

## Answers to Multi-Choice Quiz

1. What fraction is shaded? *Checks basic understanding of fractions of a shape*

- a)  $\frac{1}{3}$  *Pupils perceives this as 1 white part out of 3 blue parts – lacks understanding of the numerator and the denominator*
- b)  $\frac{3}{1}$  *Pupil perceives this as 3 blue parts and 1 white part – lacks understanding of the numerator and denominator*
- c)  $\frac{1}{4}$  *Pupil has correctly identified the white part but not the three blue shaded parts*
- d)  $\frac{3}{4}$  **Correct answer**

2. Which shape shows  $\frac{2}{9}$  shaded in? *Checks for basic fraction understanding in a shape*

- a)  **Correct answer**
- b)  *Misconception – pupil sees the numerator as the number of shaded parts and the denominator as the number of remaining unshaded parts*
- c)  *Misconception – pupil has counted the unshaded parts as being  $\frac{2}{9}$  which is correct. Pupil needs to read the question more carefully*
- d)  *Pupil can see 2 shaded parts, but may have miscounted the total number of parts. Checks for understanding of equivalence*

3. What fraction of the shape is shaded? Circle the equivalent fraction below  
*Checks for understanding of equivalence*

- a)  $\frac{2}{5}$  *Misconception – pupil has counted the unshaded parts of the shape. Pupil may be aware that the denominator show how many parts make the whole.*
- b)  $\frac{3}{2}$  *Misconception – pupil does not understand that the fraction bar (—) means 'out of the whole shape/amount'. Pupil has counted the shaded parts of the shape correctly though*
- c)  $\frac{9}{15}$  **Correct answer**
- d)  $\frac{6}{4}$  *Pupil may have some understanding of equivalence, but misconceptions lie with not understanding that the denominator is the number of equal parts in the whole*

4. What is the denominator?  
*Checks understanding of the vocabulary linked to fractions*

- a) It is the top number and it shows how many parts we are looking at (shaded parts)  
*Pupils has confused the denominator with the numerator*
- b) It is the bottom number and shows us how many equal parts there are  
**Correct answer**
- c) It is the top number and it shows us how many equal parts there are  
*May understand that the denominator shows the number of equal parts but thinks that the top number represents this*
- d) It is the bottom number and it shows us how many parts we are looking at (shaded parts)  
*May understand that the denominator is the bottom number but thinks that this shows the number of parts we need to look at*

5. What is the numerator?  
Checks understanding of the vocabulary linked to fractions

- a) It is the top number and it shows how many parts we are looking at (shaded parts)  
Correct answer
- b) It is the bottom number and shows us how many equal parts there are  
Pupils has confused the denominator with the numerator
- c) It is the top number and it shows us how many equal parts there are  
May understand that the numerator is the top number but thinks that this shows the number of equal parts there are
- d) It is the bottom number and it shows us how many parts we are looking at (shaded parts)  
May understand that the numerator shows the number of parts we are looking at but thinks that the bottom number represents this

6. What is  $\frac{21}{42}$  in its simplest form? Checks converting equivalent fractions to its simplest form

- a)  $\frac{3}{6}$  Although answer is correct, it is not written in its simplest form – can find equivalent fractions
- b)  $\frac{7}{6}$  Pupil has divided the numerator by 3 and the denominator by 7 – unclear how to find equivalence
- c)  $\frac{5}{9}$  Random answer – lacks understanding of equivalence
- d)  $\frac{1}{2}$  Correct answer

7.  $\frac{3}{7} + \frac{2}{7}$  Checks adding fractions with the same denominators

- a)  $\frac{5}{14}$  Misconception – adding the numerators and the denominators. Pupil has not understood the concept of '3 lots of sevenths plus 2 lots of sevenths'
- b)  $\frac{6}{14}$  Misconception – multiplying the numerators and adding the denominators. Pupil has not understood the concept of '3 lots of sevenths plus 2 lots of sevenths'
- c)  $\frac{5}{7}$  Correct answer
- d)  $\frac{10}{9}$  Random answer – pupil does not understand addition of fractions

8.  $\frac{6}{13} - \frac{5}{13}$  Checks subtracting fractions with the same denominators

- a)  $\frac{1}{13}$  Correct answer
- b) 1 Misconception – subtracting the numerators and the denominators. Pupil has not understood the concept of '6 lots of thirteenths minus 5 lots of thirteenths'
- c)  $\frac{1}{0}$  Misconception – subtracting the numerators and the denominators. Pupil has not understood the concept of '6 lots of thirteenths minus 5 lots of thirteenths'
- d)  $\frac{7}{8}$  Random answer – pupil does not understand subtraction of fractions

9. Write  $\frac{21}{8}$  as a mixed number Checks expressing an improper fraction as a mixed number

- a) 3 May have some idea that  $\frac{21}{8}$  is about 3 but unsure what a mixed number is or how to work it out
- b) 2 May have some idea that  $\frac{21}{8}$  is about 2 but unsure what a mixed number is or how to work it out
- c)  $2\frac{5}{8}$  Correct answer
- d)  $2\frac{1}{5}$  Remainder is 5 – pupils simply puts it as a denominator – lack of understanding about the denominator being a noun – it is what those parts are called, in this case 'eighths'