

# Reasoning and Problem Solving

## Step 1: What is a Fraction?

Teaching note: We recommend this resource is printed in colour.

### National Curriculum Objectives:

Mathematics Year 4: (4F2) [Recognise and show, using diagrams, families of common equivalent fractions](#)

### Differentiation:

Questions 1, 4 and 7 (Problem Solving)

**Developing** Find the odd one out and redraw the unit fraction, using objects, shapes and number lines which include scales.

**Expected** Find the odd one out and redraw the unit or non-unit fraction, using objects, shapes and number lines with indication of scale.

**Greater Depth** Find the odd one out and redraw two representations of the unit or non-unit fraction, using mixed objects, mixed shapes and number lines with some indication of scale.

Questions 2, 5 and 8 (Reasoning)

**Developing** Explain if the image shown is a correct representation of the unit fraction, using objects and shapes up to and including twelfths.

**Expected** Explain if the image shown is a correct representation of the non-unit fraction, using two objects, up to and including twelfths.

**Greater Depth** Explain if the image shown is a correct representation of the fraction, using three objects, up to and including twelfths.

Questions 3, 6 and 9 (Reasoning)

**Developing** Explain if the unit fraction is shown correctly on a scaled number line.

**Expected** Explain if the fraction is shown correctly on a scaled number line.

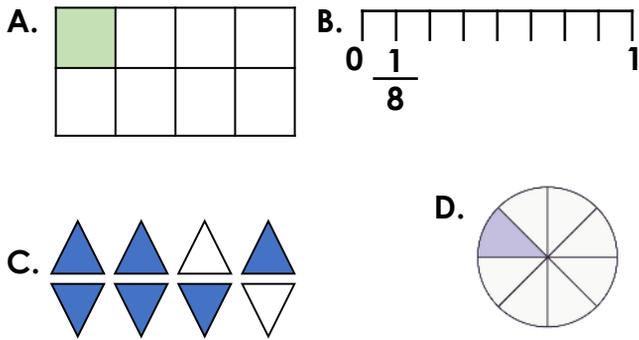
**Greater Depth** Explain if the fraction is shown correctly on a number line with major increments marked.

More [Year 4 Fractions](#) resources.

Did you like this resource? Don't forget to [review](#) it on our website.

# What is a Fraction?

1a. Which image is the odd one out?



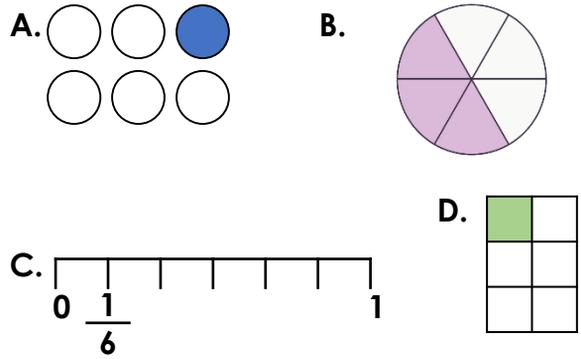
Redraw the image to show the correct fraction.



PS

# What is a Fraction?

1b. Which image is the odd one out?

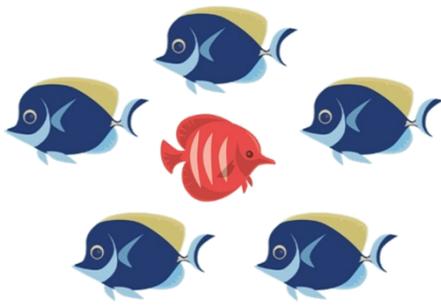


Redraw the image to show the correct fraction.



PS

2a. Leah thinks the fraction represented below is  $\frac{1}{5}$ .



Is she correct? Prove it.



R

2b. Zac thinks the fraction represented below is  $\frac{1}{11}$ .

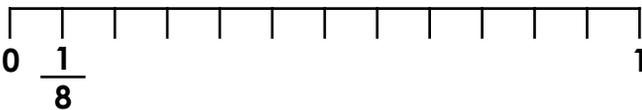


Is he correct? Prove it.



R

3a. Ciaran writes a fraction on the number line.

