GCSE Mathematics

# Algebraic Fractions

## Worked Solutions

Pearson Edexcel GCSE & iGCSE Mathematics

# Section B — Higher — Worked Solutions

## [Fluency] Question 1

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

$\therefore$ **x–2**

## [Fluency] Question 2

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

$\therefore$

## [Fluency] Question 3

$$\frac{3(x^2-4)}{x^2+x-6} = \frac{3(x-2)(x+2)}{(x+3)(x-2)} = \frac{3(x+2)}{x+3}$$

$\therefore$

## [Fluency] Question 4

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

$\therefore$

## [Fluency] Question 5

$$\frac{4(x+3)-2(x-1)}{(x-1)(x+3)} = \frac{2x+14}{(x-1)(x+3)} = \frac{2(x+7)}{(x-1)(x+3)}$$

$\therefore$

## [Reasoning] Question 6

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

$\therefore$ **(x+3)(x+1)**

## [Reasoning] Question 7

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

$6x + 6 = x^2 + 2x \Rightarrow x^2 - 4x - 6 = 0$

$x = \frac{4 \pm \sqrt{16+24}}{2} = 2 \pm \sqrt{10}$

$\therefore$

## [Reasoning] Question 8

$(x+3)(x-2) = (x+1)(x-1)$

$x^2 + x - 6 = x^2 - 1 \Rightarrow x = 5$

$\therefore$ **x=5**

## [Problem Solving] Question 9

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

$\therefore$

## [Problem Solving] Question 10

$\frac{3(x-1)+5(x+2)}{(x+2)(x-1)} = 2 \Rightarrow 8x + 7 = 2(x+2)(x-1)$

$8x + 7 = 2x^2 + 2x - 4 \Rightarrow 2x^2 - 6x - 11 = 0$

$x = \frac{6 \pm \sqrt{36+88}}{4} = \frac{6 \pm \sqrt{124}}{4} = \frac{3 \pm \sqrt{31}}{2}$

$\therefore$