



eClassroom

GCSE Mathematics

Fractions

Questions

Pearson Edexcel GCSE & iGCSE Mathematics



Section A — Foundation

Worked Examples

[Fluency]

Work out $3/4 + 1/3$. Give your answer as a mixed number.

Find a common denominator (12):

$$\frac{3}{4} + \frac{1}{3} = \frac{9}{12} + \frac{4}{12} = \frac{13}{12} = 1\frac{1}{12}$$

[Reasoning]

Ali has $2/3$ of a cake. He eats $1/4$ of what he has. What fraction of the whole cake does he eat?

He eats $1/4$ of $2/3$, which means multiply:

$$\frac{1}{4} \times \frac{2}{3} = \frac{2}{12} = \frac{1}{6}$$

[Problem Solving]

A recipe needs $2/5$ kg of butter for 6 portions. How much butter is needed for 9 portions?

Butter per portion = $2/5 \div 6 = 2/30 = 1/15$ kg

For 9 portions: $\frac{1}{15} \times 9 = \frac{9}{15} = \frac{3}{5}$ kg

[Fluency]

1.

Work out:

$$\frac{2}{3} + \frac{1}{4}$$

(2 marks)

[Fluency]

2.

Work out:

$$\frac{5}{6} - \frac{1}{4}$$

(2 marks)



[Fluency]

3.

Work out:

$$\frac{3}{4} \times \frac{8}{9}$$

(2 marks)

[Fluency]

4.

Work out:

$$\frac{5}{6} \div \frac{5}{3}$$

(2 marks)

[Fluency]

5.

Convert the mixed number to an improper fraction:

$$2\frac{3}{5}$$

(1 mark)

[Fluency]

6.

Convert the improper fraction to a mixed number:

$$\frac{17}{4}$$

(1 mark)

[Reasoning]

7.

Work out, giving your answer as a mixed number:

$$1\frac{1}{2} + 2\frac{3}{4}$$

(3 marks)

[Reasoning]

8. A school has 240 students. $\frac{3}{5}$ of the students study French. How many students study French?

(2 marks)

[Problem Solving]

9.

Jake eats $\frac{2}{5}$ of a pizza. Sara eats $\frac{1}{3}$ of the same pizza.

What fraction of the pizza is left? Give your answer in its simplest form.

(3 marks)

**[Problem Solving]****10.**

A recipe for 6 people requires $\frac{3}{4}$ cup of flour.

- (a) How much flour is needed for 1 person? (1)
- (b) How much flour is needed for 10 people? Give your answer as a mixed number. (2)

(3 marks)



Section B — Higher

Worked Examples

[Fluency]

Simplify: $(x^2 - 9) \div (x + 3)$

Factorise the numerator:

$$\frac{x^2 - 9}{x + 3} = \frac{(x + 3)(x - 3)}{x + 3} = x - 3 \quad (x \neq -3)$$

[Reasoning]

Solve:

$$\frac{x}{2} + \frac{x}{5} = 7$$

Multiply through by 10 (LCM of 2 and 5):

$$5x + 2x = 70 \Rightarrow 7x = 70 \Rightarrow x = 10$$

[Problem Solving]

Add the algebraic fractions:

$$\frac{2}{x + 1} + \frac{3}{x - 2}$$

$$= \frac{2(x - 2) + 3(x + 1)}{(x + 1)(x - 2)} = \frac{5x - 1}{(x + 1)(x - 2)}$$

[Fluency]

1.

Write as a single fraction in its simplest form:

$$\frac{3}{x + 1} + \frac{2}{x - 1}$$

(3 marks)

[Fluency]

2.

Simplify fully:

$$\frac{x^2 - 4}{x + 2}$$

(2 marks)





[Fluency]

3.

Simplify fully:

$$\frac{2x+1}{5} \times \frac{15}{4x+2}$$

(3 marks)

[Reasoning]

4.

Solve:

$$\frac{x}{3} + \frac{x}{4} = 7$$

(3 marks)

[Reasoning]

5.

Solve:

$$\frac{2x+1}{3} - \frac{x-2}{4} = 3$$

(4 marks)

[Reasoning]

6.

Simplify fully:

$$\frac{3x^2 - 12}{x^2 + x - 6}$$

(4 marks)

[Problem Solving]

7.

Divide and simplify fully:

$$\frac{x^2 + 5x + 6}{x + 3} \div \frac{x^2 + 2x}{x + 1}$$

(4 marks)

[Problem Solving]

8.

Given that:

$$\frac{1}{a} + \frac{1}{b} = \frac{1}{c}$$

Find c in terms of a and b. Give your answer as a single fraction.

(3 marks)

**[Problem Solving]****9.**

Solve, giving your answers in exact form:

$$\frac{3}{x-2} + \frac{1}{x+1} = 1$$

(5 marks)**[Problem Solving]****10.****(a)** Show that:

$$\frac{1}{n(n+1)} = \frac{1}{n} - \frac{1}{n+1}$$

(2)

(b) Hence find the exact value of:

$$\frac{1}{1 \times 2} + \frac{1}{2 \times 3} + \frac{1}{3 \times 4} + \dots + \frac{1}{9 \times 10}$$

(3)

(5 marks)