# Answer on Question #84905 – Math – Statistics and Probability

Question

130 people use the gym. 62 people use the swimming pool. 58 people use the track. 22 people use the gym and the pool. 29 people use the pool and the track. 25 people use the gym and the track. 11 people use all three facilities. A person is selected at random. What is the probability that the person uses exactly one of the facilities?

Solution

Represent this information on a Venn diagram
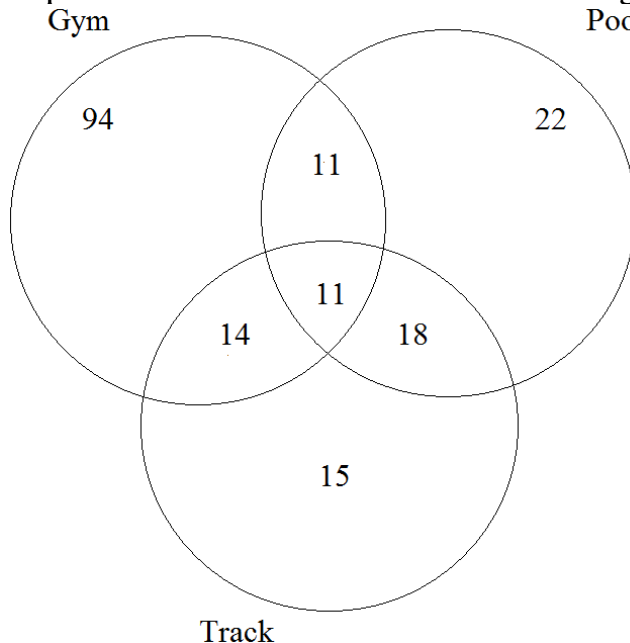
If 11 people use all three facilities, this means:

$22 - 11$ or 11 are using the gym and the pool but no the track,

$29 - 11$ or 18 are using the pool and the track but no the gym,

$25 - 11$ or 14 are using the gym and the track but no the pool.

How many people use the gym only?

$$130 - (14 + 11 + 11) = 94$$

How many people use the pool only?

$$62 - (18 + 11 + 11) = 22$$

How many people use the track only?

$$58 - (14 + 11 + 18) = 15$$

How many people go in for sports?

$$94 + 22 + 15 + 11 + 14 + 18 + 11 = 185$$

How many people use exactly one of the facilities?

$$94 + 22 + 15 = 131$$

What is the probability that the person uses exactly one of the facilities?

$$p = \frac{131}{185} \approx 0.7081$$