

Reasoning and Problem Solving

Step 1: Equivalent Fractions

National Curriculum Objectives:

Mathematics Year 5: (5F2b) [Identify, name and write equivalent fractions of a given fraction, represented visually, including tenths and hundredths](#)

Differentiation:

Questions 1, 4 and 7 (Reasoning)

Developing Describe an error in a model of equivalent fractions of a half, a third, a quarter or a fifth using pictorial support where the original denominator is represented first.

Expected Describe an error in a model of equivalent unit and non-unit fractions using pictorial support where the original denominator is represented first.

Greater Depth Describe an error in a model of equivalent fractions of unit and non-unit fractions using pictorial support where the image represents a multiple of the denominator.

Questions 2, 5 and 8 (Reasoning)

Developing Correct and explain errors when shading equivalent fractions of a half, a third, a quarter or a fifth where the original denominator is represented first.

Expected Correct and explain errors when shading equivalent unit and non-unit fractions where the original denominator is represented first,

Greater Depth Correct and explain errors when calculating equivalent fractions of unit and non-unit fractions.

Questions 3, 6 and 9 (Problem Solving)

Developing Find 2 possibilities for a missing function used to create equivalent fractions of a half, a third, a quarter or a fifth using pictorial support where the image represents a multiple of the denominator.

Expected Find 2 possibilities for a missing function used to create equivalent unit or non-unit fractions.

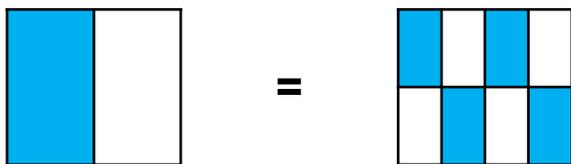
Greater Depth Find 2 possibilities for two missing functions used to create equivalent fractions of unit and non-unit fractions.

More [Year 5 Fraction](#) resources

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

Equivalent Fractions

1a. Cole has coloured two grids to create an equivalent fraction.



The parts do not need to be together to create a fraction.

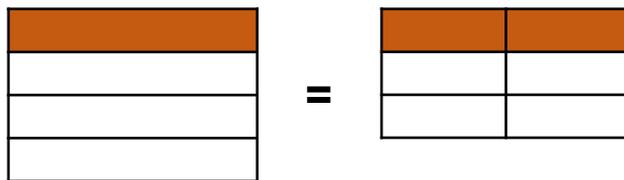
Is Cole correct? Explain your answer.



R

Equivalent Fractions

1b. Jennie has coloured two grids to create an equivalent fraction.



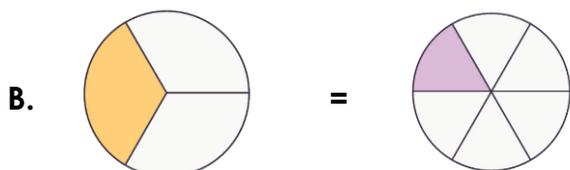
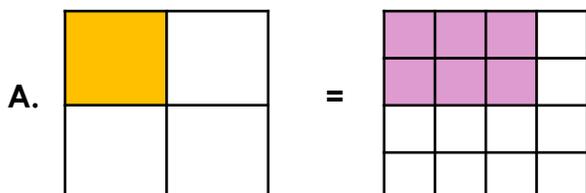
They are shaded in the same shape so they are equal.

Is Jennie correct? Explain your answer.



R

2a. Sylvia has drawn some equivalent fractions.

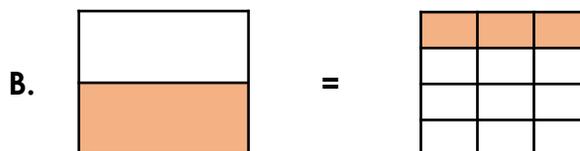
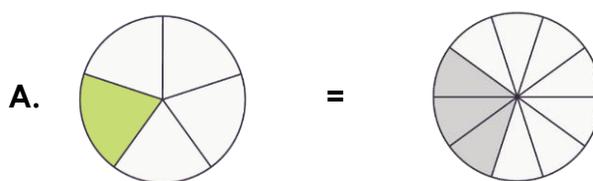


Find and explain any mistakes.



R

2b. Mark has drawn some equivalent fractions.

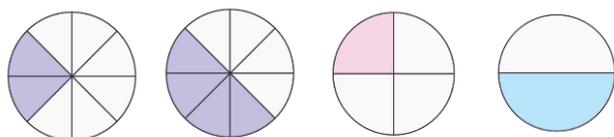


Find and explain any mistakes.



