Diagnostic TASK

FOCUS

Understanding Units

- Key Understanding 8

Direct Measure

- Key Understanding 4

Page Sections

Years 5–9

Purpose

To investigate children's understanding of standard centimetre lengths and their relationship to decimal numbers (to one or more decimal places).

Materials

Page Sections sheet.

Producing the work samples

Whole Class

Hand a copy of the Page Sections sheet to each child. Read through the instructions so students are clear about what is required, but do not mention 'divide' or 'division' or give any clues about how they should proceed.

Remind students to write down what they did to find the correct mark for each ruler. Follow-up questioning may be needed if individual students give insufficient information about their thinking.

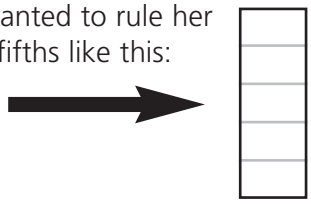
Individual interview

These are appropriate if children are unable to read the information. As with the whole class, avoid giving clues about what to do. You can scribe the child's explanations if they are unable to do this for themselves.

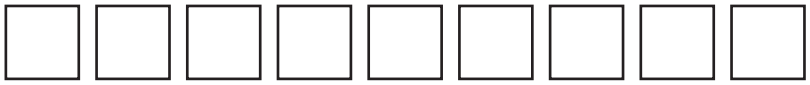
Note: Students may recognise that when measuring in centimetres, one decimal place tells how many millimetres. But they may not realise that the first decimal place always shows how many millimetres, and that decimal places beyond the first place are therefore about parts of a millimetre. The language students use to explain their interpretation of the numbers can help you to see whether they understand why this is so.

Page Sections Name _____ Year _____ Date _____

Carrie wanted to rule her page in fifths like this:



She measured the length of the page and it was 29.5 cm long. Show the calculator keys she would need to press to work out where to draw the lines.



This is the answer Carrie's calculator gave:

5.9

Show on this ruler where she needs to draw the **first** line, and the **second** line.

How did you know where to mark the ruler?

Carrie wanted to rule another page in quarters. She used her calculator and this is the answer she got:

7.375

Show on this ruler where she needs to draw the **first** line and the **second** line.

How did you know where to mark the ruler?

Carrie wanted to rule her last page in thirds. She used her calculator and this is the answer she got:

9.8333333

Show on this ruler where she needs to draw the **first** line only.

How did you know where to mark the ruler?

Diagnostic TASK

FOCUS
Understanding Units
- Key Understanding 8

Decimals and Measures Years 5–9

Purpose
To investigate children's ability to relate decimal numbers to units of mass, time and length.

Materials
Decimals and Measures sheet.

Producing the work samples
Whole Class
Hand a copy of the Decimals and Measures sheet to each child. If necessary, read it to them, without giving any clues as to how to complete it.
Encourage the children to give a full explanation for each part.
Follow-up questioning may be needed if individual students give insufficient information about their thinking.

Individual interview
These are appropriate if students are unable to read the information. As with the whole class, avoid giving clues about what to do. You can scribe the child's explanation if they are unable to do this for themselves.

Decimals and Measures

Name _____ Year _____ Date _____

We know that **3.25 metres** is equal to **3 metres** and **25 centimetres**.

So why can't **3.25 kilograms** be equal to **3 kilograms** and **25 grams**?

What does **3.25 kilograms** equal? _____ kilograms and _____ grams

And why can't **3.25 hours** be equal to **3 hours** and **25 minutes**?

What does **3.25 hours** equal? _____ hours and _____ minutes

And why can't **3.25 centimetres** be equal to **3 centimetres** and **25 millimetres**?

What does **3.25 centimetres** equal? _____ centrimetres and _____ millimetres

Jacob had to cut 33 metres of rope into 8 equal length pieces.

He used his calculator and pressed: 3 3 ÷ 8 =

This is what he saw on his calculator: 4.125

What length will he need to cut each piece of rope? _____

Explain how you know.

Jacob knew you can measure the same length using different units, so he said the length of each piece is:

_____ metres OR _____ centimetres OR _____ millimetres