eClassroom

GCSE Mathematics

FDP Equivalence

Worked Solutions

Pearson Edexcel GCSE & iGCSE Mathematics

Section A — Foundation — Worked Solutions

[Fluency] Question 1

0.5 = 5 tenths = 5/10

∴ **1/2**

[Fluency] Question 2

Percentage → decimal: divide by 100.

25 ÷ 100 = 0.25

∴ **0.25**

[Fluency] Question 3

4 ÷ 5 = 0.8 → 0.8 × 100 = 80%

∴ **80%**

[Fluency] Question 4

0.04 × 100 = 4%

∴ **4%**

[Fluency] Question 5

60% = 60/100

Simplify: divide top and bottom by 20 → 3/5

∴ **3/5**

[Reasoning] Question 6

Convert all to decimals:

2/5 = 0.40 43% = 0.43 0.45 = 0.45

Order: 0.40 < 0.43 < 0.45

∴ **2/5, 43%, 0.45**

[Reasoning] Question 7

Convert 3/4 to a percentage: 3 ÷ 4 = 0.75 = 75%

Compare: 75% > 70%

Jake is correct.

∴ **Jake is correct. 3/4 = 75% which is greater than 70%.**

[Reasoning] Question 8

(a) (17 ÷ 40) × 100 = 42.5%

(b) 42.5% ÷ 100 = 0.425

∴ **(a) 42.5% (b) 0.425**

[Problem Solving] Question 9

Convert all to the same form:

2/5 = 40/100 = 40% blue = 35%

Total accounted for: 40% + 35% = 75%

Yellow: 100% – 75% = 25% = 25/100 = 1/4

∴ **1/4**

[Problem Solving] Question 10

Convert all to decimals:

Anna: 5/8 = 0.625 km Ben: 0.6 km Cara: 63% = 0.63 km

Order: 0.600 < 0.625 < 0.630

(a) Cara runs furthest (0.630 km = 63%).

(b) Furthest – shortest: 0.630 – 0.600 = 0.030 km

0.030 = 30/1000 = 3/100 km

∴ **(a) Cara (b) 3/100 km**

Section B — Higher — Worked Solutions

[Fluency] Question 1

Let x = 0.6666...

One digit recurs → multiply by 10: 10x = 6.666...

Subtract: 9x = 6 → x = 6/9

Simplify by dividing by 3:

∴ **2/3**

[Fluency] Question 2

Let x = 0.181818...

Two digits recur → multiply by 100: 100x = 18.1818...

Subtract: 99x = 18 → x = 18/99

Simplify by dividing by 9:

∴ **2/11**

[Fluency] Question 3

Convert all to decimals:

5/8 = 0.625 0.624 = 0.624 62% = 0.620

Order: 0.620 < 0.624 < 0.625

∴ **Ascending: 62%, 0.624, 5/8**

[Fluency] Question 4

Let x = 0.4444...

One digit recurs → 10x = 4.444...

Subtract: 9x = 4 → x = 4/9 ✓

∴ **$0.\underline{4} = 4/9$**

[Reasoning] Question 5

Let x = 0.131313...

Two digits recur → 100x = 13.1313...

Subtract: 99x = 13 → x = 13/99 ✓

∴ **$0.\underline{13} = 13/99$**

[Reasoning] Question 6

Convert 5/11 to decimal: $5 \div 11 = 0.4545...$

Distance of 5/11 from 1/2: $|0.5000 - 0.4545| = 0.0455$

Distance of 0.46 from 1/2: $|0.5000 - 0.4600| = 0.0400$

Since $0.0400 < 0.0455$:

$\therefore$ **0.46 is closer to 1/2.**

[Reasoning] Question 7

Convert p to a fraction: $0.\underline{37} = 37/99$

Compare 37/99 with 3/8 using cross-multiplication:

$37 \times 8 = 296$ and $3 \times 99 = 297$

Since $296 < 297$, we have $37/99 < 3/8$

$\therefore$ **p < q** ✓

[Problem Solving] Question 8

$0.\underline{4} = 4/9$ (since 9x = 4)

$0.\underline{2} = 2/9$ (since 9x = 2)

Sum: $4/9 + 2/9 = 6/9 = 2/3$ ✓

$\therefore$ **$0.\underline{4} + 0.\underline{2} = 2/3$**

[Problem Solving] Question 9

(a) Convert to fractions with common denominator:

3/7 = 60/140 0.45 = 63/140

Total: 60/140 + 63/140 = 123/140

English: 1 – 123/140 = 17/140 (17 and 140 share no factors → simplest form)

(b) 17/140 × 140 = 17 students

$\therefore$ **(a) 17/140 (b) 17 students**

[Problem Solving] Question 10

Let n be a positive single-digit integer (1 to 9).

0.$\underline{n}$ means 0.nnn... Let x = 0.nnn...

Then 10x = n.nnn... $\rightarrow$ 9x = n $\rightarrow$ x = n/9

Similarly, 0.($\underline{9-n}$) = (9–n)/9

Sum: n/9 + (9–n)/9 = 9/9 = 1 ✓

This holds for all integers n with $1 \leq n \leq 9$.

∴ **0.$\underline{n}$ + 0.($\underline{9-n}$) = n/9 + (9–n)/9 = 9/9 = 1 for all valid n.**