

# Reasoning and Problem Solving

## Step 2: Equivalent FDP

### National Curriculum Objectives:

Mathematics Year 6: (6F6) [Associate a fraction with division and calculate decimal fraction equivalents \[for example, 0.375\] for a simple fraction \[for example, 3/8\]](#)

Mathematics Year 6: (6F11) [Recall and use equivalences between simple fractions, decimals and percentages, including in different contexts](#)

### Differentiation:

Questions 1, 4 and 7 (Reasoning)

**Developing** Explain why a statement is correct or incorrect. Using tenths, quarters or halves.

**Expected** Explain why a statement is correct or incorrect. Using fifths, eighths, tenths, hundredths, quarters or halves. Fractions may need to be simplified.

**Greater Depth** Explain why a statement is correct or incorrect. Using fifths, eighths, tenths, twentieths, quarters or halves, or multiples of these fractions. Fractions may need to be simplified.

Questions 2, 5 and 8 (Problem Solving)

**Developing** State which is the largest value. Using tenths, quarters or halves.

**Expected** State which is the largest value. Using fifths, eighths, tenths, hundredths, quarters or halves. Fractions may need to be simplified.

**Greater Depth** State which is the largest value. Using fifths, eighths, tenths, twentieths, quarters or halves, or multiples of these fractions. Fractions may need to be simplified.

Questions 3, 6 and 9 (Reasoning)

**Developing** Explain which statement is correct. Using tenths, quarters or halves.

**Expected** Explain which statement is correct. Using fifths, eighths, tenths, hundredths, quarters or halves. Fractions may need to be simplified.

**Greater Depth** Explain which statement is correct. Using fifths, eighths, tenths, hundredths, twentieths, quarters or halves, or multiples of these fractions. Fractions may need to be simplified.

More [Year 6 Percentages](#) resources.

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## Equivalent FDP

1a. Maia says,



If I give 25% of my sweets to friends, there will be half, or 0.5 left.

Do you agree?

Explain why.



R

## Equivalent FDP

1b. Frankie says,



If I give three tenths of my sweets to friends, there will be 70% or 0.7 left.

Do you agree?

Explain why.



R

2a. Kim ate 50% of her pizza.

Jane ate  $\frac{7}{10}$  of her pizza.

Lucy ate 0.6 of her pizza.

Who ate the most of their pizza?

Show your working out.



PS

2b. Nile ate 75% of his pizza.

Max ate  $\frac{3}{4}$  of his pizza.

James ate 0.7 of his pizza.

Who ate the most of their pizza?

Show your working out.

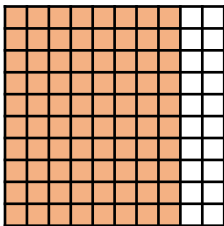


PS

3a. Morgan thinks that 80% of the squares are shaded.

Simone thinks that  $\frac{3}{4}$  of the squares are shaded.

Grace thinks that 0.9 of the squares are shaded.



Who is correct? Explain your answer.

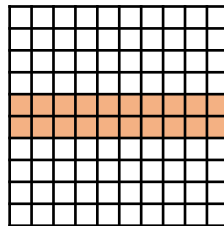


R

3b. Ellie thinks that 30% of the squares are shaded.

Becky thinks that  $\frac{1}{4}$  of the squares are shaded.

Kelly thinks that 0.2 of the squares are shaded.



Who is correct? Explain your answer



R

## Equivalent FDP

## Equivalent FDP

4a. Millie says,



If I eat 60% of my birthday cake, there will be three fifths, or 0.6 left.

Do you agree?

Explain why.



R

4b. Saad says,



If I eat 0.625 of my birthday cake, there will be three eighths, or 37.5% left.

Do you agree?

Explain why.



R

5a. Joshua scored 75% on his Maths test.

Briony got  $\frac{3}{5}$  of her answers correct.

Verity expresses her result as a decimal, which is 0.8.

Who scored the highest?

Show your working out.



PS

5b. Will scored 60% on his English test.

Kate got  $\frac{5}{8}$  of her answers correct.

Holly expresses her result as a decimal, which is 0.6.

Who scored the highest?

Show your working out.

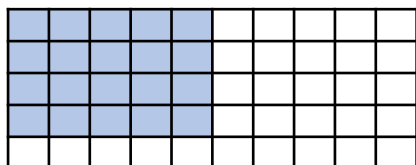


PS

6a. Theo thinks that 20% of the squares are shaded.

Mia thinks that  $\frac{2}{5}$  of the squares are shaded.

Jasmine thinks that 0.4 of the squares are shaded.



Who is correct? Explain your answer.

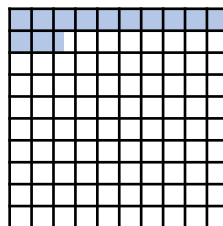


R

6b. Connie thinks that 12.5% of the squares are shaded.

George thinks that  $\frac{3}{8}$  of the squares are shaded.

Alice thinks that 0.1 of the squares are shaded.



