Test - Area, volume, surface area, arcs and sectors

Year: Year 10 · Duration: 45 minutes · /20

Name:	Date:	**Mark: /20**

Question	1	2	3	4	5	Total
marks	4	4	4	4	4	**20**
Mark						

Show your working.

Question 1 (4 marks)

Question 1 – Areas and circles

Calculator allowed. Give answers to 1 decimal place where needed.

a. A trapezium has parallel sides 8 cm and 14 cm and height 6 cm. Work out its area. (2 marks)
b. Work out the circumference and area of a circle with radius 7 cm. (2 marks)

Question 2 (4 marks)

Question 2 – Prisms

A triangular prism has a right-angled triangle for its cross-section, with perpendicular sides 6 cm and 8 cm and hypotenuse 10 cm. The prism is 15 cm long.

a. Work out the volume. (2 marks)
b. Work out the total surface area. (2 marks)

Question 3 (4 marks)

Question 3 – Arcs and sectors

A sector of a circle has radius 9 cm and angle 120°. Calculator allowed.

a. Work out the arc length, giving your answer in terms of π and to 1 d.p. (2 marks)
b. Work out the area of the sector to 1 d.p. (2 marks)

Question 4 (4 marks)

Question 4 – Problem: the oil tank

A cylindrical oil tank has diameter 1.2 m and length 2 m. It lies on a stand. Heating oil

costs 68p per litre.

a. Show that the tank holds about 2262 litres when full. (2 marks)
b. Work out the cost of filling the tank completely, to the nearest £. (2 marks)

Question 5 (4 marks)

Question 5 – Higher: cone and sphere

Higher tier. A cone has base radius 6 cm and vertical height 8 cm. A sphere has radius 3 cm.

a. Work out the slant height of the cone. (1 mark)
b. Work out the volume of the cone in terms of π. (1 mark)
c. Work out the volume of the sphere in terms of π. (1 mark)
d. Find the ratio of the volume of the cone to the volume of the sphere in its simplest form. (1 mark)