



**eClassroom**

GCSE Mathematics

# **FDP Equivalence**

**Questions**

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Pearson Edexcel GCSE & iGCSE Mathematics



## Section A — Foundation

### Worked Examples

#### [Fluency]

Write  $\frac{3}{4}$  as a percentage.

Divide numerator by denominator, then multiply by 100:

$$3 \div 4 = 0.75 \rightarrow 0.75 \times 100 = 75\%$$

#### [Reasoning]

Which is greater:  $\frac{2}{5}$  or 45%? Show your reasoning.

Convert  $\frac{2}{5}$  to a percentage:  $2 \div 5 \times 100 = 40\%$

Compare:  $40\% < 45\%$

**45% is greater.**

#### [Problem Solving]

In a bag,  $\frac{1}{4}$  of the counters are red and 30% are blue. What fraction are neither red nor blue?

Convert to same form:  $\frac{1}{4} = 25\%$  and  $30\% = 30\%$

Total:  $25\% + 30\% = 55\%$

Remaining:  $100\% - 55\% = 45\% = \frac{45}{100} = \frac{9}{20}$

#### [Fluency]

1. Write 0.5 as a fraction.

(1 mark)

#### [Fluency]

2. Write 25% as a decimal.

(1 mark)

#### [Fluency]

3. Write  $\frac{4}{5}$  as a percentage.

(1 mark)

#### [Fluency]

4. Write 0.04 as a percentage.

(1 mark)

#### [Fluency]

5. Write 60% as a fraction. Give your answer in its simplest form.

(2 marks)

**[Reasoning]**

6. Write the following values in order of size, starting with the smallest.

$$\frac{2}{5} \quad 0.45 \quad 43\%$$

(2 marks)

**[Reasoning]**

7. Jake says: " $\frac{3}{4}$  is greater than 70%."

Is Jake correct? You **must** show your working to justify your answer.

(2 marks)

**[Reasoning]**

8. In a survey, 17 out of 40 people said they preferred tea to coffee.

(a) Write 17 out of 40 as a percentage. (b) Write your answer as a decimal.

(2 marks)

**[Problem Solving]**

9. A bag contains red, blue and yellow counters.

$\frac{2}{5}$  of the counters are red and 35% are blue.

What fraction of the counters are yellow? Give your answer in its simplest form.

(3 marks)

**[Problem Solving]**

10. Three athletes run sections of a relay race.

Anna runs  $\frac{5}{8}$  of a kilometre.

Ben runs 0.6 km.

Cara runs 63% of a kilometre.

(a) Who runs the furthest? Show how you decided. (b) How much further does the furthest runner go than the shortest runner? Give your answer as a fraction of a kilometre.

(4 marks)



## Section B — Higher

### Worked Examples

#### [Fluency]

Convert  $0.\underline{3}6$  ( $0.363636\dots$ ) to a fraction.

Let  $x = 0.363636\dots$

Two digits recur  $\rightarrow$  multiply by 100:  $100x = 36.363636\dots$

Subtract:  $99x = 36 \rightarrow x = 36/99 = \mathbf{4/11}$

#### [Reasoning]

Show that  $0.\underline{3} + 0.\underline{6} = 1$ .

$0.\underline{3} = 3/9 = 1/3$  and  $0.\underline{6} = 6/9 = 2/3$

$1/3 + 2/3 = 3/3 = 1$  ✓

#### [Problem Solving]

In a class,  $3/7$  of students study French,  $0.28$  study Spanish, and the rest study German.  
What fraction study German?

$3/7 + 0.28 = 3/7 + 28/100 = 300/700 + 196/700 = 496/700 = 62/87.5\dots \rightarrow$  use common denominator 700:

$3/7 = 300/700$  and  $28/100 = 196/700$

Total =  $496/700 = 62/87.5$  — simplify:  $496/700 = 124/175$

German =  $1 - 124/175 = 51/175$

#### [Fluency]

1. Convert  $0.\underline{6}$  ( $0.6666\dots$ ) to a fraction in its simplest form.

(2 marks)

#### [Fluency]

2. Convert  $0.\underline{18}$  ( $0.181818\dots$ ) to a fraction in its simplest form.

(2 marks)

#### [Fluency]

3. Write the following in ascending order of size.

$\frac{5}{8}$  0.624 62%

(2 marks)

#### [Fluency]

4. Show that  $0.\underline{4} = \frac{4}{9}$ .

(2 marks)

**[Reasoning]**

5. Prove algebraically that  $0.\underline{13} = \frac{13}{99}$ .

(2 marks)

**[Reasoning]**

6. Which value is closer to  $\frac{1}{2}$ :  $\frac{5}{11}$  or 0.46?  
You must show all your working.

(3 marks)

**[Reasoning]**

7.  $p = 0.\underline{37}$     $q = \frac{3}{8}$

Without using a calculator, show clearly that  $p < q$ .

(3 marks)

**[Problem Solving]**

8. Show that  $0.\underline{4} + 0.\underline{2} = \frac{2}{3}$ .

(3 marks)

**[Problem Solving]**

9. A school surveyed 140 students about their favourite subject.

$\frac{3}{7}$  of students chose Mathematics.

0.45 of students chose Science.

The rest chose English.

(a) What fraction of students chose English? Give your answer in its simplest form. (2)

(b) How many students chose English? (1)

(3 marks)

**[Problem Solving]**

10.  $n$  is a positive single-digit integer (1 to 9).

Prove algebraically that  $0.\underline{n} + 0.(\underline{9-n}) = 1$  for all valid values of  $n$ .

*Note:  $0.\underline{n}$  means the decimal  $0.nnn\dots$  where  $n$  recurs.*

(4 marks)