2.1 Algebraic Fractions: Simplifying, Multiplying and Dividing: 30-minute Pack

AQA 8365 · Calculator allowed · about 30 minutes

Total Marks

Name: _____ Date: ____ / ____ / _____

Answer ALL questions. Show all your working.

1 Simplify each fraction fully.

(a) Simplify fully $(24x^6y^3)/(16x^2y^5)$ **(2)**

(b) Simplify fully $(18a^5b^2)/(27a^2b^7)$ **(2)**

(Total for Question 1 is 4 marks)

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2 Simplify each fraction fully by factorising first.

(a) Simplify fully $(5x+15)/(x^2+3x)$ **(3)**

(b) Simplify fully $(8x-24)/(x^2-3x)$ **(3)**

(Total for Question 2 is 6 marks)

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3 Simplify fully $(x^2+6x+8)/(x^2+2x-8)$

(Total for Question 3 is 3 marks)

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4 Simplify fully $(9x-27)/(x^2-3x)$

(Total for Question 4 is 1 mark)

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5 Simplify fully $(5x+30)/(x^2+6x)$

(Total for Question 5 is 1 mark)

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6 Simplify fully $(x^2-9)/(x+2) \div (x-3)/(3x+6)$

(Total for Question 6 is 3 marks)

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7 Show that $(3x^2+11x+6)/(x^2-3x-18)$ simplifies to $(3x+2)/(x-6)$

(Total for Question 7 is 3 marks)

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8 A rectangular tile has area $(x^2-4)/(x+3)$ cm^2 and length $(x-2)/(x^2-9)$ cm. Find an expression for the width of the tile in its simplest form.

(Total for Question 8 is 5 marks)

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Mark scheme · 2.1 Algebraic Fractions: Simplifying, Multiplying and Dividing: 30-minute Pack

Question 1

(a) numeric coefficient simplified to 3/2 oe **M1**

(a) $3x^4/(2y^2)$ cao **A1**

(a) Answer: $3x^4/(2y^2)$

(b) numeric coefficient simplified to 2/3 oe **M1**

(b) $2a^3/(3b^5)$ cao **A1**

(b) Answer: $2a^3/(3b^5)$

Question 2

(a) numerator factorised as 5(x+3) **M1**

(a) denominator factorised as x(x+3) **M1**

(a) 5/x cao **A1**

(a) Answer: 5/x

(b) numerator factorised as 8(x-3) **M1**

(b) denominator factorised as x(x-3) **M1**

(b) 8/x cao **A1**

(b) Answer: 8/x

Question 3

numerator factorised as (x+2)(x+4) **M1**

denominator factorised as (x+4)(x-2) **M1**

(x+2)/(x-2) cao **A1**

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

Question 4

9/x cao, factorising 9(x-3) and x(x-3) then cancelling (x-3) **B1**

Answer: 9/x

Question 5

5/x cao, factorising 5(x+6) and x(x+6) then cancelling (x+6) **B1**

Answer: 5/x

Question 6

inverts second fraction and factorises x^2-9 as (x-3)(x+3) **M1**

3x+6 factorised as 3(x+2); cancels (x-3) and (x+2) correctly **M1**

3x+9 oe cao **A1**

Answer: 3x+9

Question 7

numerator factorised as (3x+2)(x+3) **M1**

denominator factorised as (x+3)(x-6) **M1**

cancels (x+3) correctly to reach (3x+2)/(x-6) cso **A1**

Answer: (3x+2)/(x-6)

Question 8

sets up width = area / length **M1**

factorises x^2-4 as (x-2)(x+2) and x^2-9 as (x-3)(x+3) **M1**

inverts the length fraction and multiplies correctly **M1**

cancels (x-2) and (x+3) correctly **M1**

(x+2)(x-3) oe, or x^2-x-6, cao **A1**

Answer: (x+2)(x-3), which expands to x^2-x-6

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