HIGHER

7.6 Algebraic Fractions: 1-hour Pack

EDEXCEL 1MA1 · Calculator allowed · about 60 minutes

Total Marks

Name: _____ Date: ____ / ____ / _____

Answer ALL questions. Show all your working.

Algebraic Fractions: Fluency and Exam Drill

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This worksheet opens with short fluency questions on cancelling common factors, adding, subtracting, multiplying and dividing algebraic fractions, before moving into exam-style questions that combine these skills with solving fractional equations, showing given identities and a real-life journey-time problem. It finishes with two grade-9 items: a compound fraction and a solve-and-reject question that tests whether a solution is actually valid once excluded values are considered.

1 Simplify fully $(3x^2 - 2x - 5)/(x^2 - 1)$

(Total for Question 1 is 3 marks)

2 Solve $(x - 2)/4 + (x + 3)/2 = 5$

(Total for Question 2 is 4 marks)

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3 Write $3/(x + 6) + 1/(x + 3)$ as a single fraction in the form $(ax + b)/((x + p)(x + q))$.

(Total for Question 3 is 3 marks)

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4 Simplify fully $(4x^2 - 16)/(4x^2 - 8x)$

(Total for Question 4 is 3 marks)

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5 Simplify fully $(x^2 - x - 2)/(3x^2 - 8x + 4)$

(Total for Question 5 is 3 marks)

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6 Simplify $(x^2 - 5x + 6)/(x^2 + x - 6)$

(Total for Question 6 is 3 marks)

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7 Solve $(x - 3)/3 + (x + 3)/6 = 4$

(Total for Question 7 is 4 marks)

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8 Write $4/(x - 5) + 5/(x + 4)$ as a single fraction in the form $(ax + b)/((x + p)(x + q))$.

(Total for Question 8 is 3 marks)

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9 Simplify $(x^2 - 4x - 5)/(x^2 - 8x + 15)$

(Total for Question 9 is 3 marks)

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10 Simplify fully $(4x^2 - 196)/(4x^2 + 28x)$

(Total for Question 10 is 3 marks)

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11 Solve $6/(x - 3) = 5/(x - 1)$

(Total for Question 11 is 3 marks)

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12 Solve $(x - 4)/6 + x/3 = 9$

(Total for Question 12 is 4 marks)

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13 Simplify fully $(x^2 - x - 2)/(x^2 - 7x + 10)$

(Total for Question 13 is 3 marks)

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14 Simplify fully $(x^2 - x - 12)/(x^2 - 16)$

(Total for Question 14 is 3 marks)

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Mark scheme · 7.6 Algebraic Fractions: 1-hour Pack

Question 1

numerator factorised	**M1**
denominator factorised	**M1**
(3x - 5)/(x - 1)	**A1**

Answer: (3x - 5)/(x - 1)

Question 2

multiplies through by 8	**M1**
expands brackets correctly	**M1**
collects terms	**M1**
x = 16/3	**A1**

Answer: x = 16/3

Question 3

common denominator (x + p)(x + q)	**M1**
correct numerator over common denominator	**M1**
(4x + 15)/((x + 6)(x + 3))	**A1**

Answer: (4x + 15)/((x + 6)(x + 3))

Question 4

numerator factorised as a difference of two squares	**M1**
denominator factorised	**M1**
(x + 2)/x	**A1**

Answer: (x + 2)/x

Question 5

numerator factorised	**M1**
denominator factorised	**M1**
(x + 1)/(3x - 2)	**A1**

Answer: (x + 1)/(3x - 2)

Question 6

numerator factorised (x - 2)(x - 3)	**M1**
denominator factorised	**M1**
(x - 3)/(x + 3)	**A1**

Answer: (x - 3)/(x + 3)

Question 7

multiplies through by 18	**M1**
expands brackets correctly	**M1**
collects terms	**M1**
x = 9	**A1**

Answer: x = 9

Question 8

common denominator (x + p)(x + q)	**M1**
correct numerator over common denominator	**M1**
(9x - 9)/((x - 5)(x + 4))	**A1**

Answer: (9x - 9)/((x - 5)(x + 4))

Question 9

numerator factorised (x - 5)(x + 1)	**M1**
denominator factorised	**M1**
(x + 1)/(x - 3)	**A1**

Answer: (x + 1)/(x - 3)

Question 10

numerator factorised as a difference of two squares	**M1**
denominator factorised	**M1**
(x - 7)/x	**A1**

Answer: (x - 7)/x

Question 11

cross multiplies: 6(x - 1) = 5(x - 3)	**M1**
expands and collects x terms	**M1**
x = -9	**A1**

Answer: x = -9

Question 12

multiplies through by 18	**M1**
expands brackets correctly	**M1**
collects terms	**M1**
x = 58/3	**A1**

Answer: x = 58/3

Question 13

numerator factorised	**M1**
denominator factorised	**M1**
(x + 1)/(x - 5)	**A1**

Answer: (x + 1)/(x - 5)

Question 14

factorises numerator: (x - 4)(x + 3)	**M1**
factorises denominator: (x - 4)(x + 4)	**M1**
(x + 3)/(x + 4) oe cao	**A1**

Answer: (x + 3)/(x + 4)

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