

PLACE VALUE – DECIMALS

Week 4

Objectives for this week

- Explain what each digit represents in decimals with up to two places, and partition and order these numbers
- Relate fractions to their decimal equivalents

Teacher exposition and guided practice

Consolidate knowledge of tenths and hundredths	C
Compare two decimal numbers	N
Consolidate understanding of decimal notation	C
Consolidate understanding of the relationship between decimals and fractions	C
Practise ordering decimal numbers and fractions on a number line	C
Know and use fraction and decimal equivalents	C
Order decimal numbers and relate them to their position on a number line	N
Solve problems involving decimal numbers in the context of measurement	N

Notes on the teaching

Decimals were first introduced in Y4 Week 32; most of this week provides consolidation of the introduction to decimals. Pupils consolidate their understanding of the value of decimal numbers and learn to compare two decimal numbers, for example, 1.23 and 1.3. They learn that, for example, 3.12 has the same value as $3 + \frac{1}{10} + \frac{2}{100}$ and learn to recognise decimals and their fractional equivalents, so they know that, for example, 0.25 is one quarter and 0.4 is four tenths.

Note: In the resources, the decimal point is positioned correctly midway vertically between the whole numbers and the tenths. In the lesson materials, however, for ease of typing, the decimal point appears as a dot on the line as in, for example, 2.21.

Language and vocabulary

fraction	tenths
whole number	hundredths
decimal	ones/units
decimal point	place value
decimal place	equivalent

Starters for the week - choose from

Counting and understanding number Y5 1.8
Counting and understanding number Y5 1.9

Ordering and place value Y5 2.4

(Note: There is a space left in each lesson plan to write in the starter you plan to use.)

WEEK 4 LESSON 1

Resources

Starter

Part 1: Consolidate knowledge of tenths and hundredths C

Teacher exposition and guided practice

- Ask pupils to tell you what they know about decimals from their learning in Year 4, for example:
 - the decimal point separates whole numbers from the decimal parts;
 - decimal numbers can have tenths and hundredths;
 - columns to the right of the decimal point are tenths and then hundredths.
- Display Card set 4:1a and discuss the visual representations, namely:
 - a fully-shaded square represents one whole;
 - a fully-shaded row represents one tenth;
 - a single shaded square represents one hundredth.
- Select any two cards, e.g. one showing one whole and the other showing 0.2 to represent 1.2 altogether.
- Count the number of whole ones (1) and lead pupils to count the decimal part as two tenths (each row is one tenth of a whole).
- Say: *Together these represent one whole and two tenths. We write this as 1.2.*
- Repeat with a decimal number with hundredths, e.g. 1.32. Select a card showing one whole and the card showing 0.32.
- Say (whilst pointing to the appropriate representation): *There is one whole number, three tenths and two hundredths. We write this as 1.32.*
- Show and recap on how this decimal number is made up by writing $1 + \frac{3}{10} + \frac{2}{100}$.
- Say: *The number is one point three two.*
- Write: 1.32.
- Repeat with other decimal numbers using the representations on Card set 4:1a.

Y5 CST 4:1a

Practice and consolidation

This is a teacher-led activity. Display cards from Card set 4:1b to make a variety of decimal numbers between 1 and 3, e.g. 1.36, 2.63 and so on. Select a pupil to say the decimal number represented. Pairs partition the number into ones, tenths and hundredths and record in their exercise books, e.g.

2.63 = two wholes + six tenths + three hundredths.

Repeat with other numbers in the same way.

Y5 CST 4:1b

Part 2: Compare decimal numbers in terms of numbers of tenths or hundredths and place in order on a number line C

Teacher exposition and guided practice

- Briefly take feedback and pupils' answers from the teacher-led activity. Clarify any misconceptions.
- Use Card sets 4:1a and 4:1b to make and display pairs of decimal numbers, e.g. 1.32 and 1.36.
- Ask: *Which is the higher number?*
- Lead pupils to understand that 1.36 is higher, as it has the same number of tenths (count the rows) but four **more** hundredths (count the individual squares).
- Repeat, making a different pair of numbers. Ask pupils out to compare them and find the higher/lower number, giving reasons.
- Next, compare two numbers with a different number of figures after the decimal point, e.g. 1.7 and 1.66. Ask: *Which is the higher number?* If children tell you that 1.66 is higher because it has more figures (a common misconception), refer them to the visual representation which clearly shows 1.7 with more shaded squares.
- Write some decimal numbers, e.g. 1.3 1.21 1.12 1.01 1.11.
- Ask children to point to a number which has:
 - two tenths;*
 - no tenths;*
 - the same number of hundredths as tenths, and so on.*
- Ask: *Which is the lowest number?*
- Discuss strategies for deciding this by considering the numbers of wholes, tenths and hundredths.
- Explain that if a decimal number is less than 1, i.e. it has no whole numbers, then it is written with a single zero (0) to the left of the decimal point to indicate this, as for example, 0.41.

