Name:

Exam Style Questions

Surface Area of a Sphere

Corbettmaths

Equipment needed: Calculator, pen

Guidance

1. Read each question carefully before you begin answering it.
2. Check your answers seem right.
3. Always show your workings

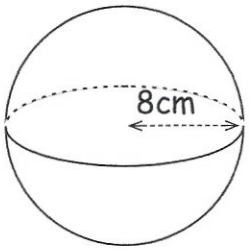
Video Tutorial

www.corbettmaths.com/contents

Video 313

Answers and Video Solutions

1. Shown is a sphere with radius 8cm.



Calculate the surface area of the sphere.
Give your answer to 1 decimal place.

$SA = 4\pi r^2$

$= 4 \times \pi \times 8^2$

$= 804.2477...$

804.2 ..... cm^2

(3)

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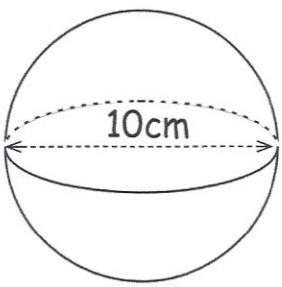
2. Shown is a sphere with diameter 10cm.



Calculate the surface area of the sphere.
Give your answer to 1 decimal place.

$4\pi r^2$

$4 \times \pi \times 5^2$

$= 314.159...$

314.2 ..... cm^2

(3)

3. Calculate the surface area of a sphere with radius 4cm

$SA = 4\pi r^2$

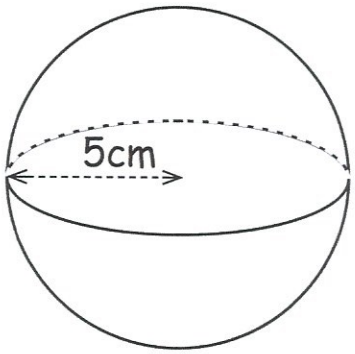
$= 4 \times \pi \times 4^2$

$= 201.0619\ldots$

201.1 ..... cm^2

(3)

4. Shown below is a sphere.



Calculate the surface area of the sphere.
Give your answer in terms of π

$SA = 4\pi r^2$

$= 4 \times \pi \times 5^2$

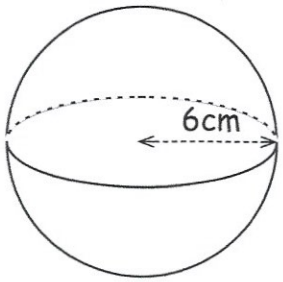
$= 4 \times \pi \times 25$

$= 100\pi$

100π ..... cm^2

(3)

5. Shown is a sphere with radius 6cm.



Calculate the surface area of the sphere.
Give your answer in terms of π

$4\pi r^2$

$4 \times \pi \times 6^2$

$= 4 \times \pi \times 36$

$= 144\pi$

144π ..... cm^2

(3)

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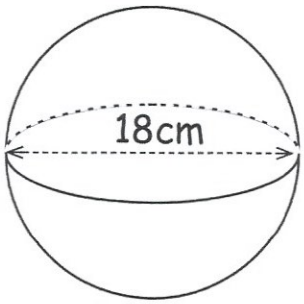
6. Shown is a sphere with diameter 18cm



Calculate the surface area of the sphere.
Give your answer in terms of π

$SA = 4\pi r^2$

$= 4 \times \pi \times 9^2$

$= 4 \times \pi \times 81$

$= 324\pi$

81
× 4
324

324π ..... cm^2

(3)

7. A sphere has radius 45cm.
Calculate the surface area of the sphere.
Give your answer to 1 decimal place.

$4\pi r^2$

$4 \times \pi \times 45^2$

$= 25446.90049$

25446.9 .....cm²

(3)

8. A sphere has diameter 3.2m.
Calculate the surface area of the sphere.
Give your answer to 1 decimal place.

$4\pi r^2$

$4 \times \pi \times 1.6^2$

$= 32.1699...$

32.2 .....m²

(3)

9. A sphere has radius 0.3cm
Calculate the surface area of the sphere.
Give your answer to 1 decimal place.

$4 \times \pi \times 0.3^2$

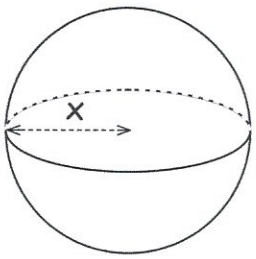
$4 \times \pi \times 0.09$

$= 1.13097...$

1.1 .....cm²

(3)

10. A sphere has surface area 800cm².



Calculate the radius of the sphere, x.

$4\pi r^2 = 800$

$4\pi x^2 = 800$

$\pi x^2 = 200$

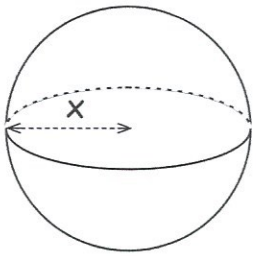
$x^2 = 63.6619...$

$x = 7.9788...$

7.979 .....cm

(3)

11. A sphere has surface area 3600π cm².



Calculate the radius of the sphere, x.

