

SPRINGBOARD 6 LESSON

1 PLACE VALUE

TOTAL TIME

30
MINUTES

Objective:

- Order a set of decimal numbers and identify the most significant digit when sorting numbers

Vocabulary:

- significant digit

By the end of the lesson children should be able to:

- order a set of decimal numbers.

Resources:

- a class set of place value mats and digit cards
- a set of mixed decimal number cards, up to three decimal places
- Resource Sheet 1.1
- whiteboards and pens

ORAL AND MENTAL STARTER

10
MINUTES

Write on the board 34 052. Get children to say the number in words and discuss the value of different digits.

Q: What is the value of the digit 5?

Use the place value mat and digit cards to make 34.05 and ask the children to say the number in words.

Q: Why is there a zero in the tenths column?

Repeat this process with 280.67 and 3.004, discussing the meaning of the zeros in each case.

Reinforce this by writing on the board 105, 10.5, 1.05 and 0.105 and discuss the significance of the zeros.

Q: What is 34.05 multiplied by 10?

Demonstrate how to find the answer by moving all the cards on the mat one place to the left.

Ask the children to read the answer and give the answers to 34.05×100 and 34.05×1000 .

Q: What is 34.05 divided by 10?

Demonstrate how to find the answer by moving all the cards on the mat one place to the right.

Ask the children to read the answer, and give the answers to $34.05 \div 100$ and $34.05 \div 1000$.

Q: How would you explain to someone how to multiply a decimal number by 10?**Q: How would you explain to someone how to divide a decimal number by 10?**

Establish the idea that when multiplying a number by 10, the digits shift one place to the left and when dividing a number by 10, they shift to the right.

MAIN TEACHING ACTIVITY

Compare the two numbers 2 and 0.528 by making these numbers on the place value mats.

Q: Which is the bigger number?

Use the place value mat to demonstrate and establish that 2 is bigger because it has 2 units compared to 0.528 that has no units even though it has more digits.

Q: Which is smaller, 2.05 or 2.50?

Demonstrate and emphasise the need to look at the digits after the decimal point.

Q: Does the number of digits affect the size of the number?

Compare 1234 and 999. Ensure that children understand that when comparing whole numbers the number, of digits can be used to compare the relative size of the numbers.

Compare 0.123 and 0.3 and establish that when comparing decimal numbers less than one, the number of digits is not always significant. Emphasise that children need to compare the number of tenths and if necessary the hundredths and thousandths. Compare 21.45 and 21.65, and 7.21 and 7.211.

Q: Can you give me an example where a three-digit decimal number is smaller than a one-digit decimal number?

Refer back to 2 and 0.528.

Ask the children to make the following numbers using the mats:

8.19, 8.09, 8.91 and 8.9.

Q: Which is the most important (significant) digit (units, tenths or hundredths) to look at when ordering these numbers?

Establish that to order the numbers we first compare the units, then the tenths, then the hundredths.

Repeat for 34.7, 34.74, 37.74 and 37.47.

Take the set of decimal cards, shuffle the set, turn over four cards and stick them to the board. The children then order the set of four cards from smallest to largest and record their answer on a whiteboard. Shuffle the cards again and repeat.

PLENARY



Present the children with the following information:

Some children of Spring Hill Primary School competed in a long jump competition. Here are the results:

Sarah	1.4 m
Matthew	1.45 m
Saki	1.38 m
Bob	1.39 m

Q: Who won the competition?

Establish that the digit we need to focus on to start with is the tenths digit as the units digit is the same in each case, then the hundredths digit.

Remember:

- When ordering numbers, identify and compare the most significant digits.
- Don't be fooled into thinking that the more digits there are after the decimal point, the bigger the number.

LESSON 1 RELATED TEST QUESTION
2000 TEST A (NON-CALCULATOR)

11

Circle **two** numbers which **add** to make **0.12**



0.1 0.5 0.05 0.7 0.07 0.2

1 mark

MARK SCHEME

0.1 0.5 0.05 0.7 0.07 0.2

Accept alternative indications, e.g. the numbers crossed or underlined.

ANALYSIS OF CHILDREN'S ANSWERS

- A common error, when asked to combine two numbers to make a decimal number to two places, was to combine two numbers with one decimal place, for example, 0.5 and 0.7 to make 0.12.
- Many children did not answer this question.

IMPLICATIONS FOR PLANNING

- Decimal place value should be planned for in its own right, not just in this context of money and measures.
- Equivalent vulgar fractions can aid understanding of addition/subtraction of decimals. For example, viewing 0.12 as $\frac{12}{100}$ would help children to see that 0.05 ($\frac{5}{100}$) and 0.07 ($\frac{7}{100}$) total 0.12.
- A calculator provides a useful resource for children to see the effects of repeatedly adding 0.01 to 0.07.