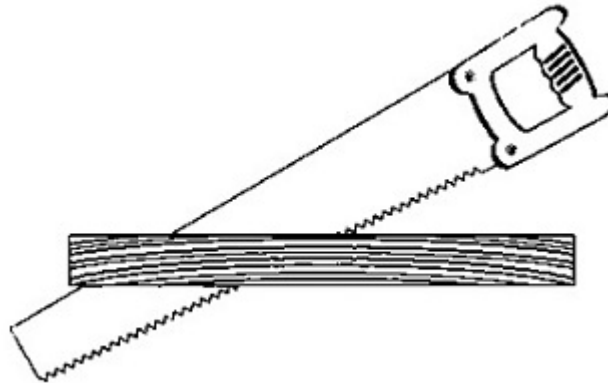


How many **centimetres** of ribbon does she have left?

 cm

1 mark

18. How many **50cm** lengths of wood can I cut from a **3m** plank?



1 mark

19. Harry does English and maths homework each week.

It takes him a total of two and a half hours.

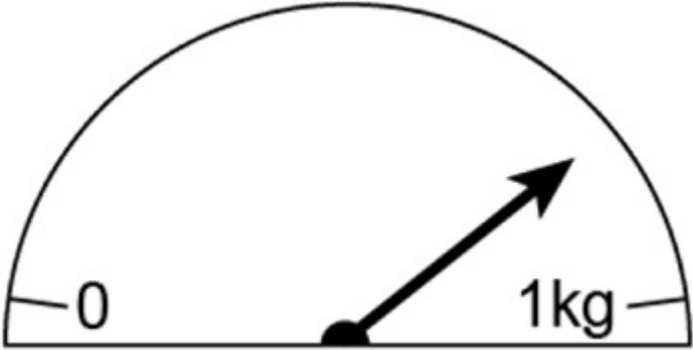


He spends **80** minutes doing English homework.

How many **minutes** does he spend doing maths homework?

1 mark

20. Estimate the mass, in grams, shown on this weighing scale.



1 mark

21. The tree outside Cecily's house is **308cm** tall.

Cecily's bedroom window is **3m 68cm** from the ground.



How much taller must the tree grow to reach the bottom of Cecily's bedroom window?

1 mark

22.

A bamboo plant was **4m** tall.

Then it grew by another **83cm**.



How tall is the bamboo plant now?

1 mark

23.

Put these amounts of money in order.

£7

£1.75

68p

243p

1 mark

24.

One plane lands every minute.

How many planes land in **1 hour**?



planes

1 mark

25.

Litres to gallons

A petrol station shows this information:

$$10 \text{ litres} = 2.2 \text{ gallons}$$

How many gallons is **50 litres**?

Show your method

gallons

2 marks

26.

Square units

Gustav says:

There are **100** square centimetres in a square metre.

Gustav is **wrong**.

How many square centimetres are there in a square metre?

cm²

1 mark

27.

Length

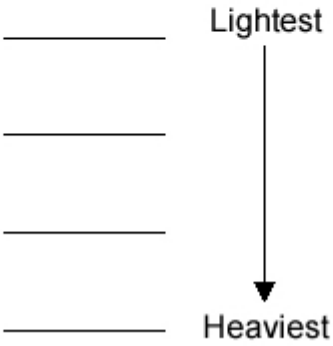
Arrange these masses in order of size.

10 grams

10 kilograms

10 milligrams

10 pounds



1 mark

28. Time intervals

Look at these three time intervals.

1 hour 25 minutes 125 minutes 1.25 hours

Arrange them in **size order**, shortest first.

Then fill in the missing number of minutes.

_____ _____ _____

shortest longest

difference in time is _____ minutes

2 marks

29. Conversions

Fill in the gaps to show what the units measure.

The first one is done for you.

centimetres measure ___length___

kilograms measure _____

litres measure _____

square metres measure _____

2 marks

30.

Estimates

Which value completes each sentence? Tick (✓) the correct box.

The first one is done for you.

The **length** of a **banana** is about ...

- 2 cm
- 20 cm
- 200 cm
- 2000 cm



A **can of drink** holds about ...

- 0.3 litres
- 3 litres
- 30 litres
- 300 litres



1 mark

The **weight** of an **apple** is about ...

- 1 gram
- 10 grams
- 100 grams
- 1000 grams



1 mark

31.

Units

(a) Fill in the gaps using units of **length**.

The first one is done for you.

There are **10** mm in one cm

There are **100** _____ in one _____

1 mark

There are **1000** _____ in one _____

1 mark

(b) Fill in the gaps using units of **mass**.