Who is correct? Explain your answer



R

## Equivalent FDP

7a. Safeeyah says,



Six fortieths of my cake has been eaten so there is 0.85 or 85% left.

Do you agree?

Explain why.



R

7b. Jacob says,



Fourteen sixteenths of my cake has been eaten so there is 0.25 or 25% left.

Do you agree?

Explain why.



R

8a. Jack scored 60% on his music exam.

Scarlett scored 26 out of 40.

Isaac expresses his result as a decimal, which is 0.65.

Who scored the highest?

Show your working out.



PS

8b. Megan scored 85% on her tap exam.

Nate scored 14 out of 16.

Mo expresses his result as a decimal, which is 0.875.

Who scored the highest?

Show your working out.

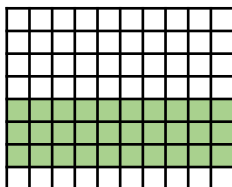


PS

9a. James thinks that 30% of the squares are shaded.

Sam thinks that  $\frac{3}{10}$  of the squares are shaded.

Adam thinks that 0.375 of the squares are shaded.



Who is correct? Explain your answer.

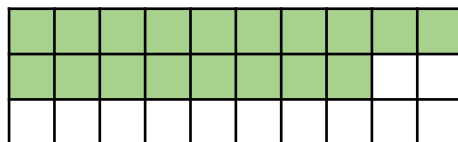


R

9b. Isla thinks that 70% of the squares are shaded.

Ellie thinks that  $\frac{9}{15}$  of the squares are shaded.

Hafsa thinks that 0.6 of the squares are shaded.



Who is correct? Explain your answer



R

## Reasoning and Problem Solving Equivalent FDP

### Developing

1a. No, there will be 75% left which is equivalent to 0.75 and  $\frac{3}{4}$ .

2a. Kim:  $50\% = 0.5 = \frac{1}{2}$ . Jane:  $\frac{7}{10} = 70\% = 0.7$ . Lucy:  $0.6 = 60\% = \frac{6}{10}$ . Jane ate the most.

3a. Morgan is correct. 80 out of 100 squares are shaded, which is equivalent to 80%, 0.8 or  $\frac{8}{10}$ .

### Expected

4a. No, there will be 40% left which is equivalent to 0.4 and  $\frac{2}{5}$ .

5a. Joshua:  $75\% = 0.75 = \frac{3}{4}$ . Briony:  $\frac{3}{5} = 0.6 = 60\%$ . Verity:  $0.8 = 80\% = \frac{4}{5}$ . Verity scored the highest.

6a. Mia and Jasmine are both correct. 20 of the 50 squares are shaded, which is equivalent to 40%,  $\frac{2}{5}$  and 0.4.

### Greater Depth

7a. Yes, there will be  $\frac{17}{20}$  left which is equivalent to 0.85 and 85%. This is because  $\frac{6}{40} = \frac{3}{20}$ .

8a. Jack:  $60\% = 0.6$  and  $\frac{3}{5}$ . Scarlett:  $\frac{26}{40} = \frac{13}{20}$ , 0.65 and 65%. Isaac:  $0.65 = 65\%$  and  $\frac{13}{20}$ . Scarlett and Isaac both scored the highest.

9a. Adam is correct. 30 out of 80 squares are shaded, which is equivalent to 0.375, 37.5% and  $\frac{3}{8}$ .

## Reasoning and Problem Solving Equivalent FDP

### Developing

1b. Yes, there will be  $\frac{7}{10}$  left which is equivalent to 0.7 and 70%.

2b. Nile:  $75\% = 0.75 = \frac{3}{4}$ . Max:  $\frac{3}{4} = 75\% = 0.75$ . James:  $0.7 = 70\% = \frac{7}{10}$ . Nile and Max both ate the most.

3b. Kelly is correct. 20 out of 100 squares are shaded, which is equivalent to 20%, 0.2 or  $\frac{2}{10}$ .

### Expected

4b. Yes, there will be 37.5% left which is equivalent to 37.5 and  $\frac{3}{8}$ .

5b. Will:  $60\% = 0.6 = \frac{3}{5}$ . Kate:  $\frac{5}{8} = 62.5\% = 0.625$ . Holly:  $0.6 = 60\% = \frac{3}{5}$ . Kate scored the highest.

6b. Connie is correct. 12.5 out of 100 squares are shaded, which is equivalent to 12.5%,  $\frac{1}{8}$  and 0.125.

### Greater Depth

7b. No, there will be  $\frac{1}{8}$  left which is equivalent to 0.125 and 12.5%. This is because  $\frac{14}{16} = \frac{7}{8}$ .

8b. Megan:  $85\% = 0.85$  and  $\frac{17}{20}$ . Nate:  $\frac{14}{16} = \frac{7}{8}$ , 0.875 and 87.5%. Mo:  $0.875 = 87.5\%$  and  $\frac{7}{8}$ . Nate and Mo both scored the highest.

9b. Ellie and Hafsa are both correct. 18 out of 30 squares are shaded, which is equivalent to  $\frac{9}{15}$  ( $\frac{3}{5}$  when simplified), 60% and 0.6.