$4\pi r^2 = 3600\pi$

$4r^2 = 3600$

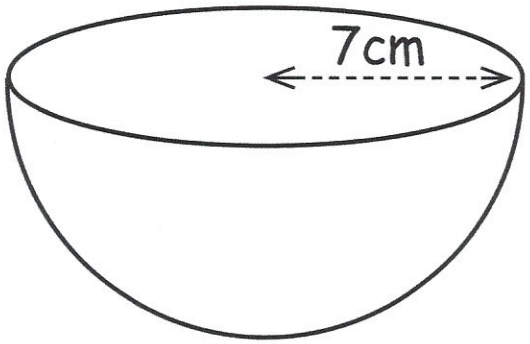
$r^2 = 900$

$r = 30$

30 .....cm

(3)

12. Shown below is a hemisphere with radius 7cm.



Calculate the surface area of the hemisphere.

$\pi r^2 + 2\pi r^2$

↑ top ↑ Curved surface

$\pi \times 7^2 + 2 \times \pi \times 7^2$

$= 147\pi$

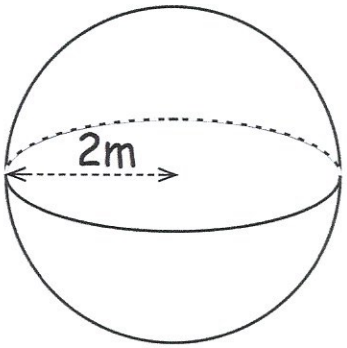
$= 461.814...$

to 2dp

461.81 .....cm²

(4)

13. The diagram shows a solid sphere, radius 2 metres.



Jessica paints the sphere.
Each tube of paint costs £3.75 and covers 4m².

Work out how much it costs Jessica to paint the sphere.

$4\pi r^2$

$4 \times \pi \times 2^2 = 50.26548... m^2$

$50.26548... \div 4 = 12.566...$

13 tubes needed

$13 \times 3.75 = £48.75$

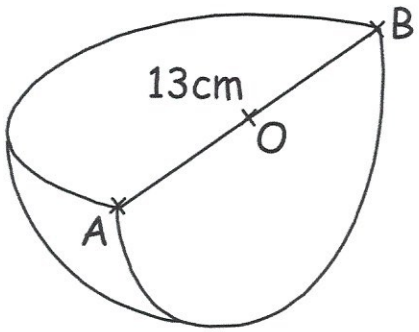
£48.75

.....

(4)

14. A football birthday cake is made from a sphere of sponge cake, diameter 13cm.
The cake is then covered with fondant icing.

Alex cuts the cake so that her slice is a quarter of a sphere, as shown below.
O is the centre of the cake.



Calculate the area of her slice that is covered with fondant icing.

$4\pi r^2$

$4 \times \pi \times 6.5^2 = 530.929...$

$530.929... \div 4 = 132.732...$

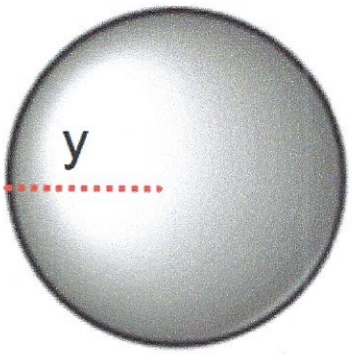
132.73 to 2dp.

.....cm²

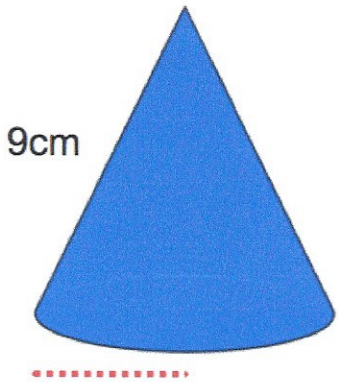
(3)

15. Shown below is a sphere, cone and cube.

The surface area of the sphere is equal to the sum the surface areas of the cone and cube.



$SA = 4\pi y^2$

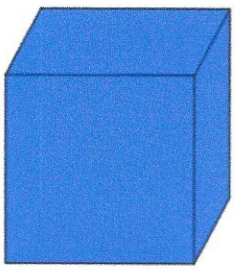


$SA = \pi r^2 + \pi r l$

$= \pi \times 3^2 + \pi \times 3 \times 9$

$= 36\pi$

$= 113.097...$



$SA = 6 \times 8^2$

$= 384 \text{ cm}^2$

Find y.

$4\pi y^2 = 36\pi + 384$

$\pi y^2 = 9\pi + 96$

$y^2 = 39.5577...$

$y = 6.2894...$

6.29

.....cm

(6)