



GCSE Foundation/Higher 09

Algebra



Mark scheme



75 minutes



69 marks

Simplifying expressions

M1. $w^2 + 6w$

B1 for w^2 or (+) $6w$

Award B1 if further working seen after correct answer

B2

[2]

M2. (a) $(5x + 3 =) 3x + 6$

B1

$5x - \text{their } 3x = \text{their } 6 - 3 \text{ or } 2x = 3$

oe

M1

1.5

oe

ft for linear equation if B0 scored

A1 ft

(b) $2x + 32$ or $4x - 20$

Accept $ax + ab$ for M1

M1

$6x + 12$ or $6(x + 2)$

A1

$a = 6$ and $b = 2$

ft from their $6x + 12$ if M1 earned

SC2 $a = 6$ and $b = 12$

SC1 $a = 6$

A1 ft

[6]

M3. (a) $7 \times 8 - x \times x$

oe x^2 must be shown as $x \times x$

B1

(b) Diagram with a vertical and/or horizontal line drawn from bottom right corner of shaded square

M1

Two (or three) separate rectangles with dimensions correctly shown

A1

Horizontal line, correct areas shown

SC1 For expanding brackets and showing that it is $56 - x^2$

A1

[4]

M4.	(a) 120	B1	[3]
	(b) $x(2x - 1)$ <i>Condone $x \times (2x - 1)$</i>	B1	
	(c) 120 <i>ft Their (a)</i>	B1ft	

M5.	(a) x^5	B1	[4]
	(b) y^3	B1	
	(c) $x^4 - 3x$ <i>B1 x^4 or $3x$ Penalise fw</i>	B2	

M6.	(a) $8t = 19 + 5$	M1	[6]
	3	A1	
	(b) $3x + 5y$ <i>oe Allow $3 \times x + 5 \times y$ not $x3 + y5$ B1 For one term correct Do not ignore fw</i>	B2	
	(c) $8w + 12 - 15w - 35$ <i>Allow one term incorrect</i>	M1	
	$-7w - 23$	A1	

M7.	(a)	a^6	B1	
	(b)	b^6	B1	
	(c)	c^{11}	B1	[3]

M8.	(a)	-80	B1	
	(b)	$8w - 3w$ or $1 + 5$ <i>Or better</i>	M1	
		$5w = 6$	A1	
		$\frac{6}{5}$ or 1.2 oe	A1 ft	
	(c)	$y + 2y^2$ or $y(1 + 2y)$ Allow $y + 2 \times y^2$ B0 fw eg, $y + 2y^2 = 3y^2$	B1	
	(d)	$5(3t + 5)$ Allow $5 \times (3t + 5)$ or $(3t + 5) \times 5$ Condone missing final bracket	B1	
	(e)	$z(z + 8)$ Allow $z \times (z + 8)$ or $(z + 8) \times z$ Condone missing final bracket	B1	[7]

M9.	(a)	$3.2 \times 3.6 \div 2$ oe	M1	
		5.76	A1	

(b) $120.96 \div (\text{Their } 5.76)$

M1

21

A1 ft

[4]

M10. (a) $6x - 4 + 4x + 20$

Allow one error

M1

$10x + 16 (= 2(5x + 8))$

Ignore fw that does not contradict, but do not award A1 for fw such as $= 26x$

A1

(b) $10x + 16 = 4x - 8$

Allow 1 error

ft Their answer for (a)

ie, Their (a) $= 4x - 8$

M1

$10x - 4x = -8 - 16 (6x = -24)$

-4

*ft on **one error** only for A1*

Errors can be in expansion (1 error)

Collecting terms to $ax = b$

Solving equation

A2 ft

[5]

M11. (a) $2x - 1 + 2x - 1 + x + 2 + x + 2$

oe

B1

- (b) $(6x + 2 =) 2x + 8$
Allow $(6x + 2 =) x - 1 + x - 1 + 5 + 5$ oe
B1
- $6x - 2x = 8 - 2$
oe Allow one error in signs
M1
- $4x = 6$
*ft **Only** from **Their** $(2x + 8)$*
A1 ft
- $1\frac{1}{2}$
*ft **Their** $(2x + 8)$ or **Their** $(4x = 6)$ oe*
B1 ft
- (c) $(\text{Their } 3.5) \times (\text{Their } 2)$
 $2x^2 + 3x - 2$
M1
- 7
*From **Their** x*
A1 ft
- [7]**

- M12.** (a) $6x + 5$
B1 $6x$ or $+ 5$ eg $6x - 5$ scores B1
B2
- (b) 15
B1
- (c) (i) $1 \times 3 + 4$ or $1 \times (3 + 4)$
or $3 + 4$ or 1×7
M1
- $1 \times 3 + 4$ and $1 \times (3 + 4)$
or $3 + 4$ and 1×7
M1
- 7 (must see both methods and answers)
SC1 7 with no working
A1

- (c) (ii) $a(b + c) = ab + ac$, or
 Comparison of add b to c then multiply by a with multiply
 a by b then add c
 oe
 or complete counter example (showing both expressions have
 different values when $a \neq 1$ or $c \neq 0$)
 B1 incomplete comparisons or counter examples

B2

[8]

- M13.** (a) $8x - 4 + 3x + 18$
 Allow one error

M1

$$11x + 14$$

fw that does not contradict is not penalised but fw
 such as $= 25x$ do not award A1

A1

- (b) $4x^2 - 2x^3$

B1 each term fw such as $= 2x^5$ only give B1

$4x^2 - 2x^2 = 2x^2$ is B1, $4x^2 - 2x^2 = 6x^4$ is B0

B2

[4]

- M14.** $w = 6$

B1

$$x = 8$$

B1 ft

$$y = 5$$

B1 ft

$$z = 4$$

B1 ft

[4]

- M15.** (a) $6x + 10y$

oe

B1 for $6x$ or $10y$ oe seen

No penalty for eg $x6$

B2

- (b) 2×20 or 6×5
 or 2×25 or 4×5
 or 6×25 or 4×20

M1

70

A1

[4]

- M16.** Sum of two consecutive integers is $2 \times$ lower number plus 1
 [or $2 \times$ higher number -1] which is odd

B1 for $2 \times$ smaller is even

Or $2 \times$ larger is even

Or $2n + 1$

Or odd plus even is odd B1

even plus odd is odd B1

Or SC1 for any example

eg $27 + 28 = 55$

B2 for:

$n + (n + 1) = 2n + 1$ which is odd

Or

One of the numbers is odd

The other number is even

The total is odd

B2

[2]