Y5 CST 4:1a and 4:1b

Practice and consolidation

Display the first question on Core worksheet 4:1 which shows number lines from zero to two. Pairs discuss and agree the correct place on the number line for each of the decimal numbers, e.g. they mark and label the approximate position of 1.25 halfway between 1.2 and 1.3. They repeat with a different set of decimal numbers, finally writing five decimal numbers of their own and putting them in order.

Y5 CW 4:1

Conclusion

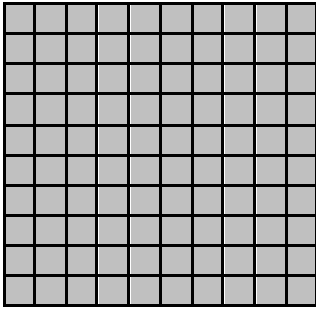
- Count round the class in tenths starting at zero, e.g. *zero, zero point one, zero point two.....* and so on.
- Count forwards in tenths across whole numbers, e.g. 2.7, 2.8, 2.9, 3, (not 2.10), 3.1..... and so on.
- Ask a few pupils to tell the class what they have learned about decimals.

Extension / differentiation

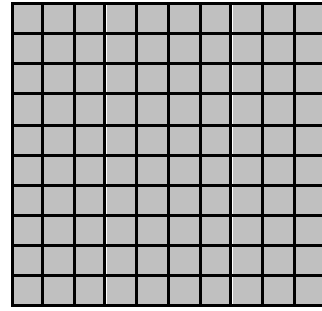
- Part 1: After partitioning the decimal numbers on Card set 4:1b, children write the nearest whole number for each decimal number. If appropriate they could also write the decimal numbers needed to make the **next** whole number.
- Part 2: After completing Core worksheet 4:1, pupils match and label five other numbers on each number line, positioning them correctly.

Y5 CST 4:1b

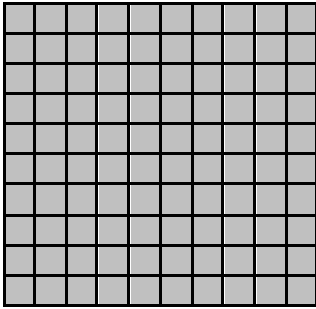
Y5 CW 4:1



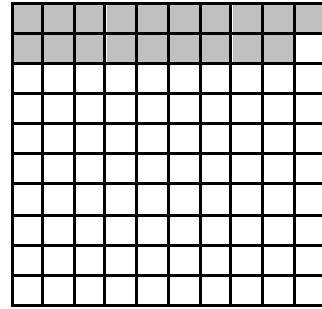
Y5 CST 4:1a



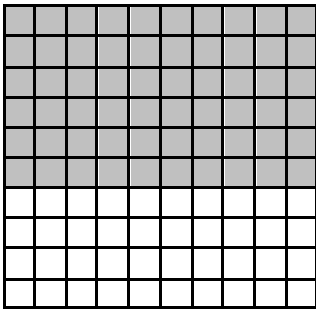
Y5 CST 4:1a



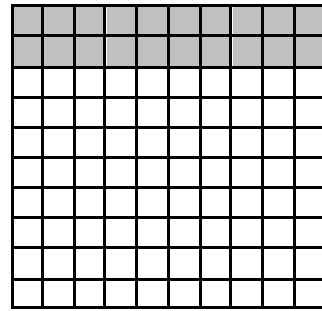
Y5 CST 4:1a



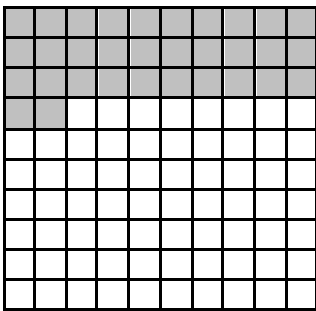
Y5 CST 4:1a



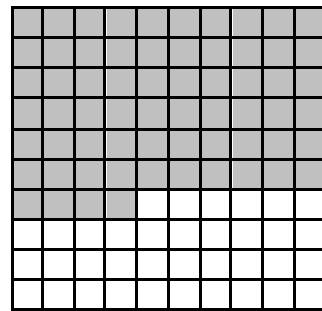
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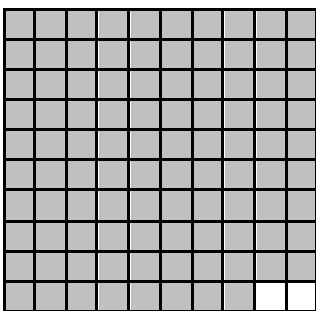
Y5 CST 4:1a



