

Online practice assessment task for AS91030 (1.5)

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Apply measurement in solving problems

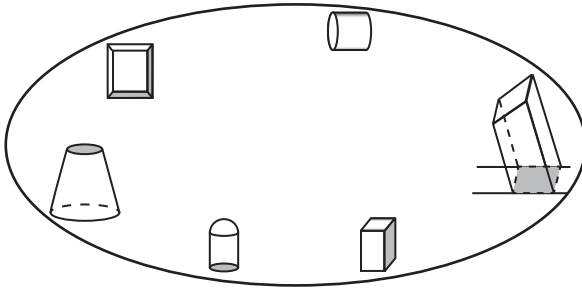
Chapter 5

Internally assessed
3 credits

Practice assessment task

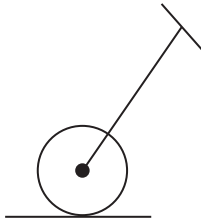
Stonehenge revisited

Some archaeologists have recently uncovered a number of stone monuments that were built about the time of Stonehenge. These monuments are all mathematical solids, and are clustered together in an Enclosure Circle, as shown in the figure below.



Some of these monuments are used in the following assessment.

1. A surveyor used a trundle wheel (as shown in the figure) to estimate the circumference of the Enclosure Circle.

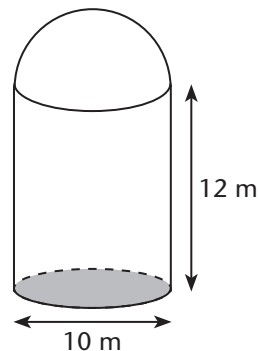


This trundle wheel measures out a distance of one metre when it rolls through one full turn.

- a. Calculate the diameter of the trundle wheel in centimetres to 1 dp.

- b. One of the archaeologists estimated the diameter of the Enclosure Circle to be 50 metres. Estimate the area of the Enclosure Circle in hectares to 2 dp.

2. One of the monuments is an upright cylinder surmounted by a hemisphere, with dimensions as shown on the figure below.



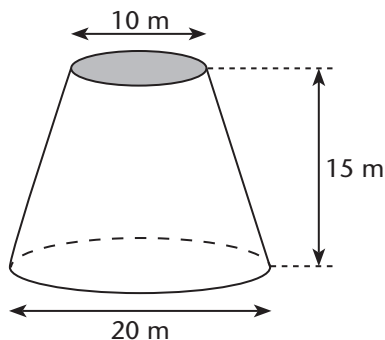
- a. Find the volume of the monument in cubic metres to 1 dp.

- b. Find the density of the stone in kg/m^3 , if the weight of the monument is 2 520 tonnes.

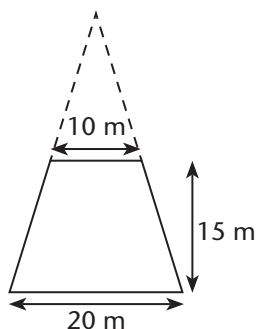
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- c. Find the exposed surface area of the monument.

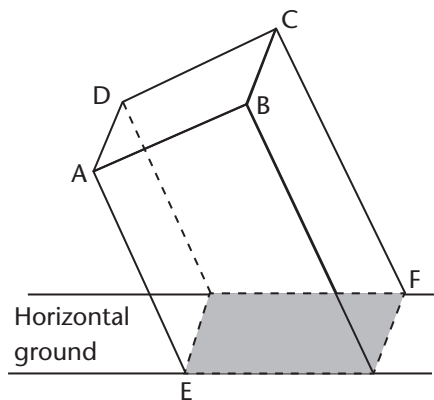
3. The monument drawn here is a truncated cone. Find the volume of the monument. Give your answer in cubic metres to 2 sf.



A diagram of the cross-section of the original cone is shown below.



4. A monument in the shape of a cuboid has partly sunk into the soft ground at one end. ABCD is a rectangle 3 m by 6 m. AE is 8 m long and CF is 12 m plus 4 cm long. Find the volume of the monument that is above the ground. Give your answer in cubic metres to 2 dp.



Answers

1.
 - a. 31.8 cm
 - b. 0.20 ha
2.
 - a. 1 204.3 m³
 - b. 2 092.5 kg/m³
 - c. A = 534.1 m²
3. 2 700 m³
4. 180.36 m³