

Practice Tests Set 7 – Paper 1H mark scheme – Spring 2018

Qn		Working	Answer	Mark	Notes
1	(a)(i)		7^8	1	B1
	(ii)		4^{14}	1	B1
	(b)	$5^n \times 5^3 = 5^{10}$ or $\frac{5^n}{5^6} = 5$ or $\frac{5^n}{5^3} = 5^4$ or $5^{n+3} = 5^{4+6}$	7	2	M1 or a correct equation in n , e.g. $n + 3 = 10$ or $n + 3 - 6 = 4$ A1 cao
2			21	2	M1 3 or 7 identified as a common factor A1 cao
3		$525 \div 3$	875	2	M1 A1 cao
4		$3 + 5 + 7$ or 15 $90 \div (3 + 5 + 7)$ or $90 \div 15$ or 6 or $\frac{7}{15}$ oe	42	3	M1 15 may be denominator of fraction or coefficient in an equation such as $15x = 90$ M1 dep A1

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5	(i)		$3x + 7$	2	M1 for $x + x + 3 + x + 4$ A1 cao
	(ii)		21	3	M1 for $3x = 54$ M1 for $x = 18$ A1 cao
6	(a)		7.5×10^4	1	B1 cao
	(b)		7.5×10^{-8}	2	M1 for $7.5 \times 10^4 \times 10^{-12}$ A1 cao
7			Maths with correct comparative figure(s)	2	M1 for correct method to find figure(s) to compare, e.g. $\frac{32}{80} \times 100 (= 40)$ oe or 0.38×80 oe (= 30.4) C1 for maths with 40% or 30.4 or $\frac{40}{100}$ and $\frac{38}{100}$ oe.
8		$72 \div 1\frac{1}{3}$ oe	54	3	B1M1 accept $72 \div 1.33$ (2dp or better) or 0.9×60 (B1 M0 for $72 \div 1.2(0)\{= 60\}$ or $72 \div 80 \{= 0.9\}$ or $72 \div 1.3 \{= 55.4$ or better}) or $72000 \div 1.33$ (or better) A1 cao

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9		<p>240 OR 6×40 OR 48 (can be implied) $3x + 102 + 60 + 30 = 240$ OR $\frac{192 + 60 + 30 + 3x}{6} = 40$</p>	16	3	M1 A1 B1
10		<p>$24 = \frac{k}{2^3}$ $x = \sqrt[3]{\frac{192}{-3}}$</p>	192 -4	4	M1 A1 M1 A1

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11		$\frac{(5-2) \times 180}{5} \text{ OR}$ $180 - \frac{360}{5}$	108°	2	M1 A1
		<p>Either $\angle EDF = 38^\circ$ or $\angle DEF = 23^\circ$ <i>Note: Angle(s) may be marked on the diagram</i> $\angle EDF = 38^\circ$ and $\angle DEF = 23^\circ$ obtuse $\angle DFE$ $= 180 - "38" - "23"$ reflex $\angle DFE = 360 - "119"$ reflex $\angle DFE = 241$</p>	241°	4	M1 A1 M1 A1
12	(a)	1 + 7 or 8	28	2	M1 for sight of 8. 8 may be denominator of fraction or coefficient in an equation such as $8x = 32$ A1 cao
	(b)	$\frac{32}{8} = 4, \quad 4 \times 7 = 28$ $32 \times 45 = 1440$ or $14.4(0)\text{m}$ $"1440" \div 48$	30	3	M1 M1 dep A1 cao

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13		$1\% \text{ of } 7500 = 75$ $1\% \text{ of } 7575 = 75.75$ $\text{Total} = 75.75 + 75 = 150.75$	150.75	3	M2 for $1.01^2 \times 7500$ A1 cao
14	(a)	$a, b, a + b, a + 2b, 2a + 3b$	Shown	2	M1 Adding pairs of successive terms C1
	(b)	$3a + 5b = 29$ $a + b = 7$ $3a + 3b = 21$ $b = 4, a = 3$	$a = 3, b = 4$	3	P1 Process to set up two equations P1 Process to solve equations A1 cao
15			Events independent	C1	Statement that events are independent
16			-2	M1 A1	$81 = 3^4 \text{ or } \frac{1}{81} = 3^{-4}$ cao

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17	(a)	(20, 4) (40, 16) (60, 42) (80, 84) (100, 96) (120, 100)	correct cf graph	2	M1 (ft from sensible table i.e. clear attempt at addition) for at least 4 points plotted correctly at end of interval or for all 6 points plotted consistently within each interval in the freq table at the correct height A1 accept curve or line segments accept curve that is not joined to (0,0)
	(b)	Reading from graph at $t = 70$		2	M1 for evidence of using graph at $t = 70$ ft from a cumulative frequency graph provided method is shown A1 100 – ‘63’ ft from a cf graph ft from a cumulative frequency graph provided method is shown
18		540/5 (108) “108” \times 12 (o.e.) £ 1296	1296	3	B1 M1 A1

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19		$\sqrt{(8 \times 6)} + \sqrt{(18 \times 6)}$ $(2\sqrt{2} \times \sqrt{6}) + (3\sqrt{2} \times \sqrt{6})$	$\frac{10}{\sqrt{2}}$	3	M1 $\sqrt{(16 \times 3)} + \sqrt{(36 \times 3)} (= 10\sqrt{3})$ M1 $10\sqrt{3} \times \frac{\sqrt{2}}{\sqrt{2}}$ or $\frac{10\sqrt{3}}{\sqrt{6}}$ A1 (dep on at least one M1)
20	(i)		18	3	M1 Uses frequency density for under 80 bar eg $7 \div 10$ M1 Completes method to find over 95 minutes frequency eg 1.2×20 and 2.2×5 A1 35 cao
	(ii)		Reasoning	1	C1 Correct explanation about grouped data so actual values between 95 and 120 unknown
21		$2x - 4 = x^2 - 4x + 4$ $x^2 - 6x + 8 = 0$ $(x - 4)(x - 2) = 0$ $x = 4, \quad x = 2$ When $x = 4, y = 4$ When $x = 2, y = 0$ $4 - 2 = 2$ $4 - 0 = 4$ $2^2 + 4^2$	$\sqrt{20}$	6	P1 for a process to eliminate y , e.g. $2x - 4 = x^2 - 4x + 4$ followed by reduction to 3 term quadratic P1 for factorisation or formula for a 3 term quadratic = 0 P1 for a process to find the values of y A1 all 4 values ($x = 4, y = 4$, and $x = 2, y = 0$) P1 for a correct process to find the distance ² or distance between the 2 points, e.g. $(4 - 2)^2 + (4 - 0)^2$ A1 $\sqrt{20}$

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22	$a^2 \times 10^{2n}$	$\frac{a^2}{10} \times 10^{2n+1}$	3	M1 A1 for $\frac{a^2}{10}$ oe A1 $\times 10^{2n+1}$ oe
23		35°	4	M1 for $ABC = 90$ M1 for $(ACB =) 180 - 90 - 25 (= 65)$ M1 for $(DBC =) 180 - '65' - 80 (=35)$ A1 cao supported by working OR M1 for $(AOB =) 180 - 2 \times 25 (= 130)$ M1 for $(ADB =) 130 \div 2 (=65)$ M1 for $(DAC =) 180 - 65 - 80$ A1 cao supported by working.

Suggested grade boundaries

	9	8	7	6	5	4
Paper 1H	68	60	52	44	35	26
Paper 2H	72	62	52	42	32	22
Paper 3H	58	50	42	34	26	18
Total	198	172	146	120	93	66