

Operations with Algebraic Fractions

For AQA GCSE Mathematics (8300) • Higher tier

Name _____

Total marks: **30**

Answer **all** questions in the spaces provided. Show your working: marks are given for correct method.

- 1** Simplify $\frac{2}{x} + \frac{5}{x}$
Circle your answer.

[1 mark]

$\frac{7}{x}$

$\frac{7}{2x}$

$\frac{10}{x}$

$\frac{7}{x^2}$

- 2** Write as a single fraction in its simplest form.

(a) $\frac{x}{3} + \frac{x+2}{5}$

[2 marks]

Answer _____

(b) $\frac{5}{a} - \frac{7}{3a}$

[2 marks]

Answer _____

- 3** Simplify $\frac{9a^2}{10} \div \frac{3a}{4}$
Give your answer as a single fraction in its simplest form.

[2 marks]

Answer _____

- 4** Write as a single fraction in its simplest form $\frac{3}{x+1} - \frac{2}{x-2}$

[3 marks]

Answer _____

- 5** Simplify fully $\frac{x^2 - 25}{3x} \times \frac{6x^2}{x+5}$

[3 marks]

Answer _____

- 6** Simplify fully $\frac{x+4}{x^2-2x} \div \frac{x^2+x-12}{x^2}$

[4 marks]

Answer _____

7 Show that, for $x \neq 0$

$$\frac{x+7}{4x} - \frac{x-2}{6x} = \frac{x+25}{12x}$$

[3 marks]

8 Simplify fully $(x^2 + 4x) \times \frac{x^2 - 5x + 6}{x^2 + 2x - 8}$

[4 marks]

Answer _____

9 Show that $\frac{x-3}{x-1} + \frac{x+3}{x+1}$
simplifies to $\frac{ax^2 - b}{x^2 - 1}$ where a and b are integers.

[3 marks]

- 10** Simplify fully $\frac{x^3 + 2x}{6} \times \frac{9}{5x^2 + 10}$
You must show your working.

[3 marks]

Answer _____