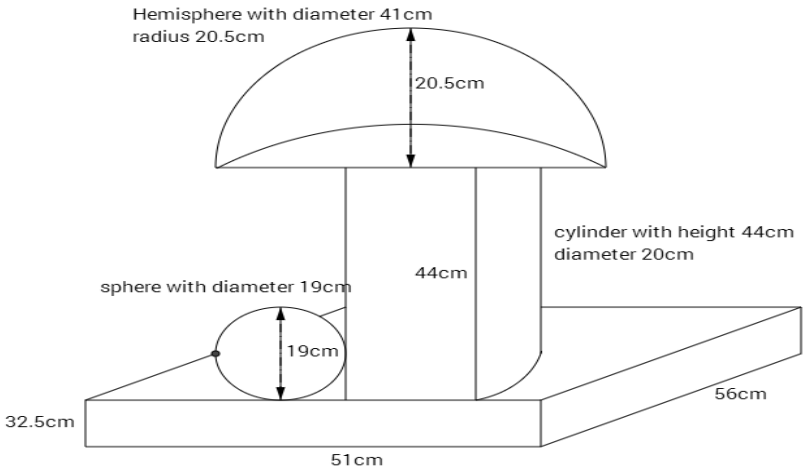
Student 3: Low Merit



1

Volume of sculpture

Cuboid = 32.5x51x56 = 92820cm^3

Sphere $= \frac{4}{3}\pi \times 9.5^3 = 3591.364002cm^3$

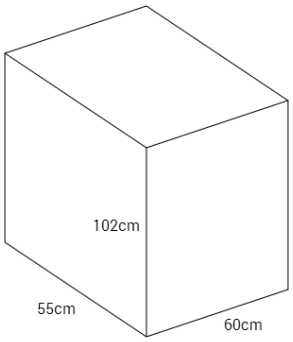
Hemisphere $= \frac{1}{2}\left(\frac{4}{3}\pi \times 20.5^3\right) = 18043.47561cm^3$

Cylinder = $\pi \times 10^2 x44 = 13823.00768cm^3$

Total volume = 128277.8473cm^3 = 0.1282778473m^3

3

Volume of box



=0.55x0.6x1.02
=0.3366m^3
=336600cm^3

Volume left over from box
= 336600-128277.8473
=208322.1527cm^3

Length of fence
=(111+116)x2 = 454cm = 4.54m

2

Area of paving
=111x116 = 12876cm^2 = 1.2876m^2

One cuboid = 51x56x32.5 = 92820cm^3 for base
One cuboid = 20x20x44 = 17600cm^3 for cylinder
One cuboid = 19x19x19 = 6859cm^3 for sphere
One cuboid = 41x41x20.5 = 34460.5cm^3 for hemisphere

4

Maximum total volume required
= 92820+17600+6859+34460.5
= 151739.5 cm^3
= 0.1517395 m^3

5