

1. Two pictures are mathematically similar. They are shown below.



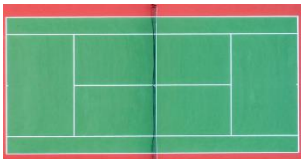
28cm



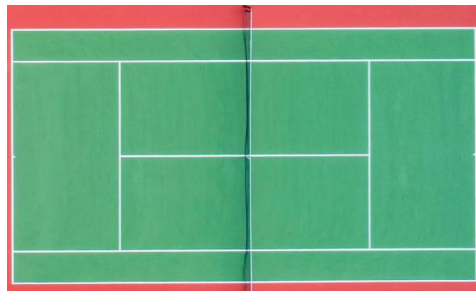
42cm

The area of the small picture is  $504 \text{ cm}^2$ . Calculate the area of the large picture.

2. Two vases are mathematically similar. The height of the larger vase is 56cm and has a volume of  $12600 \text{ cm}^3$ .  
The height of the smaller vase is 35cm. Calculate its volume. Round your answer correct to two significant figures.
3. A junior tennis court is mathematically similar to an adult tennis court. The length of the junior tennis court is 16 metres and the length of the adult court is 24 metres.  
The area of the adult court is 195 square metres. Calculate the area of the junior court.



16 m



24m

4. Two football fields are mathematically similar. The area of the larger field is 5400 square metres and has a length of 90 metres.  
Calculate the length of the smaller field if its area is 2400 square metres.
5. Two cones are mathematically similar. The radius of the smaller cone is 9 cm. The **diameter** of the larger cone is 36 cm.  
If the volume of the larger cone is 32 000 cubic centimetres, calculate the volume of the smaller cone.
6. A miniature flag is mathematically similar to the full size flag. The length of the miniature flag is 15cm and has an area of 84 square centimetres.  
The area of the large flag is 189 square centimetres.  
Calculate the length of the full size flag.

7. Two cups are shown below. They are **not** mathematically similar. The large cup needs to be re-designed so that both cups are mathematically similar. If its volume remains the same, what will be the height of the new cup?