There are **1000** _____ in one _____

1 mark

32.

Units

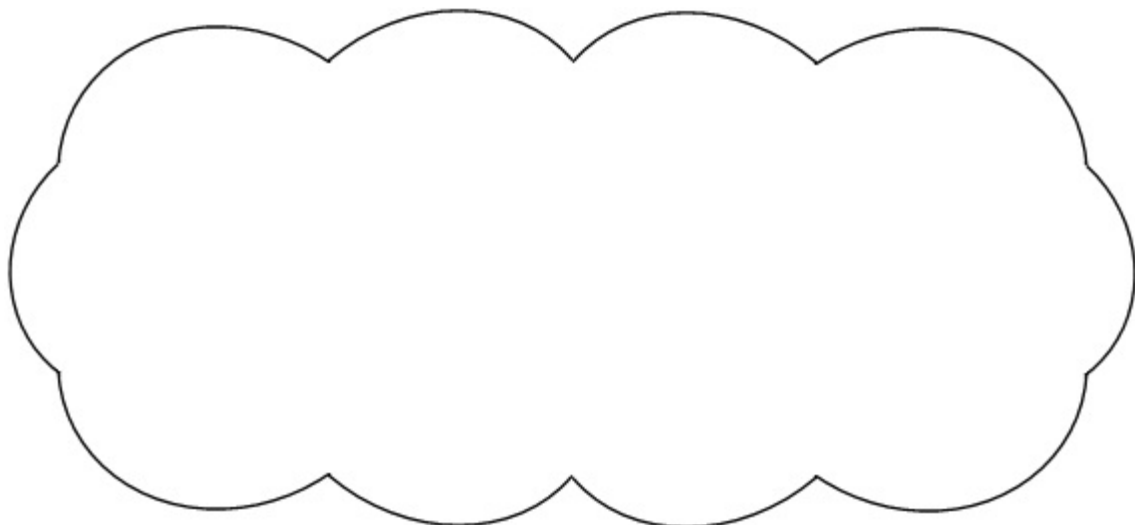
(a) Steve says there are 1000 centimetres in one metre.

Is he correct?

Yes

No

Explain your answer.



1 mark

(b) How many **millimetres** are in **one centimetre**?

millimetres

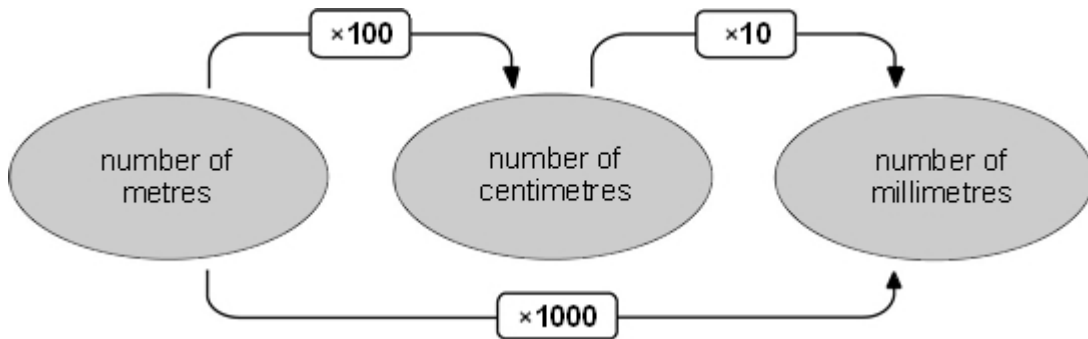
1 mark

33.

Metric

Look at the diagram.

It shows how to change metres into centimetres and millimetres.



(a) Change **5 metres** into centimetres.

centimetres

1 mark

(b) Change **9 centimetres** into millimetres.

millimetres

1 mark

(c) Change **8000 millimetres** into metres.

metres

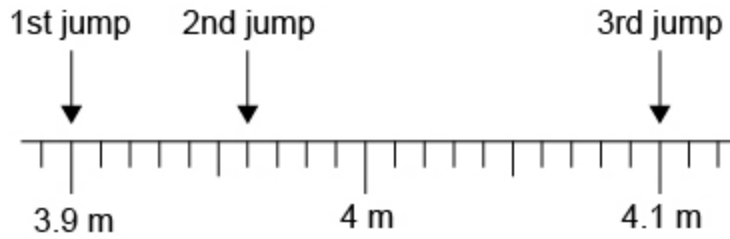
1 mark

34.

