N3.6 Decimals and measures

starter

Vocabulary
what fraction?
centimetre
metre
measure

Resources
two metre sticks,
   one marked in
   centimetres and
   one marked in
   decimetres
string
scissors

Show the class the metre stick marked in decimetres, saying: 'This is one whole metre.' Point out the decimetre spaces.

Q   How many of these are there? (ten)

Q   What fraction of the whole metre is one of these? (one tenth)

Show the class the metre stick marked in centimetres, saying: 'This is one whole metre.' Point out the centimetre spaces.

Q   How many of these centimetres are there? (one hundred)

Q   What fraction of the whole metre is one centimetre? (one hundredth)

Write 1.3 m on the board. Tell the class that you are going to measure a piece of string that is 1.3 metres long. Point to the 1, saying; 'This is one whole metre.' Point to the 3, saying: 'This is three tenths of a metre.'

Get two pupils to hold the two metre sticks to create a two-metre length. Point out the whole metre (on the left, as pupils look at it), and count three tenths along the metre marked in decimetres.

Stretch a length of string from the end of the first stick, across the 1 metre mark, to the third decimetre mark. Cut the string and hold it up, saying: 'This string is one and three tenths of a metre long.'

Repeat for strings that are 1.7 m, 0.6 m and 1.2 m long.

Q   Which is the shortest string? Which is the longest string?
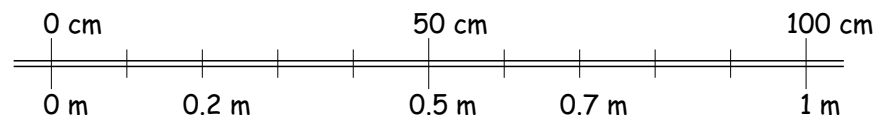
main activity

Vocabulary
convert
equivalent
estimate
range

Resources
OHT N3.6a
counting stick or paper
   strip

Make a paper strip one metre long and stick it to the board, or label a counting stick.

Count in 10 centimetres along the top of the stick from zero to 100 centimetres, and back again. Repeat by counting in decimal equivalents of 0.1 metre along the lower part of the stick.

Q   What does 'converting' from one unit of measurement to another mean?

Q   How many centimetres are equivalent to 1 metre? (100 cm)
**   To 9 metres?** (900 cm) **To half a metre?** (50 cm)

Stress that pupils should include the units in their answers, and not say merely 100, 900 or 50.

Refer to the paper strip.

Q **What is 0.2 of a metre converted to centimetres?** (20 cm)
 What is 0.7 of a metre in centimetres? (70 cm)

Q **What would 30 centimetres be in metres?** (0.3 m)

Explain that each centimetre is one hundredth of a metre, so that 56 centimetres is 56 hundredths of a metre. Write on the board 56 cm = 0.56 m.

Q **What would 27 centimetres be in metres?** (0.27 m) **75 cm?** (0.75 m)

Q **What would 0.42 of a metre be in centimetres?** (42 cm)

Q **What is 60 centimetres converted to metres? What about 10 centimetres? And 5 centimetres?**

Remind pupils that 0.60 m is written as 0.6 m, and 0.10 m is written as 0.1 m, and that 5 cm is written as 0.05 m. Draw attention to the zeros in the last example.

Write on the board 4 m 23 cm. Point to the 4 metres.

Q **How many centimetres are there in 4 metres?** (400 cm)
 How many centimetres are there in 4 metres 23 centimetres? (423 cm)

Q **What would 23 centimetres be in metres?** (0.23 m)
 How many metres are there in 4 metres 23 centimetres? (4.23 m)

Write on the board 4 m 23 cm = 423 cm = 4.23 m.

Write on the board one of the forms 6 m 38 cm, 638 cm and 6.38 m. Ask pupils to provide the other two forms. Repeat with 2 m 8 cm.

Work through the problem on **OHT N3.6a**. Ask pupils to write down their reason why Sam is correct. Stress the need for a full explanation and a complete sentence.

Invite a pupil to put a cross on the line to mark Lynn's jump. Make sure that pupils understand that there is no division on the line that corresponds to 1.14 metres, and that it lies between 1.1 m and 1.2 m.

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other tasks	**Unit 3 section 3: Metres and centimetres**	
	2 Measurement problems	page 120
Springboard 7 Units 3 and 10	Star challenge 7: Trains and lorries	page 122
	Unit 10 section 2: Multiplication	
	Star challenge 5: 'Real life' problems	page 336

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plenary	Hold up a metre stick, saying: 'This is one metre.' Prop it up so that pupils can refer to it.

Resources
metre stick
five pieces of string or
  ribbon, cut to varying
  lengths up to 1 metre
  (keep a note of the
  length of each one)
mini-whiteboards

Q **If you were estimating a length up to 1 metre, what would you regard as a good estimate? How close would it have to be?**

Establish that an estimate within 5 centimetres either way could be regarded as a good one, a range of 10 cm. If appropriate, ask pupils what percentage 10 cm is of 1 metre (10%).

Q **Would a range of 10 cm be the limits for a good estimate of a distance of 100 metres?** (no – the range would be greater – perhaps 10% of 100 metres, or 10 metres)

One by one, hold up the five lengths of ribbon or string. Ask pupils to jot down an estimate of the length **in metres**. Stress that they should write the unit of measurement (metres) each time, not just the value. After each one, tell pupils the measured length.

Q   Whose estimate was within 5 centimetres, either more or less?

Check pupils' estimates before holding up the next string or ribbon.

> **Remember**
>
> • When the answer to a question is a measurement, remember to include the units.
>
> • Use the context of the question to decide whether you need to round up or round down.

On sports day pupils get points for how far they jump.

Standing long jump	
Over 80 cm	1 point
Over 100 cm	2 points
Over 120 cm	3 points
Over 140 cm	4 points
Over 160 cm	5 points
Over 180 cm	6 points

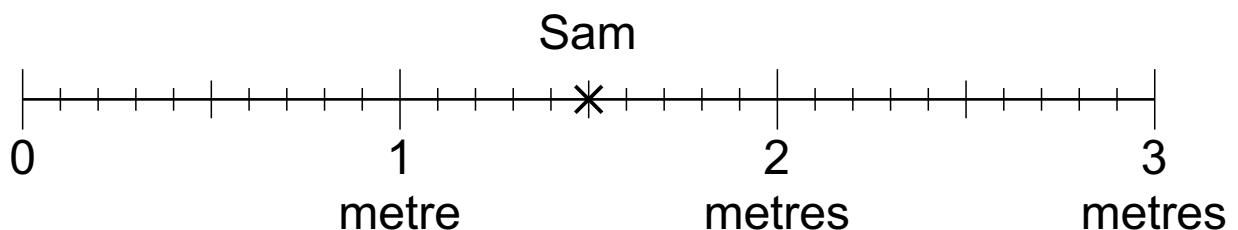Sam said: 'I jumped 1.5 metres. I get 4 points.'
Give a reason why Sam is correct.

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Each pupil put a cross on a line to show
how far they jumped.

Sam put her cross at 1.5 metres.

Sam

0   1   2   3
      metre   metres   metres

Lynn jumped 1.14 metres.
Put a cross on the line for Lynn's jump.