



EXAM PAPERS PRACTICE

GCSE AQA Math 8300

Notation Vocabulary &
Manipulation

Question Paper

*"We will help you to
achieve A Star "*

Q1. The expression $\frac{x^2 - 9}{x^2 + bx - 15}$ simplifies to $\frac{x+3}{x+5}$

Work out the value of b .

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$b =$

(Total 3 marks)

Q2.

(a) Show that $\frac{c^2 + 5c + 4}{3c + 3}$ simplifies to $\frac{c+4}{3}$

(3)

(b) Hence, or otherwise, simplify fully $\frac{c^2 + 5c + 4}{3c + 3} + \frac{3 - 2c}{6}$

Answer

(2)
(Total 5 marks)

Q3. Here is an identity $(3x + c)(x + c) \equiv 3x^2 - dx + 16$

c and d are integers.

Work out all possible pairs of values of c and d .
You **must** show your working.

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Answer

(Total 5 marks)

Q4.

Three people were born on the same date, but in different years.

The second person was born 5 years after the first.

The third person was born 7 years after the **first**.

Use algebra to prove that the sum of their ages will always be a multiple of 3

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(Total 3 marks)



EXAM PAPERS PRACTICE

Q5. Pens cost 15 pence each.
Rulers cost 20 pence each.

- (a) Write down an expression for the cost of x pens and y rulers.

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Answer

(2)

- (b) A school buys 150 pens and 90 rulers.

The total cost is reduced by $\frac{1}{5}$

How much does the school pay?

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Answer £

(5)
(Total 7 marks)

- Q6.(a)** Expand and simplify $2(a + 3) + 5(a - 1)$

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Answer

(2)

- (b) Simplify $5c^4d^2 \times c^2d^3$

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.....

Answer

(2)



EXAM PAPERS PRACTICE

(c) Simplify fully $\frac{8(x-3)^2}{4(x-3)(x+3)}$

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Answer

(2)
(Total 6 marks)

Q7. Simplify fully $\frac{11}{2x} - \frac{3}{x}$

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Answer

(Total 3 marks)

Q8. Simplify fully $4x + 7y + 5x - y$

(a) fully

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Answer

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(2)

(b) Multiply out $4(x + 3)$

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Answer

...

(c) Factorise $x^2 - 5x$

(1)

.....

Answer

(1)
(Total 4 marks)



EXAM PAPERS PRACTICE

Q9 Amy raised £ n for charity.

Chris raised £ 18 more than Amy.

The **mean** amount raised by the two of them is £ 45.

Work out how much money each one of them raised.

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(2)

Amy £

Chris £

(Total 5 marks)

Q10

Ravi, Sue and Tom do some jobs.

They are each paid £ 4 an hour.

They are paid £ 216 in total.

(a) Show that they work for 54 hours in total.

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(1)

(b) Ravi works for x hours.

Sue works 5 hours less than Ravi.

Tom works 8 hours more than Ravi.

Work out how much Ravi is **paid**.

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EXAM PAPERS PRACTICE

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£

(5)
(Total 6 marks)

Q11.(a) Circle the expression that is equivalent to $4 \times x$

x^4

$4x$

4^x

$x \times x \times x \times x$

(1)

(b) Circle the expression that is equivalent to $y \times y \times y$

$3y$

y^2

$3y^2$

y^3

(1)

(c) Circle the expression that is equivalent to $a + b$

$b + a$

ab

ba

$2ab$

(1)
(Total 3 marks)

Q12. There are n plums in Bag A.

Bag B has three times as many plums as Bag A.

Bag C has 14 more plums than Bag A.

Bag B and Bag C have the same number of plums.



Q13.

Three people were born on the same date, but in different years.

The second person was born 5 years after the first.

The third person was born 7 years after the **first**.

Use algebra to prove that the sum of their ages will always be a multiple of 3

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(Total 3 marks)

Q14. Pens cost 15 pence each.

Rulers cost 20 pence each.

(a) Write down an expression for the cost of x pens and y rulers.

.....

Answer

(2)

(b) A school buys 150 pens and 90 rulers.

The total cost is reduced by $\frac{1}{5}$

How much does the school pay?

.....

.....

.....

.....

.....

Answer £

(5)

(Total 7 marks)



EXAM PAPERS PRACTICE

Q15.(a) Expand and simplify $2(a + 3) + 5(a - 1)$

.....
.....

Answer

(2)

(b) Simplify $5c^4d^2 \times c^2d^3$

.....
.....

Answer

(2)

(c) Simplify fully $\frac{8(x-3)^2}{4(x-3)(x+3)}$

.....
.....
.....

Answer

(2)

(Total 6 marks)