

1MA1 Higher themed papers: Algebraic Fractions

Write your name here						
Surname	Other names					
Pearson Edexcel Level 1/Level 2 GCSE (9–1)	Centre Number <table border="1"><tr><td></td><td></td><td></td><td></td><td></td></tr></table>					
	Candidate Number <table border="1"><tr><td></td><td></td><td></td><td></td><td></td></tr></table>					
Mathematics Algebraic Fractions						
	Paper Reference 1MA1					
You must have: Ruler graduated in centimetres and millimetres, protractor, pair of compasses, pen, HB pencil, eraser, calculator. Tracing paper may be used.						
Total Marks <table border="1"><tr><td></td></tr></table>						

Instructions

- Use **black** ink or ball-point pen.
- **Fill in the boxes** at the top of this page with your name, centre number and candidate number.
- Answer **all** questions.
- Answer the questions in the spaces provided – *there may be more space than you need.*
- You must **show all your working**.
- Diagrams are **NOT** accurately drawn, unless otherwise indicated.
- If your calculator does not have a π button, take the value of π to be 3.142 unless the question instructs otherwise.

Information

- The total mark for this paper is **49**. There are **14** questions.
- Questions have been arranged in an ascending order of mean difficulty, as found by all students in the June 2017–November 2019 examinations.
- The marks for **each** question are shown in brackets – *use this as a guide as to how much time to spend on each question.*

Advice

- Read each question carefully before you start to answer it.
- Keep an eye on the time.
- Try to answer every question.
- Check your answers if you have time at the end.

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1 Simplify $\frac{x^2 - 16}{2x^2 - 5x - 12}$

.....
(3)

(Total for Question 1 is 6 marks)



2 Simplify fully $\frac{3x^2 - 8x - 3}{2x^2 - 6x}$

.....
(Total for Question 2 is 3 marks)

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3

Simplify fully

$$\frac{3 - 4x - 4x^2}{2x^2 - 7x + 3}$$

.....
(3)

(Total for Question 3 is 3 marks)

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4 Show that $\frac{2x^2 - 3x - 5}{x^2 + 6x + 5}$ can be written in the form $\frac{ax + b}{cx + d}$ where a , b , c and d are integers.

(Total for Question 15 is 3 marks)

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5 Solve $\frac{3x-2}{4} - \frac{2x+5}{3} = \frac{1-x}{6}$

$x = \dots\dots\dots$

(Total for Question 5 is 4 marks)

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- 6** Show that $6 + \left[(x+5) \div \frac{x^2+3x-10}{x-1} \right]$ simplifies to $\frac{ax-b}{cx-d}$ where a , b , c and d are integers.

(Total for Question 6 is 4 marks)

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7

Write $\frac{5}{x+1} + \frac{2}{3x}$ as a single fraction in its simplest form.

.....
(2)

(Total for Question 7 is 2 marks)

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- 8** $2 - \frac{x+2}{x-3} - \frac{x-6}{x+3}$ can be written as a single fraction in the form $\frac{ax+b}{x^2-9}$
where a and b are integers.

Work out the value of a and the value of b .

$a =$

$b =$

(Total for Question 8 is 4 marks)

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- 9** Write $\frac{3(x-1)}{x^2-4x-5} - \frac{2}{x-5}$ as a single fraction in its simplest form.

.....
(Total for Question 9 is 4 marks)

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- 10** (a) Write $\frac{4x^2 - 9}{6x + 9} \div \frac{2x}{x^2 - 3x}$ in the form $\frac{ax + b}{cx + d}$ where a, b, c and d are integers.

.....
(3)

- (b) Express $\frac{3}{x+1} + \frac{1}{x-2} - \frac{4}{x}$ as a single fraction in its simplest form.

.....
(3)

(Total for Question 10 is 6 marks)

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- 11** Show that $\frac{1}{2x^2 + x - 15} \div \frac{1}{3x^2 + 9x}$ simplifies to $\frac{ax}{bx + c}$ where a , b and c are integers.

(3)

(Total for Question 11 is 5 marks)

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- 12 Show that $\frac{3x+6}{x^2-3x-10} \div \frac{x+5}{x^3-25x}$ simplifies to ax where a is an integer.

(Total for Question 12 is 4 marks)

- 13 Show that $\frac{a}{b+1} - \frac{a}{(b+1)^2}$ can be written as $\frac{ab}{(b+1)^2}$

(Total for Question 13 is 2 marks)

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14 Write $4 - \left[(x + 3) \div \frac{x^2 + 5x + 6}{x - 2} \right]$

as a single fraction in its simplest form.
You must show your working.

.....
(Total for Question 14 is 4 marks)

TOTAL MARKS FOR PAPER: 49