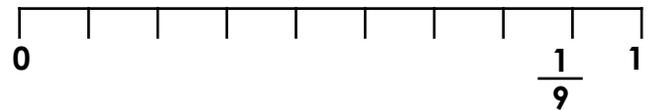


Explain the mistake he has made.



R

3b. Scarlett writes a fraction on the number line.



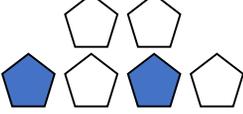
Explain the mistake she has made.

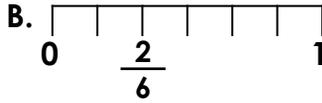


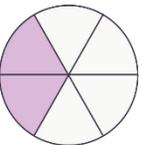
R

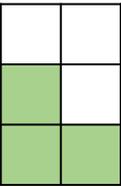
# What is a Fraction?

4a. Which image is the odd one out?

A. 

B. 

C. 

D. 

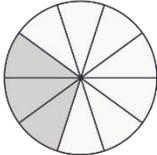
Redraw the image to show the correct fraction.



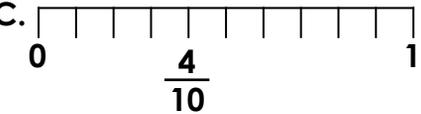
PS

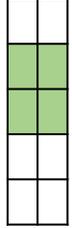
# What is a Fraction?

4b. Which image is the odd one out?

A. 

B. 

C. 

D. 

Redraw the image to show the correct fraction.



PS

5a. Tom thinks one of the fractions represented below is  $\frac{3}{7}$ .

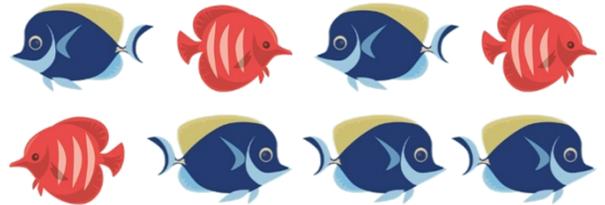


Is he correct? Prove it.



R

5b. Cleo thinks one of the fractions represented below is  $\frac{3}{4}$ .

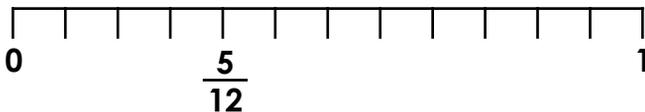


Is she correct? Prove it.



R

6a. Sasha writes a fraction on the number line.

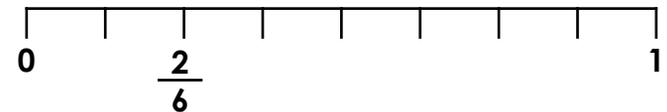


Explain the mistake she has made.



R

6b. Peter writes a fraction on the number line.



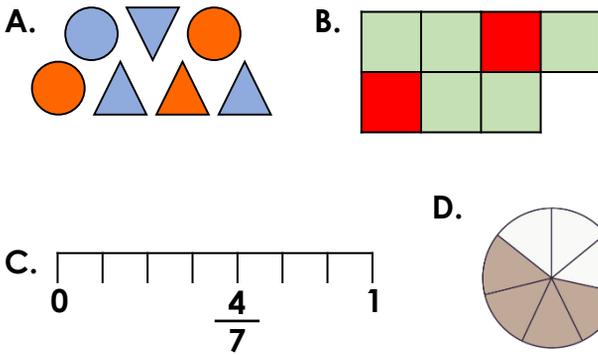
Explain the mistake he has made.



R

# What is a Fraction?

7a. Which image is the odd one out?



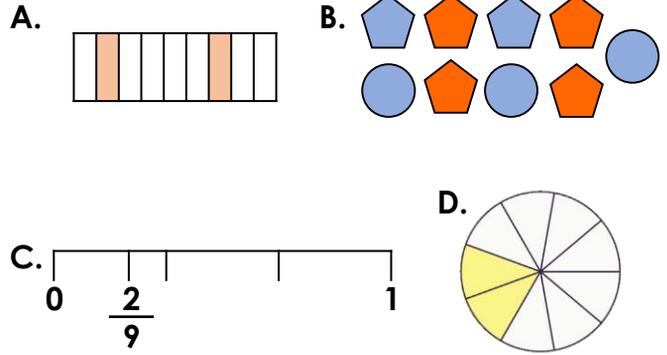
Redraw the image to show the correct fraction and create one of your own.



