

Similar shapes - areas and volumes

1) Ann has two similar dolls on her shelf. The smaller one is 12cm high, and has a surface area of 240cm^2 and a volume of 300cm^3 . The larger one is 18cm high.

- (a) Find the surface area of the larger doll.
- (b) Find the volume of the larger doll.

2) A model car 24cm long has a volume of 375cm^3 . What is the length of a similar model car with a volume of 81cm^3

3) A triangle has an area of 32cm^2 . The length of its base is 10cm. What is a length of the base of a similar triangle with an area of 18cm^2 ?

4) A vase has a surface area of 120cm^2 and a volume of 160cm^3 . What is the surface area of a similar vase with a volume of 540cm^3 ?

5) Alan has a model aeroplane which is an exact replica of a A300 Airbus on a scale of 1:50.

- (a) The length of the model is 63cm. What is the length of a real Airbus (in metres)?
- (b) 2400cm^3 of metal was used in making the model, which is solid. What is the volume of an Airbus (in m^3)?
- (c) To give the whole surface of an Airbus one coat of paint requires 1200 litres of paint. How much of the same paint would be needed to paint the model?

6) (a) On a 1:25000 map, the distance from Oxford High School to Carfax is 9.5cm. What is this distance on the ground (in km)?

(b) On the same map the area of the University Parks is 3.5cm^2 . What is their actual area?

7) A solid wooden cone 4m high has been truncated (ie the top has been cut off), leaving the figure shown, which is 3m high.



- (a) What fraction of the wood is left?
- (b) It would cost £2.40 to paint the curved surface area of the whole cone. How much would it cost to paint the curved surface area of the remaining shape?
- (c) The radius of the base of the shape is 60cm. What is the radius of the top?

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