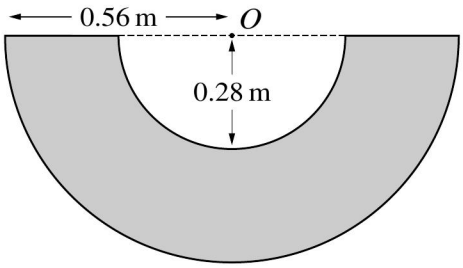

An object is made from a uniform solid hemisphere of radius 0.56 m and centre O by removing a hemisphere of radius 0.28 m and centre O. The diagram shows a cross-section through O of the object.

(i) Calculate the distance of the centre of mass of the object from O. [4]

[The volume of a hemisphere is $\frac{2}{3}\pi r^3$.]

The object has weight 24 N. A uniform hemisphere H of radius 0.28 m is placed in the hollow part of the object to create a non-uniform hemisphere with centre O. The centre of mass of the non-uniform hemisphere is 0.15 m from O.

(ii) Calculate the weight of H. [3]