PS

# What is a Fraction?

7b. Which image is the odd one out?

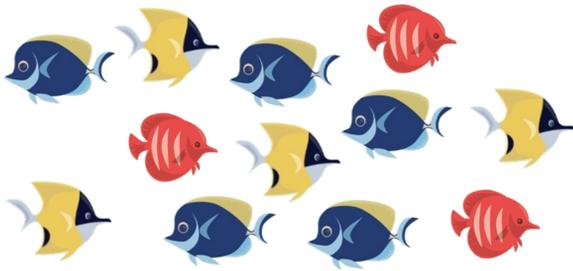


Redraw the image to show the correct fraction and create one of your own.



PS

8a. Amy thinks one of the fractions represented below is  $\frac{3}{12}$ .



Is she correct? Prove it.



R

8b. Vikram thinks one of the fractions represented below is  $\frac{2}{11}$ .

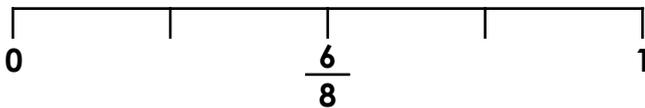


Is he correct? Prove it.



R

9a. Sam writes a fraction on the number line.

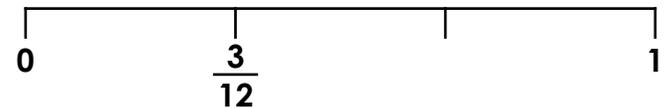


Explain the mistake he has made.



R

9b. Olivia writes a fraction on the number line.



Explain the mistake she has made.



R

## Reasoning and Problem Solving What is a Fraction?

### Developing

- 1a. C is the odd one out. Accept any drawn representation of  $\frac{1}{8}$ .
- 2a. Leah is incorrect because the whole is six. The fraction should be  $\frac{1}{6}$ .
- 3a. Ciaran has written the fraction in the correct position but the number line is in 12ths, not 8ths. He should have written  $\frac{1}{12}$ .

### Expected

- 4a. D is the odd one out. Accept any drawn representation of  $\frac{2}{6}$ .
- 5a. Tom is correct because there are 7 birds in total, 3 are red. The fraction could have also been  $\frac{4}{7}$ .
- 6a. Sasha has written the fraction on the 4<sup>th</sup> increment. The number line is in 12ths so  $\frac{5}{12}$  should have been written on the 5<sup>th</sup> increment.

### Greater Depth

- 7a. B is the odd one out. Accept two representations of  $\frac{4}{7}$ .
- 8a. Amy is correct because there are 12 fish in total. The fractions of fish are  $\frac{3}{12}$ ,  $\frac{4}{12}$  and  $\frac{5}{12}$ .
- 9a. Sam is incorrect because he has placed the fraction half way along the line, which would be  $\frac{4}{8}$ .

## Reasoning and Problem Solving What is a Fraction?

### Developing

- 1b. B is the odd one out. Accept any drawn representation of  $\frac{1}{6}$ .
- 2b. Zac is correct because there are 11 birds and one has different feathers.
- 3b. Scarlett has written the fraction on the  $\frac{8}{9}$  increment. The fraction should have been written on the first increment.

### Expected

- 4b. A is the odd one out. Accept any drawn representation of the fraction  $\frac{4}{10}$ .
- 5b. Cleo is incorrect because the whole is 8. The fraction should be  $\frac{3}{8}$  or  $\frac{5}{8}$ .
- 6b. Peter has written the fraction in the correct position but the number line is in 8ths, not 6ths. He should have written  $\frac{2}{8}$ .

### Greater Depth

- 7b. B is the odd one out. Accept two representations of  $\frac{2}{9}$ .
- 8b. Vikram is incorrect because there are 11 birds but there are more than two that are the same. The fraction of birds are  $\frac{4}{11}$ ,  $\frac{4}{11}$  and  $\frac{3}{11}$ .
- 9b. Olivia is incorrect because the fraction has been written on the  $\frac{4}{12}$  interval.