FOUNDATION & HIGHER

SAME AT BOTH TIERS

Name ..... **Class** .....

G17: Circles and solids

Circumference and area of circles; composite shapes; volume and surface area of spheres, cones and pyramids

20 marks · 25 minutes · Calculator allowed

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1) A circle has a radius of 4.5 cm. Find its circumference. Give your answer to 3 significant figures.

..... cm

[Question 1: 2 marks]

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2) A circle has a diameter of 12 cm. Find its area. Give your answer to 3 significant figures.

..... cm^2

[Question 2: 2 marks]

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3) A semicircle has a diameter of 10 cm. Find its perimeter. Give your answer to 3 significant figures.

..... cm

[Question 3: 2 marks]

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4) The shape is made from a rectangle and a semicircle. Find its area. Give your answer to 3 significant figures.



..... cm^2

[Question 4: 3 marks]

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5) A sphere has a radius of 6 cm. Find its volume. Give your answer to 3 significant figures. (Volume of sphere = $\frac{4}{3}\pi r^3$)

..... cm^3

[Question 5: 2 marks]

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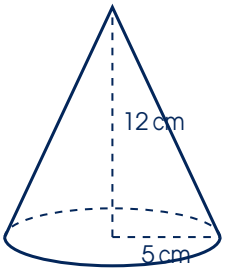
6) Find the surface area of the sphere in question 5. Give your answer to 3 significant figures. (Surface area = $4\pi r^2$)

..... cm^2

[Question 6: 1 marks]

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7) A cone has base radius 5 cm and height 12 cm. (Volume = $\frac{1}{3}\pi r^2 h$; curved surface area = πrl)



(a) Find its volume. Give your answer to 3 significant figures.

..... cm^3

(2)

(b) Find its curved surface area. Give your answer to 3 significant figures.

..... cm^2

(2)

[Question 7: 4 marks]

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8) A pyramid has a square base of side 6 cm and a perpendicular height of 10 cm. Find its volume. (Volume = $\frac{1}{3}\times$ base area $\times$ height)

..... cm^3

[Question 8: 2 marks]

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9) Find the volume of a hemisphere with radius 3 cm. Give your answer to 3 significant figures.

..... cm^3

[Question 9: 2 marks]

End of paper – 20 marks in total

Answers and brief mark scheme

Q	Answer	Method / notes
1	28.3	$2\pi \times 4.5$ (M1); A1.
2	113	$\pi \times 6^2$ (M1); A1.
3	25.7	$5\pi + 10$ (M1); A1.
4	74.1	Rectangle 60 (B1); semicircle $\frac{1}{2}\pi \times 3^2 = 14.1\ldots$ (M1); A1.
5	905	$\frac{4}{3}\pi \times 216$ (M1); A1.
6	452	B1.
7	(a) 314 (b) 204	(a) $\frac{1}{3}\pi \times 25 \times 12$ (M1); A1. (b) $l = 13$ (M1); 65π (A1).
8	120	$\frac{1}{3} \times 36 \times 10$ (M1); A1.
9	56.5	$\frac{2}{3}\pi \times 27$ (M1); A1.