

# Reasoning and Problem Solving

## Step 8: Fractions to Decimals 1

### National Curriculum Objectives:

Mathematics Year 6: (6F9a) [Identify the value of each digit in numbers given to three decimal places and multiply and divide numbers by 10, 100 and 1000 giving answers up to three decimal places](#)

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** Decide which statement is correct when comparing fractions and decimals where the denominator is 10 or 100.

**Expected** Decide which statement is correct when comparing fractions and decimals of common fractions and fractions where the denominator is a multiple or factor of 10.

**Greater Depth** Decide which statement is correct when comparing fractions and decimals using knowledge of common fractions for example  $\frac{1}{4} = 0.25$  therefore  $\frac{1}{8} = 0.125$ .

Questions 2, 5 and 8 (Problem Solving)

**Developing** Convert fractions to decimals and order correctly when converting fractions where the denominator is 10 or 100.

**Expected** Convert fractions to decimals and order correctly when converting common fractions and fractions where the denominator is a multiple or factor of 10.

**Greater Depth** Convert fractions to decimals and order correctly when using knowledge of common fractions for example  $\frac{1}{4} = 0.25$  therefore  $\frac{1}{8} = 0.125$ .

Questions 3, 6 and 9 (Problem Solving)

**Developing** Find the fraction and decimal from given clues using knowledge of converting fractions to decimals where the denominator is 10 or 100.

**Expected** Find the fraction and decimal from given clues using knowledge of converting fractions to decimals including common fractions and fractions where the denominator is a multiple or factor of 10.

**Greater Depth** Find the fraction and decimal from given clues using knowledge of converting fractions to decimals using knowledge of common fractions for example  $\frac{1}{4} = 0.25$  therefore  $\frac{1}{8} = 0.125$ .

More [Year 6 Decimals](#) resources.

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## Fractions to Decimals 1

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1a. Josh and Jenny are comparing fractions.



Josh

I think that 0.7 is greater.



Jenny

I think that  $\frac{70}{100}$  is greater.

Who is correct. Explain how you know.



R

1b. Cian and Hannah are comparing fractions.



Cian

I think that 0.2 is greater.



Hannah

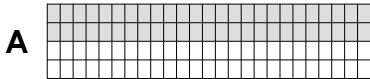
I think that  $\frac{2}{100}$  is greater.

Who is correct. Explain how you know



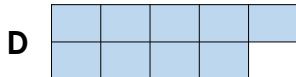
R

2a. Convert the fractions into decimals and write them in ascending order.



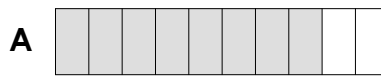
B  $\frac{1}{100}$

C  $\frac{3}{10}$



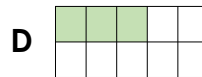
PS

2b. Convert the fractions into decimals and write them in descending order.



B  $\frac{40}{100}$

C  $\frac{5}{100}$



PS

3a. I am thinking of a fraction.

- It can be simplified.
- The denominator is 10.
- The numerator is a multiple of 2.
- It is less than half.

What is my fraction?

What is this fraction as a decimal?



PS

3b. I am thinking of a fraction.

- It can be simplified.
- The denominator is 100.
- The numerator is a multiple 6.
- The numerator is between 40 and 56.

What is my fraction?

What is this fraction as a decimal?



PS

## Fractions to Decimals 1

## Fractions to Decimals 1

4a. Isabel and Chuan are comparing fractions.



Isabel

I think that 0.7 is greater.

I think that  $\frac{4}{5}$  is greater.



Chuan

Who is correct? Explain how you know.



R

4b. Alfie and Scarlett are comparing fractions.



Alfie

I think that 0.2 is greater.

I think that  $\frac{2}{5}$  is greater.



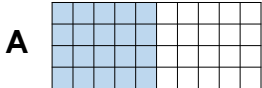
Scarlett

Who is correct. Explain how you know



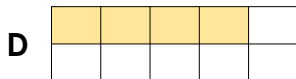
R

5a. Convert the fractions into decimals and write them in ascending order.



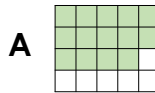
B  $\frac{1}{5}$

C  $\frac{12}{20}$



PS

5b. Convert the fractions into decimals and write them in descending order.



B  $\frac{3}{5}$

C  $\frac{3}{20}$



PS

6a. I am thinking of a fraction.

- It can be simplified.
- The numerator is more than 16 but less than 24.
- The numerator is a multiple of the denominator.
- The denominator is between 30 and 36.

What is my fraction?

What is this fraction as a decimal?



