



Aberdare Community School
Mathematics Department

WJEC GCSE
Higher – Non Calculator
Algebra

Writing expressions, formulae and equations

Name:

Set:

Date:

Teacher:

12. When ten times a number x is added to three, the result is less than the result of subtracting x from seven. Write down and simplify an inequality which is satisfied by x .

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[2]

12. The dimensions of a photograph are $8x$ cm and $5x$ cm. A border of width x cm is placed around the photograph.

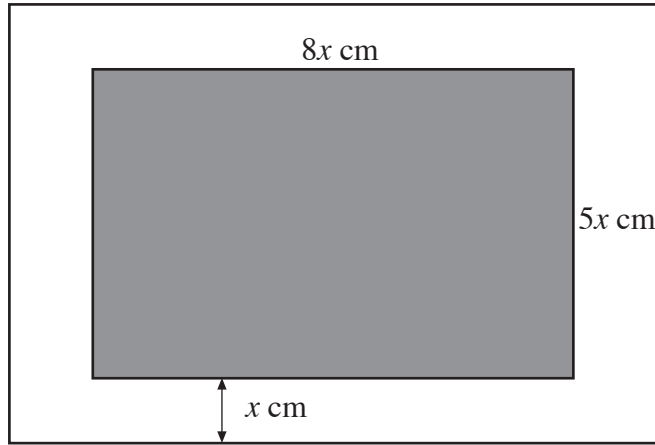


Diagram not drawn to scale.

- (a) Show that the area of the border is $30x^2$ cm².

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- (b) The area of the border is 120 cm². Find the dimensions of the photograph.

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Length of the photograph cm

Width of the photograph cm

[3]

17. A cone, with base of radius x cm and height h cm, has the same volume as a cuboid with length x cm, width $(x - 3)$ cm and height $(x + 3)$ cm.
Find an expression for h in terms of x and π in its simplified form.

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[5]

(a) Solve $4 - x > 7$.

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(b) A garage has x new cars and three times as many used cars for sale.
The total number of cars for sale is 84.
Write down an equation in x and solve it to find the number of new cars for sale.

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(c) When a number n is added to 7 the total is greater than 11.

(i) Write down and simplify an inequality which is satisfied by n .

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(ii) Find the least whole number value of n .

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- (c) A number is divided by 6 then 8 is added. This gives an answer of 78.
Find the number.

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[2]

7. Between Monday and Friday Sonia earns £8 per hour for working in a shop. At weekends the hourly rate of pay is doubled. She works x hours on Friday, $(x + 2)$ hours on Saturday and $(x + 3)$ hours on Sunday. Write down, in its simplest form, an expression for Sonia's total pay for working on Friday, Saturday and Sunday.

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[4]

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(b) Freddy is paid $\pounds x$ per hour.
How long, in minutes, will Freddy have to work for in order to earn $\pounds y$? Give your answer in terms of x and y .

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13. A farmer has just enough food to feed x pigs for y days.

- (a) Write down an expression for the number of days the farmer could feed z pigs with the same amount of food.

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- (b) Write down an assumption you have made in answering part (a).

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