Mark scheme

Pythagoras' theorem

Mathematics 0580 · Questions from Paper 1, Paper 2 and Paper 3

Total marks

41

MARKS FOR EACH QUESTION

1	2	3	4	5	6	7	8	9	10	Total
2	3	3	3	4	4	4	4	5	9	**41**

Question 1 [2]

1	41.3 or 41.34…	**2**	**M1** for $35^2 + 22^2$ oe or better

Question 2 [3]

2	16.1 or 16.12 to 16.13	**3**	**M2** for $\sqrt{(18^2 - 8^2)}$ or better or **M1** for $18^2 = […]^2 + 8^2$ or better

Question 3 [3]

3	**(a)**	Angle [in a] semi-circle	**1**	
	(b)	19.2 or 19.23 to 19.24	**2**	**M1** for $17^2 + 9^2$

Question 4 [3]

4	24.3(0788…)	3	**M1** $5 \times 3.5 + 2 \times 1.5$ **M1** (√) $1.5^2 + 3.5^2$

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Question 5 **[4]**

5	52	**4**	**B3** for 17 OR **B1** for 8 correctly identified **M1** for $15^2 + (\textit{their}\ 8)^2$ oe **M1dep** for $14 + 15 + 6 + \textit{their}\ 17$ soi

Question 6 **[4]**

6	60 cao	**4**	**M3** for $39^2 + 52^2 - 25^2 \left[= x^2\right]$ oe or **M2** for $39^2 + 52^2 = 25^2 + x^2$ oe or **M1** for $39^2 + 52^2$ or $25^2 + x^2$ [= *their* AC^2]

Question 7 **[4]**

7	69.3 or 69.28…	**4**	**M2** for height = $\sqrt{8^2 - 4^2}$ or **M1** for $4^2 + h^2 = 8^2$ oe **and M1** for $\frac{1}{2}(8+12) \times \textit{their}$ perp height oe

Question 8 **[4]**

8(a)	$\sqrt{57}$	**3**	**M2** for $11^2 - 8^2$ or **M1** for $11^2 = AC^2 + 8^2$
8(b)	$\frac{8}{11}$	**1**	

Question 9 **[5]**

9	**(a)** 14.1	2	**M1** $(BD^2) = 10^2 + 10^2$ or sin45 = 10/CD
	(b) 3.74 or 3.78	3	**M1 (a)**/2 **M1** (their **(a)**/2)^2 + $PM^2 = 8^2$

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Question 10 **[9]**

10(a)	$\frac{AB}{18} = \cos 60$ or $[AB =]\ 18\cos 60$	**M1**	
	$\cos 60 = \frac{1}{2}$ and $[AB =]\ 9$	**A1**	
	Correct use of Pythagoras' theorem i.e. $[CD^2 =]\ 6^2 + (17 - their AB)^2$ oe	**M1**	
	Correct evaluation for *their AB* $[CD^2 =]\ 36 + 64$ or $[CD =]\sqrt{36+64}$	**M1**	
	$\sqrt{100} = 10$	**A1**	Dep on M1A1M1M1
10(b)	$39 + 9\sqrt{3}$	**4**	**B3** for $[BE =]\ 9\sqrt{3}$ or for answer $k + 9\sqrt{3}$ or for answer equivalent to $39 + 9\sqrt{3}$ but not in required form OR **M2** for $\frac{BE}{18} = \frac{\sqrt{3}}{2}$ oe or better or **M1** for $\frac{BE}{18} = \sin 60$ oe or better **M1** for $18 + 17 + 10 + their\ BE - 6$ oe OR **M2** for $\sqrt{18^2 - their\ 9^2}$ oe or **M1** for $BE^2 + (their\ 9)^2 = 18^2$ oe **M1** for $18 + 17 + 10 + their\ BE - 6$ oe

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