

Question 7

(55 marks)

The Atomium in Brussels is one of Belgium's most famous landmarks. It consists of 9 identical spheres joined by two types of cylindrical pipes.



Picture: Squonk11
www.flickr.com/photos/squonk

- (a) The Atomium is modelled on an iron atom that has been magnified 165 billion times. Given that a billion is a thousand million, write 165 billion in the form $a \times 10^n$, where $n \in \mathbb{Z}$, and $1 \leq a < 10$.

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- (b) The diameter of each sphere in the Atomium is 18 metres.

- (i) Find the radius of each sphere.

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- (ii) Find the volume of each sphere, correct to 2 decimal places.

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- (c) Find the combined surface area of all 9 spheres in the Atomium, correct to the nearest m^2 .

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