

A statue is to be scaled down, without distorting its shape, by changing its total volume from 1.25 m^3 to 0.37 m^3 . Explain your reasoning in each of the following calculations.

- A. If the height of the original statue is 250 cm, calculate the height of the smaller model.
- B. If the circular base of the original statue has a circumference of 45 cm, calculate the circumference of the scaled-down base in the smaller model.
- C. How will the total surface area of the model *compare* (this means an appropriate *ratio*) with the total surface area of the original? How will the surface areas of the circular bases compare?
- D. If both the model and the original are made of the same material, how will the mass of the model compare (again, this means your answer should describe the appropriate ratio) with the mass of the original?
- E. If the model and the original are not made of the same material, what would you have to know about the materials to be able to compare the masses, and how would you use this information?
- F. If the original statue and the model turned out to have the same mass, what would you conclude about the materials making up the two objects? (Give a numerical answer comparing relevant properties of the materials.)

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