Long jump

Peter took part in a long jump competition.
He had three jumps.

The arrows on the scale show how far he jumped each time.



(a) How far did Peter jump on his **2nd** jump?

 m

1 mark

(b) Peter jumped further on his **3rd** jump than on his **1st** jump.
How much further?

Write your answer in metres.

 m

1 mark

Now write your answer in centimetres.

 cm

1 mark

35.

Tom fills the kitchen sink with water to do the washing up.

The sink holds 7 litres.

A jug holds 500 millilitres.

How many jugs of water would Tom need to fill the empty kitchen sink?

Show your method

2 marks

36.

Write in the missing numbers.

36 months =

years

96 hours =

days


77 days =

weeks

2 marks

38. Match each length to the correct box on the right.

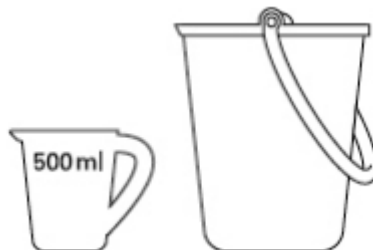
One has been done for you.

| | | |
|--------|--|--------|
| 60 mm |  | 6 m |
| | | 6 cm |
| 600 cm | | 600 m |
| | | 60 m |
| 6 km | | 6000 m |

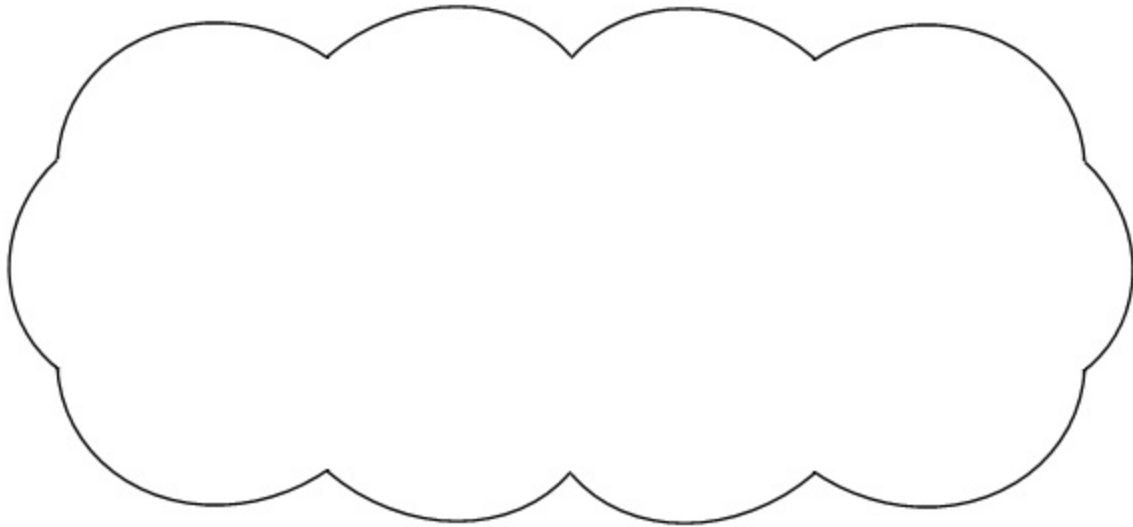
1 mark

39. Scott needs to put **2 litres** of water in a bucket.

He has a **500 ml** jug.



Explain how he can measure 2 litres of water.



1 mark

40. Tick (✓) the two cards that show the **same** weight.

1.5 kilograms

150 grams

15 kilograms

1 kilogram 50 grams

1500 grams

1 mark

Mark schemes

1.

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]

2.

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

Do not accept equivalent answer in grams.

[1]

3.

1,250 m

[1]

4.

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

| | | | | | |
|---------------------|------------|-------------|--------------|----------------|------------|
| $\frac{1}{5}$ 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]

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

$$2,250\text{ml} = \boxed{2.25} \text{ litres}$$

$$5\frac{1}{2} \text{ cm} = \boxed{55} \text{ mm}$$

$$650 \text{ cm} = \boxed{6.5} \text{ m}$$

$$4\frac{1}{2} \text{ kg} = \boxed{4,500} \text{ g}$$

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

Up to 2m

[2]

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

$$\frac{3}{4} \text{ km} = \boxed{750} \text{ m}$$

$$165\text{p} = \boxed{\text{£}1.65}$$

$$750\text{g} = \boxed{0.75} \text{ kg}$$

$$3.4\text{m} = \boxed{340} \text{ cm}$$

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

Up to 2m

[2]