R

3a. Give 2 possible values for A and B. Use the images to help you.

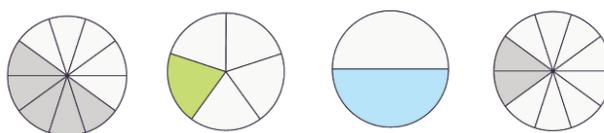


$$\frac{1}{A} = \frac{B}{8}$$



PS

3b. Give 2 possible values for A and B.



$$\frac{1}{A} = \frac{B}{10}$$



PS

Equivalent Fractions

4a. Amelia has coloured two grids to create an equivalent fraction.



Two parts are shaded in each grid so they show equivalent fractions.

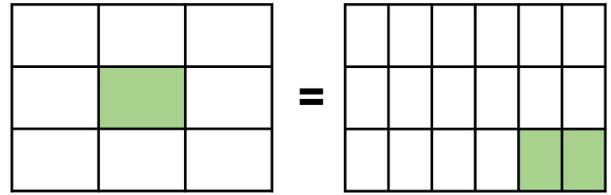
Is Amelia correct? Explain your answer.



R

Equivalent Fractions

4b. Conrad has coloured two grids to create an equivalent fraction.



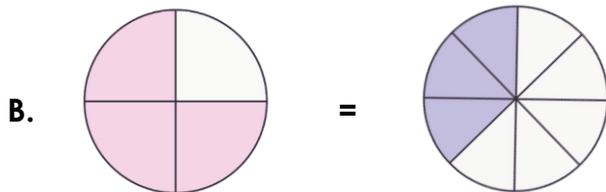
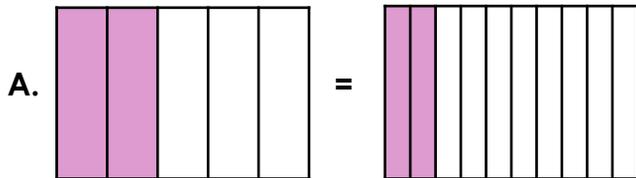
The shaded parts are equal.

Is Conrad correct? Explain your answer.



R

5a. Dwayne has drawn some equivalent fractions.

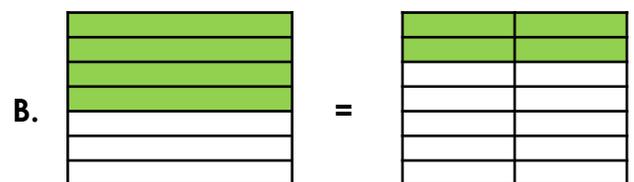
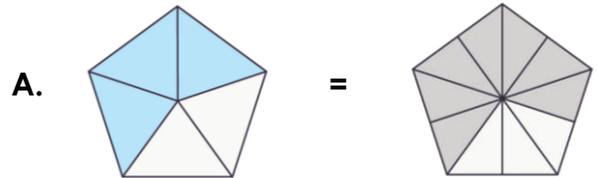


Find and explain any mistakes.



R

5b. Shelly has drawn some equivalent fractions.



Find and explain any mistakes.



R

6a. Give 2 possible values for A and B.

$$\frac{1}{A} = \frac{B}{24}$$

Diagram showing a purple arrow from the denominator 'A' to the denominator '24' labeled 'x?', and another purple arrow from the numerator '1' to the numerator 'B' labeled 'x?'.



PS

6b. Give 2 possible values for A and B.

$$\frac{2}{A} = \frac{B}{36}$$

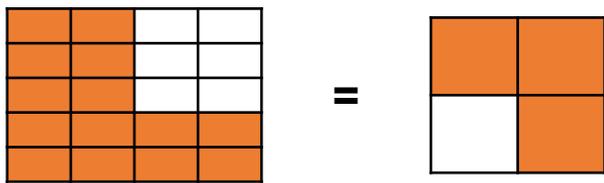
Diagram showing a purple arrow from the denominator 'A' to the denominator '36' labeled 'x?', and another purple arrow from the numerator '2' to the numerator 'B' labeled 'x?'.



PS

Equivalent Fractions

7a. Danyaal has coloured two grids to create an equivalent fraction.



My fractions are equivalent to $\frac{9}{12}$.

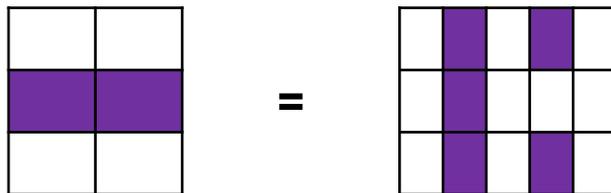
Is Danyaal correct? Explain your answer.



