Mark scheme

Circles, arcs and sectors

Mathematics 0580 · Questions from Paper 1 and Paper 2

Total marks

31

MARKS FOR EACH QUESTION

1	2	3	4	5	6	7	8	9	10	Total
2	2	3	3	2	3	3	4	4	5	**31**

Question 1 **[2]**

1	64π	**2**	**M1** for $\left(\frac{16}{2}\right)^2$

Question 2 **[2]**

2	$\frac{3}{2}\pi$, $1\frac{1}{2}\pi$, or 1.5π	**2**	**M1** for $\frac{60}{360}\times\pi\times3^2$ oe

Question 3 **[3]**

3	$\frac{7\pi}{2}$ or 3.5π	**3**	**M2** for $2\pi\times7=4x$ oe or **M1** for $2\pi\times7$ or 14π or $4x$

Question 4 **[3]**

4	28	**3**	**M2** for $16\times\pi7^2=\pi R^2$ or better or **M1** for $\pi7^2$

Question 5 **[2]**

5	$\frac{9}{2}$ oe	**2**	**M1** for $\frac{45}{360}\times2\times[\pi]\times18$ oe

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Question 6 **[3]**

6	36.8 or 36.80 to 36.81	**3**	**M1** for $\frac{26}{360}\times 2\times\pi\times 15$ **M1** for 2×15 + a term involving π

Question 7 **[3]**

7	71.6 or 71.61 to 71.62	**3**	**M2** for $\frac{\text{angle}}{360}=\frac{26-8-8}{2\pi\times 8}$ or better or **M1** for $\frac{\text{angle}}{360}\times 2\pi\times 8$ oe

Question 8 **[4]**

8	33.8 or 33.78 to 33.80	**4**	**M2** for $2\times 12.6\times\sin 40$ oe or **M1** for $\sin 40=\frac{(...)}{12.6}$ oe **M1** for $\frac{80}{360}\times 2\times\pi\times 12.6$ oe

Question 9 **[4]**

9	90.2 or 90.18…	**4**	**B3** for 9.82[%] OR **M3** for $[100\times]\left(k^2-\frac{45}{360}\times\pi\times\left(\frac{k}{2}\right)^2\right)\div k^2$ oe or **M2** for $[100\times]\frac{45}{360}\times\pi\times\left(\frac{k}{2}\right)^2\div k^2$ oe or $k^2-\frac{45}{360}\times\pi\times\left(\frac{k}{2}\right)^2$ or $100\times(k^2-m\pi k^2)\div k^2$ or **M1** for $\frac{c}{360}\times\pi\times\left(\frac{k}{2}\right)^2$ oe or for $(k^2-m\pi k^2)\div k^2$ or for $100\times(k^2-mk^2)\div k^2$

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Question 10 **[5]**

10	1024 cao	**5**	**B4** for 1023 to 1024.0… or 1020 or **M3** for $\frac{125}{360}\times\pi\times48^2-\frac{125}{360}\times\pi\times40^2+32\times8$ or **M1** for $\frac{125}{360}\times\pi\times48^2$ or $\frac{125}{360}\times\pi\times40^2$ **and M1** for $32\times8+k\pi$ If B0 scored **B1** for *their* more accurate decimal answer rounded correctly to an integer

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