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

$$1.8 \text{ litres} = \boxed{1800} \text{ ml}$$

$$\text{£}8.12 = \boxed{812} \text{ p}$$

$$21\text{mm} = \boxed{2.1} \text{ cm}$$

$$8,300\text{m} = \boxed{8.3} \text{ km}$$

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

Up to 2m

[2]

9. 10

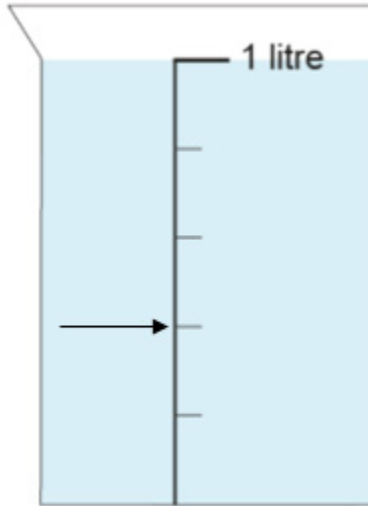
[1]

10. 200 g [1]

11. 6 [1]

12. 200 g [1]

13. Indicates 400 ml correctly on the scale, as shown:
400 ml



14. 1,200 m or 1.2 km [1]

15. 9,250 g or 9.25 kg [1]

16. 30 [1]

17. 78 cm [1]

18. 6 [1]

19. 70 (minutes)
Accept 1hr 10 minutes [1]

20. Answer in the range of 800 g and 850 g inclusive. [1]

21. 60 cm [1]

22. 483 cm or 4 m 83 cm
Also accept equivalent number of metres, i.e., 4.83m, provided the unit is changed accordingly. [1]

23. 68p £1.75 243p £7
or
£7 243p £1.75 68p [1]

24. 60 (planes) [1]

25. 11 2

or Shows a complete correct method with not more than one computational error, eg

- 2.2×5
- $2.2 + 2.2 + 2.2 + 2.2 + 2.2$
- $2.2 \times 10 = 22$
- $22 \div 2$

Do not accept conceptual error, eg

- $2.2 \times 5 = 10.10$

•
$$\begin{array}{r} 2.2 \\ \times 5 \\ \hline 110 \end{array}$$

1

[2]

26. 10 000
Do not accept incomplete processing, eg
• 100^2 [1]

27.

Correct order, eg
10 milligrams
10 grams
10 pounds
10 kilograms

! Units only given, ie values of 10 omitted

Abbreviations used

Accept if unambiguous, even if unconventional, eg

- *m*
- *g*
- *p*
- *km (acceptable as unambiguous in this context)*

! List given in reverse order

Mark as 0, 1

[1]

28.

Gives the values in the correct order and shows the correct time difference, ie

1.25 hours

1 hour 25 min

125 minutes

difference in time is 50 minutes

2

or Gives the values in the correct order

or

Shows the correct time difference

or

Shows or implies that 1.25 hours is 1 hour 15 minutes or 75 minutes, eg

- 1 hour 15 seen
- 75 seen

or

Shows or implies that 125 minutes is 2 hours 5 minutes, eg

- 2 hours 5 seen

Accept any unambiguous indication of the time intervals

! Units omitted

Accept provided unambiguous

1

[2]

29.

Gives all three correct, ie
mass
volume or capacity
area

2

or Gives any two correct

Accept minimally acceptable description

eg, for kilograms

- *Weight*

eg, for square metres

- *Surface area*

! Description lacks generality

Provided the correct property of the quantity is identified, condone

eg, for 2m accept

- *mass of person*
volume of drink
area of playground
eg, do not accept
- *person*
drink
playground

Do not accept incomplete description

eg, for litres

- *Quantity of liquid [could refer to mass or volume]*

eg, for square metres

- *Length x width*

1

[2]

30.

Indicates 0.3 litres, ie

1

Indicates 100 grams, ie

1

[2]

31.

- (a) Completes the sentence correctly using units of **length**, eg
- There are 100 centimetre in one metre
 - There are 100 mm in one dm

1

Completes the sentence correctly using units of **length**, eg

- There are 1000 metres in one kilometre
- There are 1000 mm in one m

1

- (b) Completes the sentence correctly using units of **mass**, eg
- There are 1000 grams in one kilogram
 - There are 1000 mg in one g
 - There are 1000 kg in one tonne

! Units abbreviated

Accept provided unambiguous, including ton or t for tonne for part (b)

Do not accept units that measure properties other than length or mass, eg

- *There are 1000 ml in one litre*

1

[3]

32.