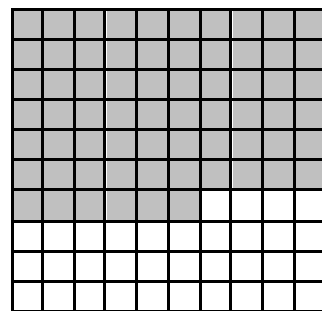
Y5 CST 4:1a



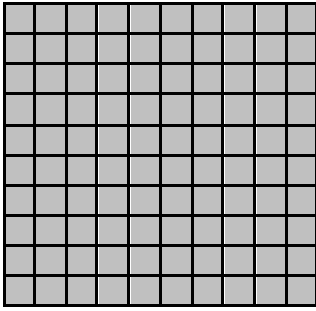
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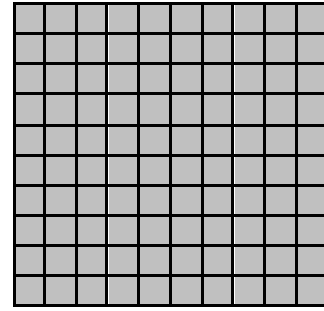
Y5 CST 4:1a



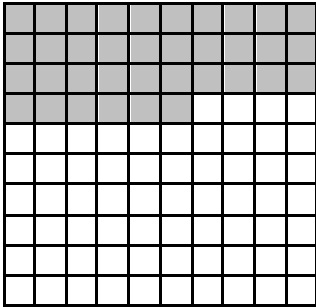
Y5 CST 4:1a



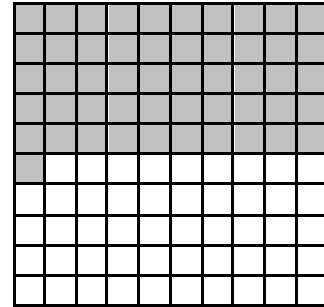
Y5 CST 4:1b



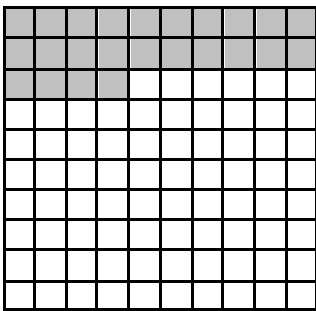
Y5 CST 4:1b



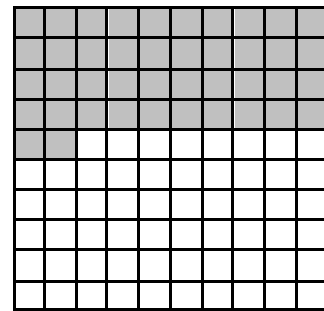
Y5 CST 4:1b



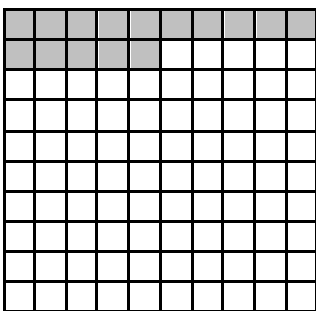
Y5 CST 4:1b



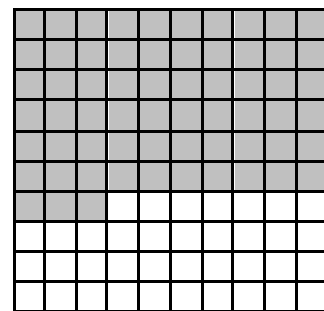
Y5 CST 4:1b



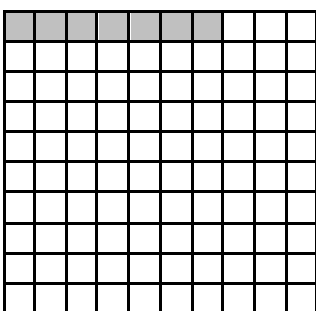
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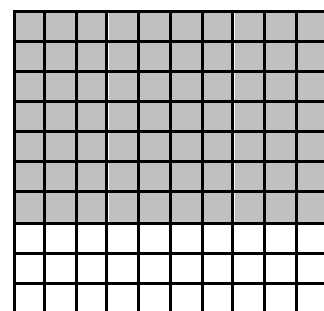
Y5 CST 4:1b



Y5 CST 4:1b



Y5 CST 4:1b



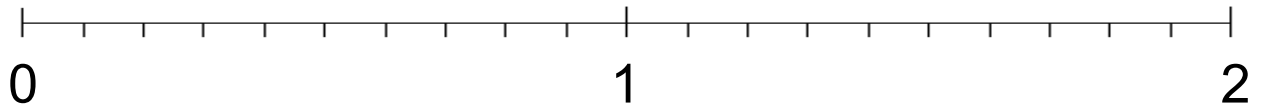
Y5 CST 4:1b

Name

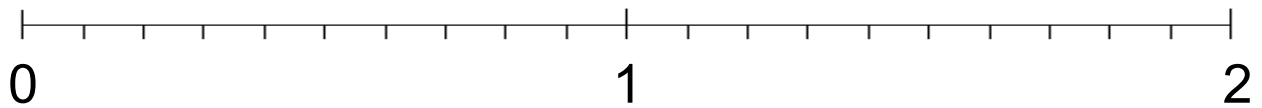
Ordering decimal numbers

Mark and label the decimal numbers in the correct size order on the number lines.

1. 0.7, 1.25, 1.52, 1.8, 0.24



2. 0.6, 1.6, 1.16, 1.26, 1.02



Now select and write five decimal numbers of your own and place them in order on the number line.

3.

