GCSE (9–1)
MATHEMATICS

Topic Check In - 6.01 Algebraic expressions

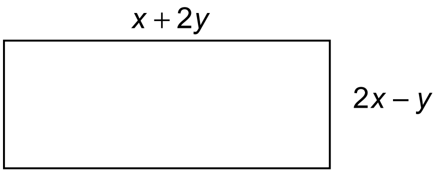
1. Simplify $2x+3y-x+2y$.

2. Multiply out the brackets from $3(2x+y-4z)$.

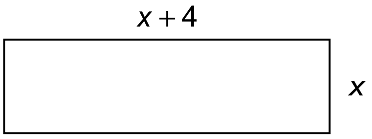
3. Simplify $\frac{9a^4}{3a^2}$.

4. Factorise $4x+12y$.

5. Write down an expression for the perimeter of this rectangle.
   Simplify your expression.



6. Show that the area of the rectangle below can be written as x^2+4x.



7. Robin says that $30x+10x^2$ can be written as $5(6x+2x^2)$ in its simplified form. Explain why this has not been fully simplified.

8. Explain why $(3x-4)+x-(4x-6)$ is a constant number whatever the value of x.

9. Shape A has an area of $3(x+4)$ and shape B has an area of $5(2x-1)$. If the two shapes are joined together so that they do not overlap, what is the area of the new shape? Write your answer in its simplest form.

10. A regular pentagon has a perimeter given by the expression $40x+30$. Write an expression for the length of each side.

Extension

A 3 × 3 magic square is a square grid with each row and column having 3 cells. The sum of each row, each column and each diagonal adds to the same number.

Complete this magic square.

$3x + 2y$	$-(2x + 3y)$	$4y - x$
$3y - 4x$		
	$2x + 5y$	

Answers

1. $x + 5y$

2. $6x + 3y - 12z$

3. $3a^2$

4. $4(x + 3y)$

5. $2(3x + y)$

6. $x(x + 4) = x^2 + 4x$

7. Factorises fully to $10x(3 + x)$.

8. Independent of x because the expression simplifies to 2 with no x term.

9. $13x + 7$

10. $8x + 6$

Extension

$3x + 2y$	$-(2x + 3y)$	$4y - x$
$3y - 4x$	y	$4x - y$
$x - 2y$	$2x + 5y$	$-3x$

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AO1	1	Simplify an algebraic expression.			
AO1	2	Expand a single bracket and collect like terms.			
AO1	3	Simplify a quotient.			
AO1	4	Factorise into a single bracket.			
AO1	5	Write and simply an expression for a perimeter.			
AO2	6	Factorise an expression for a simple area.			
AO2	7	Simplify expressions fully.			
AO2	8	Simplify algebraic expressions.			
AO3	9	Translate a word problem into a simplified algebraic expression.			
AO3	10	Translate a perimeter problem into a simplified algebraic expression.			

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