

# A5

## Algebra exam review

1 Make  $v$  the subject of the formula  $m(v - u) = l$

$$v = \dots\dots\dots$$

(Total 3 marks)

2 Make  $W$  the subject of the formula  $h = \sqrt{\frac{W}{l}}$

$$W = \dots\dots\dots$$

(Total 2 marks)

3 Make  $R$  the subject of the formula  $A = \pi(R + r)(R - r)$

$$R = \dots\dots\dots$$

(Total 4 marks)

4 
$$\frac{x}{x+c} = \frac{p}{q}$$

Make  $x$  the subject of the formula.

$$x = \dots\dots\dots$$

(Total 4 marks)

5 Prove algebraically that the sum of the squares of any two odd numbers leaves a remainder of 2 when divided by 4.

(Total 3 marks)



6 Lisa said that  $-2$  is the **only** value of  $x$  that satisfies the equation  $x^2 + 4x + 4 = 0$

Was Lisa correct?

Show working to justify your answer.

(Total 2 marks)

7 a Write down an expression, in terms of  $n$ , for the  $n$ th multiple of 5.

.....

(1)

b Hence or otherwise

i prove that the sum of two consecutive multiples of 5 is always an odd number

ii prove that the product of two consecutive multiples of 5 is always an even number.

(5)

(Total 6 marks)

8 Prove that

$$(n + 1)^2 - (n - 1)^2$$

is a multiple of 4, for all positive integer values of  $n$ .

(Total 4 marks)

9 The fraction,  $p$ , of an adult's dose of medicine which should be given to a child who weighs  $w$  kg is given by the formula

$$p = \frac{3w + 20}{200}$$

a Use the formula  $p = \frac{3w + 20}{200}$  to find the weight of a child whose dose is the same as an adult's dose.

..... kg

(3)

b Make  $w$  the subject of the formula  $p = \frac{3w + 20}{200}$

$w =$  .....

(3)

$$\frac{3w + 20}{200} = \frac{A}{A + 12}$$

c Express  $A$  in terms of  $w$ .

$A =$  .....

(4)

10 Sophie says, 'For any whole number,  $n$ , the value of  $6n - 1$  is always a prime number'.

Sophie is wrong.

Give an example to show that Sophie is wrong.

(Total 2 marks)