

## Question 1

In a group of 35 people:

10 speak German but not Italian

21 speak exactly one of those languages

9 speak neither language

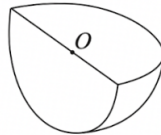
Given that a randomly chosen person speaks Italian,  
find the probability that they also speak German.

## Question 2

Here is a quarter of a solid sphere, with centre  $O$ .

The volume of the solid is  $72\pi \text{ cm}^3$

Find the surface area of the solid in  
terms of  $\pi$ .

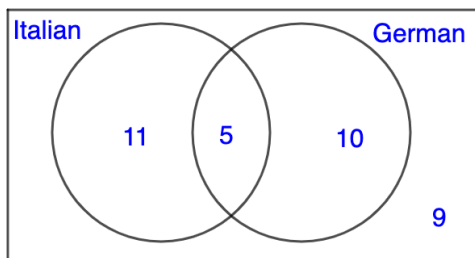


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$$\text{Surface area of sphere} = 4\pi r^2$$

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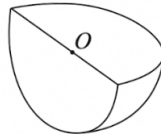
The probability is  $\frac{5}{16}$

## Question 2

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$$\text{Volume of sphere} = \frac{4}{3}\pi r^3$$

$$\text{Surface area of sphere} = 4\pi r^2$$

$$\text{Volume of whole sphere} = \frac{4}{3}\pi r^3 = 4 \times 72\pi$$

$$\text{So } r = \sqrt[3]{3 \times 72} = 6 \text{ cm}$$

$$\text{Curved surface area} = \frac{4\pi r^2}{4} = \frac{4 \times \pi \times 6^2}{4} = 36\pi$$

$$\text{Flat surface area} = \pi r^2 = \pi \times 6^2 = 36\pi$$

$$\therefore \text{Total surface area} = 72\pi \text{ cm}^2$$