# Maths skills – M4.1 Calculate the circumference, surface areas and volumes of regular shapes

You need to be able to calculate the circumference, surface areas and volumes of regular shapes using formulae from GCSE maths in the context of AS/A level biology.

These formulae will not be given in the exam so you must learn them off by heart:

1.

These formulae will be given in the exam if you need them:

### Questions:

Write your answers correct to 3 significant figures.

**1.** Circumference of circle

Radius =

| a) 2.00 cm |  |
| --- | --- |

**2.** Area of circle

Radius =

| a) 2.00 cm |  |
| --- | --- |

**3.** Surface area of cuboid

| a) | b = 6.00 µm | l = 2.00 µm | h = 5.00 µm |  |
| --- | --- | --- | --- | --- |

**4.** Volume of cuboid

| a) | b = 6.00 µm | l = 2.00 µm | h = 5.00 µm |  |
| --- | --- | --- | --- | --- |

**5.** Surface area of cylinder

| a) | r = 2.00 cm | l = 4.00 cm |  |
| --- | --- | --- | --- |

**6.** Volume of cylinder

| a) | r = 2.00 cm | l = 4.00 cm |  |
| --- | --- | --- | --- |

**7.** Surface area of sphere

| a) r = 2.00 cm |  |
| --- | --- |

**8.** Volume of sphere

| a) r = 2.00 cm |  |
| --- | --- |

**9.** Calculate the surface area to volume ratio of a spherical cell that has a radius of 0.50 µm.

|  |
| --- |

### Answers:

Write your answers correct to 3 significant figures.

**1.** Circumference of circle

Radius =

| a) 2.00 cm | 12.6 cm |
| --- | --- |

**2.** Area of circle

Radius =

| a) 2.00 cm | 12.6 cm2 |
| --- | --- |

**3.** Surface area of cuboid

| a) | b = 6.00 µm | l = 2.00 µm | h = 5.00 µm | 104 μm2 |
| --- | --- | --- | --- | --- |

**4.** Volume of cuboid

| a) | b = 6.00 µm | l = 2.00 µm | h = 5.00 µm | 60.0 μm3 |
| --- | --- | --- | --- | --- |

**5.** Surface area of cylinder

| a) | r = 2.00 cm | l = 4.00 cm | 75.6 cm2 |
| --- | --- | --- | --- |

**6.** Volume of cylinder

| a) | r = 2.00 cm | l = 4.00 cm | 50.3 cm3 |
| --- | --- | --- | --- |

**7.** Surface area of sphere

| a) r = 2.00 cm | 50.3 cm2 |
| --- | --- |

**8.** Volume of sphere

| a) r = 2.00 cm | 33.5 cm3 |
| --- | --- |

**9.** Calculate the surface area to volume ratio of a spherical cell that has a radius of 0.50 µm.

|  SA:V ratio = 3.1:0.5SA:V ratio = 6.2:1 |
| --- |

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