Place value – integers and decimals

Notes and guidance

In this small step, children continue to explore numbers with 3 decimal places, now extending to numbers greater than 1

As in the previous step, children use counters and place value charts to represent numbers greater than 1 with up to 3 decimal places, identify the value of the digits in a decimal number and partition decimal numbers in a range of ways. They can describe the difference between integer and decimal parts of numbers, for example recognising 3 tens and 3 tenths.

Children understand the relationship between the different place value columns, for example knowing that tenths are 10 times the size of hundredths and one-tenth the size of ones ($0.01 \times 10 = 0.1$, $1 \div 10 = 0.1$). Number lines and thousand squares are helpful representations for exploring these relationships.

Things to look out for

- Children may confuse the words "thousand" and "thousandth", "hundred" and "hundredth", and "ten" and "tenth".

- Children may use the incorrect number of placeholders, and so write the incorrect number.

Key questions

- What does a decimal number represent?

- How many tenths/hundredths/thousandths are there in 1 whole?

- How many thousandths are there in 1 hundredth?

- What digit is in the _____ column?

- What is the value of the digit _____ in the number _____?

- Which is greater, 1.897 or 3.1? How do you know?

Possible sentence stems

- There are _____ ones, _____ tenths, _____ hundredths and _____ thousandths.
  The number is _____

- There are _____ in _____

- _____ is 10/100/1,000 times the size of _____

- _____ is one-tenth/hundredth/thousandth the size of _____

National Curriculum links

- Identify the value of each digit in numbers given to 3 decimal places and multiply and divide numbers by 10, 100 and 1,000 giving answers up to 3 decimal places

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Key learning

- Use the cards to complete the sentences in as many ways as possible.

| tens | ones | tenths | hundredths | thousandths |

_____ are 10 times the size of _____

_____ are one-tenth the size of _____

_____ are 100 times the size of _____

_____ are one-hundredth the size of _____

_____ are 1,000 times the size of _____

_____ are one-thousandth the size of _____

- Complete the sentences to describe the number.

| O | Tth | Hth | Thth |
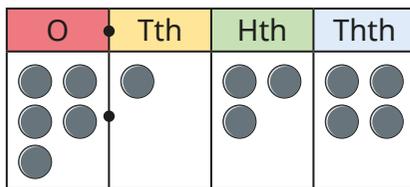
There are _____ ones, _____ tenth, _____ hundredths and _____ thousandths.

The number is _____

- Use a place value chart and plain counters to represent the numbers.

| 2.423 | 12.67 | 20.451 | 6.015 | 30.303 |
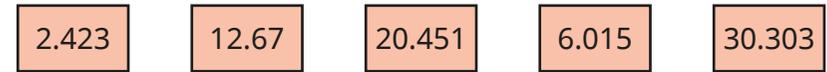
- What is the value of the 3 in each number?

| 1.34 | 31.4 | 11.403 | 4.13 | 103.414 |
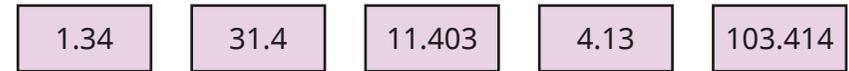
- What decimal numbers are the arrows pointing to?

A   B

4   5

C   D

2.6   2.7

E   F   G

9.34   9.35   9.36
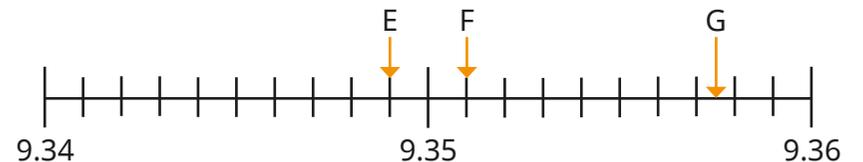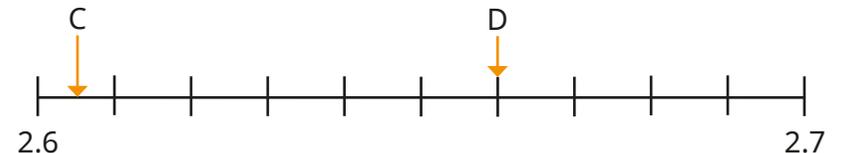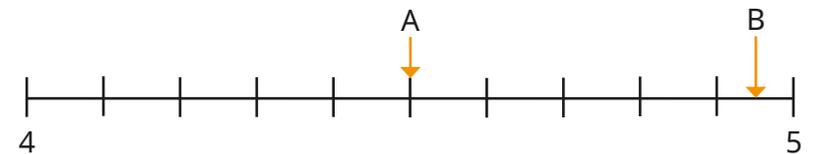
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Reasoning and problem solving

Which is the odd one out?

A | 2 + 0.1 + 0.02 + 0.003

B | 1 + 1.1 + 0.02 + 0.003

C | 2 + 1.1 + 0.03

D | 2 + 0.1 + 0.01 + 0.013

E | 2 + 0.1 + 0.023

Explain your answer.

Create your own question like this for a partner.

C

C is 3.13, but all the other numbers are 2.123

O	Tth	Hth	Thth

Use five plain counters to make a number greater than 1

What is the value of each digit in your number?

How many ways can you partition it?

multiple possible answers

Is the statement always true, sometimes true or never true?

> A number with 3 decimal places is greater than a number with only 1 decimal place.

Explain your answer.

sometimes true