7.4 – Volume and surface area

Student name: _____ANSWERS_____ Score: _____

1. A cuboid has a square base of side x cm and a height of y cm.

Find, in terms of x and y,

(a) the volume of the cuboid,

Answer(a) ..... x^2y ..... cm^3 [1]

(b) the total surface area of the cuboid.

Answer(b) ..... $4xy + 2x^2$ ..... cm^2 [2]

2. The volume of a sphere of radius 3 cm is $k\pi$ cm^3.

Find the value of k.

Answer $k =$ ..... 36 ..... [2]

3. A cuboid has a square base of side 10 cm and a volume of 1200 cm^3.

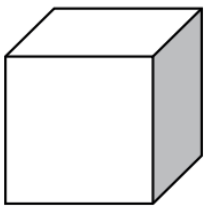
Work out the height of the cuboid.

..... 12 ..... cm [2]

4. Find the volume of a cone with radius 3 cm and perpendicular height 8 cm.
Give your answer in terms of π.

..... 24π ..... cm^3 [2]

5.



The volume of a cube is 27 cm^3.

Find the total surface area.

..... 54 ..... cm^2 [2]

6. The volume of a sphere is $\frac{32}{3}\pi$ cm^3.

Find the radius of the sphere.

..... 2 ..... cm [2]

7. The surface area of a sphere with radius r is equal to the curved surface area of a cone with radius r and height h.

Show that $h = r\sqrt{k}$, where k is a constant.

$4\pi r^2 = \pi r \times \sqrt{h^2 + r^2}$

$16r^2 = h^2 + r^2$

$15r^2 = h^2$

$h = r\sqrt{15}$

[4]

8. The volume of a sphere is 36π cubic centimetres.

Find the radius of the sphere.

3 cm [2]

9. A cone has base radius 5 cm and height $\frac{5}{4}$ cm.

A hemisphere has radius r cm.
The volume of the hemisphere is equal to the volume of the cone.

Find the value of r.

$r =$ 2.5 [3]