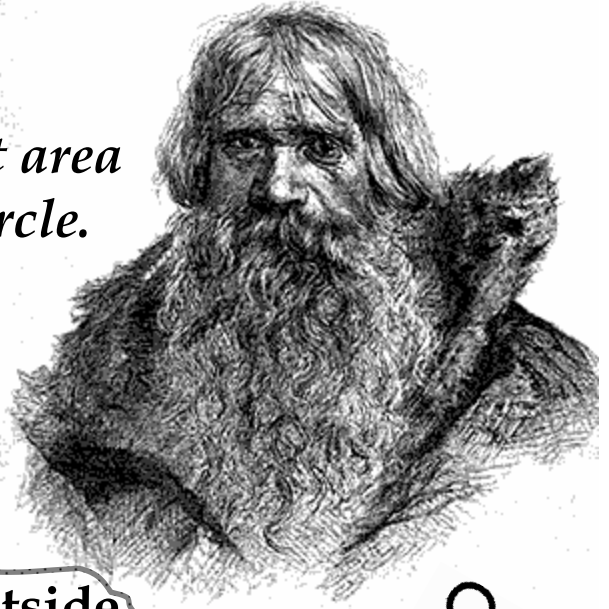


“How much land does a man need?”

Tolstoy wrote a story of Pahom, a Russian peasant, who made a deal to buy as much land as he could walk around in a day. In his greed, he ended up dying of exhaustion by the time he got back to the start.

The shape that gives the greatest area for the smallest perimeter is a circle.



The perimeter of a circle is called the circumference:

$$C = 2\pi r$$

This is the length around the outside

The area of a circle is:

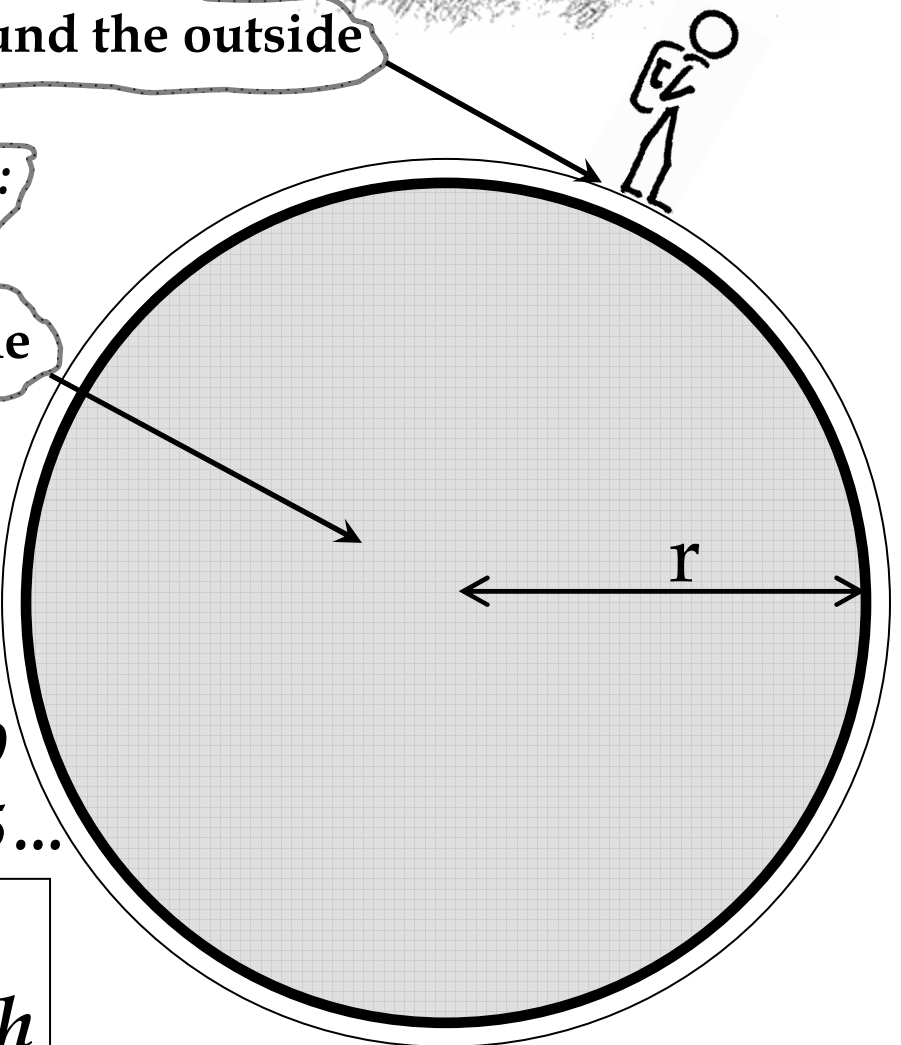
$$A = \pi r^2$$

This is the space inside

$$\pi =$$

3.14159265358979
323846264338327
9502884197169399
3751058209749445...

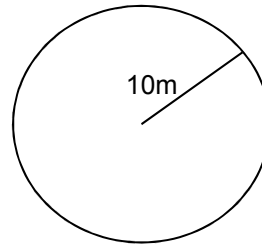
But 3.14 is usually enough



Circles

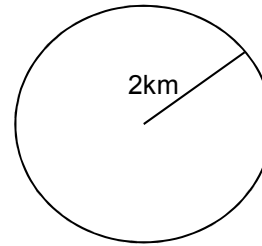
1a A traffic roundabout measures 10 metres from the centre to the outside edge. How far is it around the outside?

1b How much space is there in the middle?



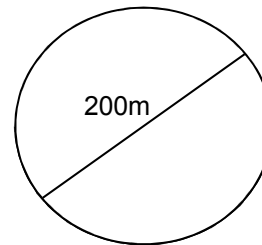
2a How much fence would be needed to make a circular enclosure with a radius of 2 kilometres?

2b How much land would the fence enclose?



3a A circular car-park has a road all around the outside and a footpath directly through the middle from one side to the other. If the footpath is 200 metres long, how long is the whole road?

3b If it takes 2 minutes to walk straight across using the footpath, how long would it take to walk from one side to the other using the road?



4a Pahom walked 35 miles in a big circle. What was the radius of this circle?

4b Using the radius you just found out, calculate the area of land he walked around.