PS

6b. I am thinking of a fraction.

- It can be simplified.
- When converted to a decimal, it is more than 0.4 but less than 0.7.
- The numerator is a multiple of 6.
- The denominator is a multiple of 5 between 17 and 31.

What is my fraction?

What is this fraction as a decimal?



PS

## Fractions to Decimals 1

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7a. Alesha and Lucy are comparing fractions.



Alesha

I think that 0.625 is greater.

I think that  $\frac{3}{8}$  is greater.



Lucy

Who is correct. Explain how you know.



R

7b. Sean and Johnny are comparing fractions.



Alfie

I think that 0.6 is greater.

I think that  $\frac{12}{20}$  is greater.



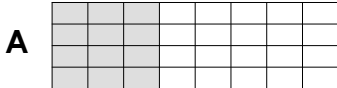
Johnny

Who is correct. Explain how you know



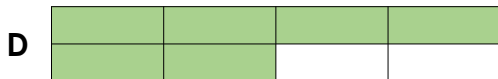
R

8a. Convert the fractions into decimals and write them in descending order.



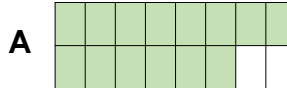
B  $\frac{5}{8}$

C  $\frac{10}{16}$



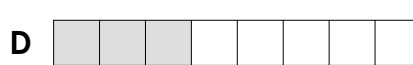
PS

8b. Convert the fractions into decimals and write them in ascending order.



B  $\frac{12}{16}$

C  $\frac{4}{5}$



PS

9a. I am thinking of a fraction.

- It can be simplified.
- When converted to a decimal, it has 3 decimal places.
- The numerator is a multiple of 4.
- The denominator is between 27 and 33.

What is my fraction?

What is this fraction as a decimal?



PS

9b. I am thinking of a fraction.

- It can be simplified.
- The denominator is a multiple of 4 less than 20.
- When converted to a decimal, it is a number with only 2 decimal places.

What is my fraction?

What is this fraction as a decimal?



PS

## Reasoning and Problem Solving

### Fractions to Decimals 1

#### Developing

- 1a. Neither are correct. They are equivalent.
- 2a. 0.5, 0.01, 0.3, 0.9. Order: 0.01, 0.3, 0.5, 0.9.
- 3a. Various answers, for example:  $\frac{2}{10} = 0.2$ ;  
 $\frac{4}{10} = 0.4$

#### Expected

- 4a. Chuan is correct.  $\frac{4}{5}$  is 0.8 which is greater than 0.7.
- 5a. 0.5, 0.2, 0.6, 0.4. Order: 0.2, 0.4, 0.5, 0.6.
- 6a. Various answers, for example:  
 $\frac{16}{32} = 0.5$ ;  $\frac{17}{34} = 0.5$ ;  $\frac{18}{36} = 0.5$

#### Greater Depth

- 7a. Alesha is correct.  $\frac{3}{8}$  is 0.375 which is less than 0.625.
- 8a. 0.375, 0.625, 0.625, 0.75.  
Order: 0.75, 0.625, 0.625, 0.375
- 9a. Various answers, for example:  
 $\frac{4}{32} = 0.125$ ;  $\frac{12}{32} = 0.375$ ;  $\frac{20}{32} = 0.625$

## Reasoning and Problem Solving

### Fractions to Decimals 1

#### Developing

- 1b. Cian is correct.  $\frac{2}{100}$  is 0.02 which is less than 0.2.
- 2b. 0.8, 0.4, 0.05, 0.3. Order: 0.8, 0.4, 0.3, 0.05.
- 3b. Various answers, for example:  
 $\frac{42}{100} = 0.42$ ;  $\frac{48}{100} = 0.48$ ;  $\frac{54}{100} = 0.54$

#### Expected

- 4b. Scarlett is correct.  $\frac{2}{5}$  is 0.4 which is greater than 0.2.
- 5b. 0.7, 0.6, 0.15, 0.9. Order: 0.9, 0.7, 0.6, 0.15.
- 6b. Various answers, for example:  
 $\frac{12}{20} = 0.6$ ;  $\frac{12}{25} = 0.48$ ;  $\frac{18}{30} = 0.6$

#### Greater Depth

- 7b. Neither are correct. They are equivalent.
- 8b. 0.875, 0.75, 0.8, 0.375.  
Order: 0.375, 0.75, 0.8, 0.875.
- 9b. Various answers, for example:  
 $\frac{2}{8} = 0.25$ ;  $\frac{6}{8} = 0.75$ ;  $\frac{4}{16} = 0.25$