Fractions

This document is part of a set that forms the subject knowledge content audit for Key Stage 1 and Key Stage 2 maths. Each document contains: audit questions with tick boxes that you can select to show how confident you are (1 = not at all confident, 2 = not very confident, 3 = fairly confident, 4 = very confident), exemplifications; explanations; and further support links. At the end of each document, there is space to type notes to capture your learning and implications for practice. The document can then be saved for your records.

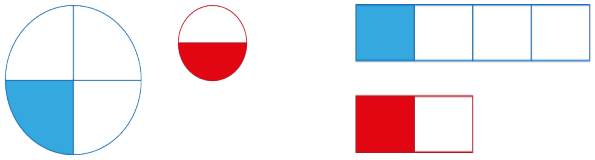
Question 5

How confident are you that you understand and can support children to recognise the importance of the denominator in comparing and ordering fractions?

1 ☑ 2 ☐ 3 ☐ 4 ☐

How would you respond …?

a. Zainab says that these two diagrams prove that $\frac{1}{4} = \frac{1}{2}$.

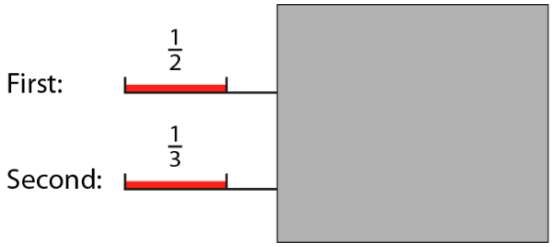


Is Zainab correct?

Emma looks at these two diagrams. She says they prove that $\frac{1}{4} > \frac{1}{2}$.

Is Emma correct?

b. Which line is longer?



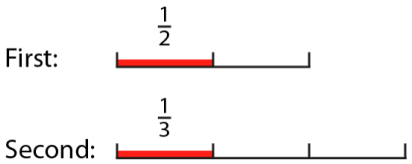
Responses

Note your responses to the questions here before you engage with the rest of this section:

Did you notice that…?

a. Neither Zainab nor Emma is correct. They are looking at the area of one part and comparing that to the area of another part, instead of relating the fraction to the whole.

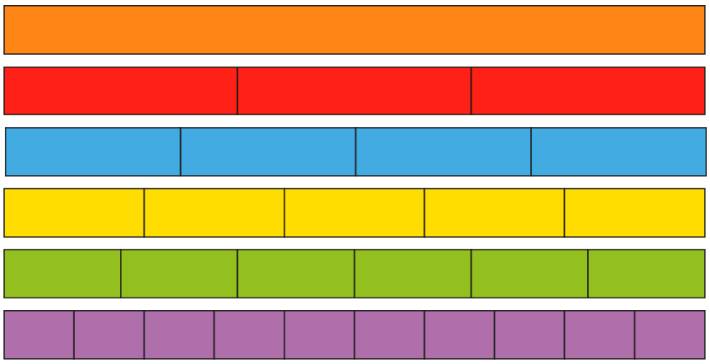
b. **First:** *'If one-half is a part, then the whole is two times as much. Take two parts and put them together to make one whole.'*
Second: *'If one-third is a part, then the whole is three times as much. Take three parts and put them together to make one whole.'*



The role of the denominator in comparing and ordering fractions

To develop the children's understanding of the role of the denominator in comparing fractions, they need to experience dividing wholes that are the same size into different amounts of equal parts. Resources such as fraction walls or Cuisenaire® rods are helpful to support this. Interactive teaching programmes are also helpful to model aspects but are not a replacement for children physically exploring building wholes.

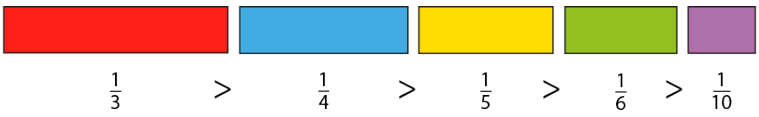
When children have explored creating and building wholes, draw their attention to the number and size of equal parts.



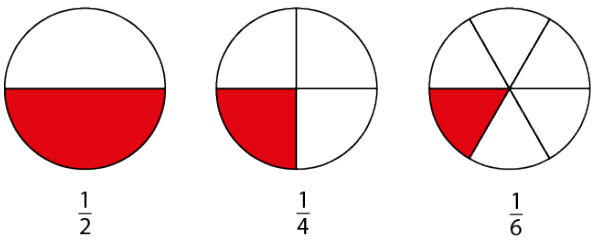
- *'Which coloured strip has the most equal parts?'* (purple)
- *'What else do you notice about the parts?'* (they are the smallest)

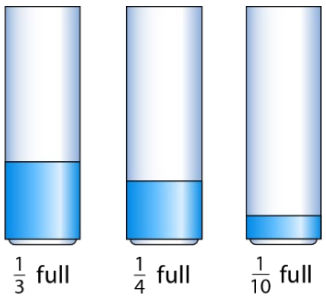
When children have explored this, ask them to make a generalisation: 'When the whole is the same, the greater the number of equal parts, the smaller each equal part is.'

Children can use the representation alongside the fraction notation to order fractions or to compare them.



They should have the opportunity to use multiple representations to support this understanding. For example:





They will have had lots of experiences developing the generalisation: 'When the whole is the same, the greater the number of equal parts, the smaller each equal part is.'

This generalisation could be developed to include more technical mathematical vocabulary: *'When comparing unit fractions, the greater the denominator, the smaller the fraction.'*

Common errors in this area may include:

- children applying their knowledge of the number system when comparing fractions, e.g. 10 is bigger than 2 so $\frac{1}{10}$ is bigger than $\frac{1}{2}$
- children looking at a pictorial representation and comparing the area rather than the fraction.

What to look for

Can a child:

- *use their knowledge about comparing the part to the whole to find the relative size?*

Links to supporting materials:

NCETM Primary Professional Development materials, Spine 3: Fractions:

- Topic 3.2: Unit Fractions: Identifying, Representing and Comparing

Notes:

Key learning from support material and self-study:

What I will focus on developing in my classroom practice: