



Published

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Mark schemes should be read in conjunction with the question paper and the Principal Examiner Report for Teachers.

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MARK SCHEME NOTES

The following notes are intended to aid interpretation of mark schemes in general, but individual mark schemes may include marks awarded for specific reasons outside the scope of these notes.

Types of mark

- M Method marks, awarded for a valid method applied to the problem.
- A Accuracy mark, awarded for a correct answer or intermediate step correctly obtained. For accuracy marks to be given, the associated Method mark must be earned or implied.
- B Mark for a correct result or statement independent of Method marks.

When a part of a question has two or more ‘method’ steps, the M marks are in principle independent unless the scheme specifically says otherwise; and similarly where there are several B marks allocated. The notation ‘**dep**’ is used to indicate that a particular M or B mark is dependent on an earlier mark in the scheme.

Abbreviations

awrt	answers which round to
cao	correct answer only
dep	dependent
FT	follow through after error
isw	ignore subsequent working
nfww	not from wrong working
oe	or equivalent
rot	rounded or truncated
SC	Special Case
soi	seen or implied

Question	Answer	Marks	Part Marks
1	0.36	1	
2(a)	$\frac{4}{15}$ cao	1	
2(b)	$\frac{9}{11}$ oe	1	
3	$x^4 - 4x^2$	2	M1 for either term correct
4	[0].043[0]	1	
5	1	1	
6	120	2	M1 for $120n$, $n > 1$ or M1 for 40, 60, 80 and 24, 48, 72 seen or M1 for $2 \times 2 \times 5$ and $2 \times 2 \times 2 \times 3$ soi
7	3	2	M1 for $x^3 = 27$
8	10	3	M2 for $\sqrt{26^2 - 24^2}$ or M1 for $x^2 + 24^2 = 26^2$ or identifies 5, 12, 13 triangle
9	$[x=]1.5$ $[y=]-2$	3	M1 for correct method to eliminate one variable B1 for $x = 1.5$ B1 for $y = -2$ If 0 scored SC1 for correct substitution into one of original equations and correct evaluation to find other variable
10	$3\sqrt{5}$	2	M1 for $\sqrt{6^2 + 3^2}$ or better or M1 for $a = 5$
11	$[y=]-2x + 17$ oe	3	M2 for $y = -2x + k$ or M1 for $\frac{11-3}{3-7}$ soi
12	$x = \frac{7}{2}$, -1 oe	3	M2 for $(2x-7)(x+1)$ or M1 for $(2x+a)(x+b)$ where $a+2b=-5$ or $ab=-7$ or M1 for $2x(x+1)-7(x+1)$ or $x(2x-7)+1(2x-7)$

Question	Answer	Marks	Part Marks
13	$6\sqrt{6} + 12$ or $6(\sqrt{6} + 2)$	3	M2 for $\frac{12(\sqrt{6} + 2)}{6 - 4}$ or better or M1 for $\frac{\sqrt{6} + 2}{\sqrt{6} + 2}$ oe seen
14	$\frac{8}{15}$ final answer	4	B3 for $\frac{48}{90}$ oe or M2 for $\frac{3}{10} \times \frac{2}{9} + \frac{7}{10} \times \frac{6}{9}$ or M1 for $\frac{3}{10} \times \frac{2}{9}$ or $\frac{7}{10} \times \frac{6}{9}$
15	$8x^2 - 26xy + 15y^2$ final answer	3	M2 for $8x^2 - 6xy - 20xy + 15y^2$ or M1 for 3 terms correct
16	$\log \frac{1}{2}$ or $-\log 2$ final answer	3	M2 for $\log \left(\frac{3^2}{2^3} \times \left(\frac{2}{3} \right)^2 \right)$ or better or M1 for one correct use of log rules.
17	$\cos 60 \sin 60 \sqrt{2} \tan 60$	2	B1 for 3 in correct 'relative' order