Simplify/Expand/Factorise

Mark Scheme 1

Level	IGCSE
Subject	Maths
Exam Board	Edexcel
Topic	Equations, Formulae and Identities
Sub Topic	Simplify/Expand/Factorise(Algebraic manipulation)
Booklet	Mark Scheme 1

Time Allowed: 59   minutes

Score: /49

Percentage: /100

Grade Boundaries:

A*	A	B	C	D	E	U
>85%	75%	70%	60%	55%	50%	<50%

Question Number	Working	Answer	Mark	Notes	
1. (a)		$w(w-9)$	2	B2	Award B2 also for $(w \pm 0)(w-9)$ B1 for factors which, when expanded & simplified, give two terms, one of which is correct except B0 for $(w+3)(w-3)$ SC B1 for $w(w-9w)$
(b)	$3x = -6$ or $3x = 1 - 7$ or $5x - 2x = -6$ oe		3	M2	for correct rearrangement with x terms on one side and numbers on the other AND correct collection of terms on at least one side M1 for $5x - 2x = 1 - 7$ oe ie correct rearrangement with x terms on one side and numbers on the other
		-2		A1	cao dep on M2
(c)	$y^2 + 3y - 7y - 21$		2	M1	for 3 correct terms out of 4 or for 4 correct terms ignoring signs or for $y^2 - 4y + n$ for any non-zero value of n
		$y^2 - 4y - 21$		A1	cao
					Total 7 marks

2. (a) (i)			a^4	1	B1	not a4 accept upper case A
(a) (			30ab	1	B1	accept ab30, 30ba, a30b,b30a (no x signs allowed) accept upper case A and/or B
(a) iii)			q^6	1	B1	accept upper case Q
(b)	$5 - 12 = 2y$ oe				M1	or $5 - 12 \div 2$ or $12 - 5 \div -2$
			$- 3.5$ o	2	A1	ans dependent on M1 (above numerical methods acceptable)
(c)	$6^2 - 2 \times 6$ oe				M1	accept $36 - 12$
			24	2	A1	
						Total 7 marks

3. (a)		Correct cancelling 8 & 4 or brackets			M1	
			$2(x - 3)$ oe	2	A1	
(b)			$(a + 12)(a - 12)$	2	B2	B1 for (a±12)(a±12)
(c)	p +5r (=√q)				M1	
			$(p+5r)^2$ oe	2	A1	do not isw (e.g. proceed onto $p^2 + 25r^2$)
(d)	$4 = 5(y - 4)$ oe				M1	or (y-4)/4 = 1/5
	$4+(5 \times 4)=5y$	must be 5 x 4 or 20 or LHS = 24			M1	$4/5 = y - 4$
			4.8 oe	3	A1	dep on M2 correct answer only = M0M0A0
						Total 9 marks

4. (a)			$a(5 - 3a)$	2	B2	B1 for factors which when expanded & simplified give 2 terms for which one is correct.
(b)			$8 - 6w$	1	B1	
(ii)			$y^3 +10y^2$	2	B2	B1 for y^3 or $10y^2$
(c)	7.168 / 0.64		11.2	2	B2	B1 for 7.168 or 0.64
						Total 7 marks

5. (a) (i)	$10x + 5 - 9x + 3$		$x + 8$	2	B2	B1 for 3 correct terms with correct signs or 4 correct terms ignoring signs
(ii)	$y^2 + 5y - 7y - 35$		$y^2 - 2y - 35$	2	B2	B1 for 3 correct terms with correct signs or 4 correct terms ignoring signs N.B. $- 2y$ (with no more y terms) implies $+ 5y - 7y$
(b)	$V / \pi h = r^2$ (oe)				M1	isolating r^2 (must be correct equation).
			$\sqrt{\dfrac{v}{\pi h}}$ oe	2	A1	condone ± Allow √v ÷ √π ÷ √h etc
						Total 6 marks

		Working	Answer	Mark	Notes
6.	(a)		$n(n+8)$	2	B2 Award B2 also for $(n \pm 0)(n+8)$
					B1 for factors which, when expanded & simplified, give two terms, one of which is correct
					SC B1 for $n(n+8n)$
	(b)	$6x - 15 - 4x - 12$		2	M1 for 3 correct terms
			$2x - 27$		A1 cao
	(c)	$y^2 + 2y + 7y + 14$		2	M1 for 3 correct terms out of 4
					or for 4 correct terms ignoring signs
					or for $y^2 + 9y + c$ for any non-zero value of c
					or for … $+ 9y + 14$
			$y^2 + 9y + 14$		A1 cao
					Total 6 marks

Question		Working	Answer	Mark	Notes
7.	(a)		$20c^2$	1	B1 Also accept $c^2 20$
	(b)		$x(x+4)$ or $x(4+x)$	2	B2 Award B2 also for $(x \pm 0)(x+4)$ oe
					B1 for factors which, when expanded and simplified, give two terms, one of which is correct
					except B0 for $(x+2)(x-2)$
	(c)	$2^3 + 5 \times 2$ or $8 + 10$		2	M1
			18		A1 cao
					Total 5 marks

Question	Working	Answer	Mark	Notes		
8.		$8(4x - y)(4x + y)$	2	B2	B2 for $8(4x - y)(4x + y)$ oe B1 for correct, incomplete factorisation eg $(16x - 4y)(8x + 2y)$ **or** eg $8(16x^2 - y^2)$ **or** correct use of difference of two squares eg. $(12x - y - (4x - 3y))(12x - y + 4x - 3y)$		
					Total 2 marks	