R

Equivalent Fractions

7b. Lucie has coloured two grids to create an equivalent fraction.



I have shown fractions equivalent to $\frac{1}{3}$.

Is Lucie correct? Explain your answer.



R

8a. Carlisle has written some equivalent fractions.

$$A \quad \frac{5}{6} = \frac{25}{30}$$

$$B \quad \frac{7}{9} = \frac{21}{27}$$

$$C \quad \frac{8}{9} = \frac{56}{72}$$

$$D \quad \frac{49}{63} = \frac{7}{7}$$

Find and explain any mistakes.



R

8b. Davina has written some equivalent fractions.

$$A \quad \frac{4}{7} = \frac{28}{42}$$

$$B \quad \frac{5}{9} = \frac{30}{54}$$

$$C \quad \frac{21}{28} = \frac{15}{20}$$

$$D \quad \frac{18}{28} = \frac{36}{54}$$

Find and explain any mistakes.



R

9a. Give 2 possible values for A and B.

$$\frac{7}{A} = \frac{B}{32} = \frac{84}{C}$$



PS

9b. Give 2 possible values for A and B.

$$\frac{2}{A} = \frac{B}{48} = \frac{24}{C}$$



PS

Reasoning and Problem Solving Equivalent Fractions

Developing

1a. Cole is correct. He has shown $\frac{1}{2} = \frac{4}{8}$.
The parts do not need to be together.

2a. A. 2 shaded parts should be crossed out as $\frac{1}{4} = \frac{4}{16}$.

B. Another part should be shaded in as $\frac{1}{3} = \frac{2}{6}$

3a. $\frac{1}{2} = \frac{4}{8}$ and $\frac{1}{4} = \frac{2}{8}$

Expected

4a. Amelia is incorrect. Her fractions are not equal in size, but have the same numerator.

5a. A. 2 more parts should be shaded in as $\frac{2}{5} = \frac{4}{10}$

B. 3 more parts should be shaded in as $\frac{3}{4} = \frac{6}{8}$

6a. Various answers, for example:

$$\frac{1}{2} = \frac{12}{24} \quad \frac{1}{4} = \frac{6}{24} \quad \frac{1}{6} = \frac{4}{24}$$

Greater Depth

7a. Danyaal is partly correct. $\frac{3}{4}$ is equivalent to $\frac{9}{12}$ but $\frac{14}{20}$ is not.

8a. C $\frac{8}{9} = \frac{64}{72}$; D $\frac{49}{63} = \frac{7}{9}$

9a. Various answers, for example:

$$\frac{7}{8} = \frac{28}{32} = \frac{84}{96} \quad \frac{7}{16} = \frac{14}{32} = \frac{84}{192}$$

Reasoning and Problem Solving Equivalent Fractions

Developing

1b. Jennie is incorrect. The shading shows $\frac{1}{4} = \frac{2}{6}$ but these are not equivalent. $\frac{1}{4} = \frac{2}{8}$

2b. A. 1 shaded part should be crossed out as $\frac{1}{5} = \frac{2}{10}$.

B. 3 more parts should be shaded in as $\frac{1}{2} = \frac{6}{12}$

3b. $\frac{1}{2} = \frac{5}{10}$ and $\frac{1}{5} = \frac{2}{10}$

Expected

4b. Conrad is correct. $\frac{1}{9} = \frac{2}{18}$

5b. A. 1 shaded part should be crossed out as $\frac{3}{5} = \frac{6}{10}$

B. 4 more parts should be shaded in as $\frac{4}{7} = \frac{8}{14}$

6b. Various answers, for example:

$$\frac{2}{4} = \frac{18}{36} \quad \frac{2}{12} = \frac{6}{36} \quad \frac{2}{18} = \frac{4}{36}$$

Greater Depth

7b. Lucie is correct. She has shaded $\frac{2}{6}$ and $\frac{5}{15}$ which are both equivalent to $\frac{1}{3}$.

8b. A $\frac{4}{7} = \frac{28}{49}$; D $\frac{18}{28} = \frac{36}{56}$

9b. Various answers, for example:

$$\frac{2}{8} = \frac{12}{48} = \frac{24}{96} \quad \frac{2}{16} = \frac{6}{48} = \frac{24}{192}$$

$$\frac{2}{12} = \frac{8}{48} = \frac{24}{144}$$