- (a) Indicates No and gives a correct explanation
- 100cm is 1 metre
 - 1000mm is 1m, not 1000cm
 - 1000cm = 10 metres not 1 metre

Accept minimally acceptable explanation, eg

- 100
- 1000mm
- 10m

! Explanation uses known measurement(s)

Accept provided there is a comparison, eg

- I would be less than 1 metre tall but I am 1.27 metres tall
- The door is 2m high, not 0.2m, eg do not accept
- I would be less than a metre tall
- The door is not 0.2m high

! Response contains an incorrect statement

Ignore alongside a correct response, eg accept

- $100\text{cm} = 1\text{m}$, so $1000\text{cm} = 1\text{km}$

eg, do not accept

- $1000\text{cm} = 1\text{km}$

Do not accept incomplete explanation, eg

- 1000
- 10

1

(b) 10

1

[2]

33.

(a) 500

1

(b) 90

1

(c) 8

1

[3]

34.

(a) 3.96 or equivalent

1

(b) 0.2 or equivalent

1

20

1

! Follow through

Accept follow through as their first mark in part (b) $\times 100$, provided their first mark is not an integer

[3]

35.

Award **TWO** marks for the correct answer of 14

If the answer is incorrect, award **ONE** mark for evidence of an appropriate method, eg

$$7 \text{ litres} = 7000 \text{ ml}$$

$$7000 \text{ ml} \div 500 \text{ ml}$$

*Answer need not be obtained for the award of **ONE** mark.*

Up to 2

[2]

36.

Award **TWO** marks for three boxes completed correctly as shown:

$$36 \text{ months} = \boxed{3} \text{ years}$$

$$96 \text{ hours} = \boxed{4} \text{ days}$$

$$77 \text{ days} = \boxed{11} \text{ weeks}$$

If the answer is incorrect, award **ONE** mark for two boxes completed correctly.

Up to 2m

[2]

37.

Award **TWO** marks for the correct answer of 30

If the answer is incorrect, award **ONE** mark for evidence of an appropriate method, e.g.

- $1.5 \text{ kg} = 1,500 \text{ g}$
 $1,500 \div 50$

*Answer need not be obtained for the award of **ONE** mark.*

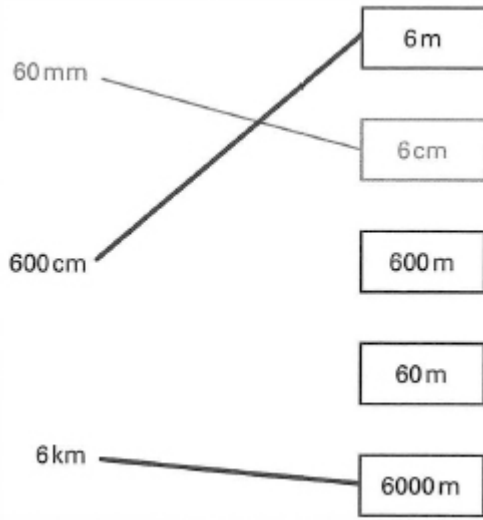
*Units must be converted correctly for the award of **ONE** mark.*

Up to 2m

[2]

38.

Both lengths matched as shown:



Both lines must be matched correctly for the award of the mark.

Lines do not have to touch the lengths of boxes, provided the intention is clear.

Do not accept lengths which have been matched to more than one box.

[1]

39.

Gives a correct explanation that shows the relationship between the volume of the jug and two litres, eg

- It's 4 jugs
- Fill the jug once, pour it in the bucket and do the same three more times
- He uses $500 + 500 + 500 + 500$
- A jug is a quarter of two litres
- Empty into the bucket four times

Accept minimally acceptable explanation, eg

- Fill it four times
- $500 \text{ ml} \times 4$

Accept jug assumed to be calibrated, eg

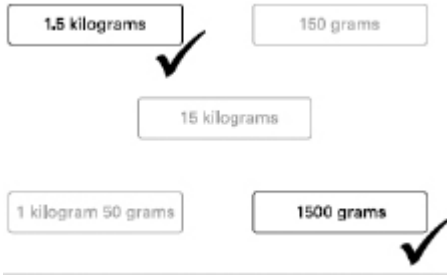
- Put 200 ml in the jug, then repeat to give a total of 10 times

U1

[1]

40.

Two cards ticked as shown:



Both cards must be correct for the award of the mark.

Accept any other clear way of indicating the correct cards, such as circling.

[1]