

Solution

First pupils need to work out that 90 customers (45% of 200) have only one topping and of these:

- **36** have **only** pepperoni ($\frac{2}{5}$ of 90);
- **36** have **only** bacon ($\frac{2}{5}$ of 90); and
- **18** have **only** chicken ($\frac{1}{5}$ of 90).

They start to complete the Venn diagram by adding the **36**, **36** and **18** in the appropriate places.

They work out that **26** (13% of 200) have two toppings of bacon and chicken and add it to the diagram.

They work out that **28** (14% of 200) have two toppings of pepperoni and bacon and add it to the diagram.

They work out that **12** ($\frac{3}{50}$ of 200) of the customers have all three toppings and add it to the diagram.

They can then include **25** within the Venn diagram for the customers that do not have any of the toppings.

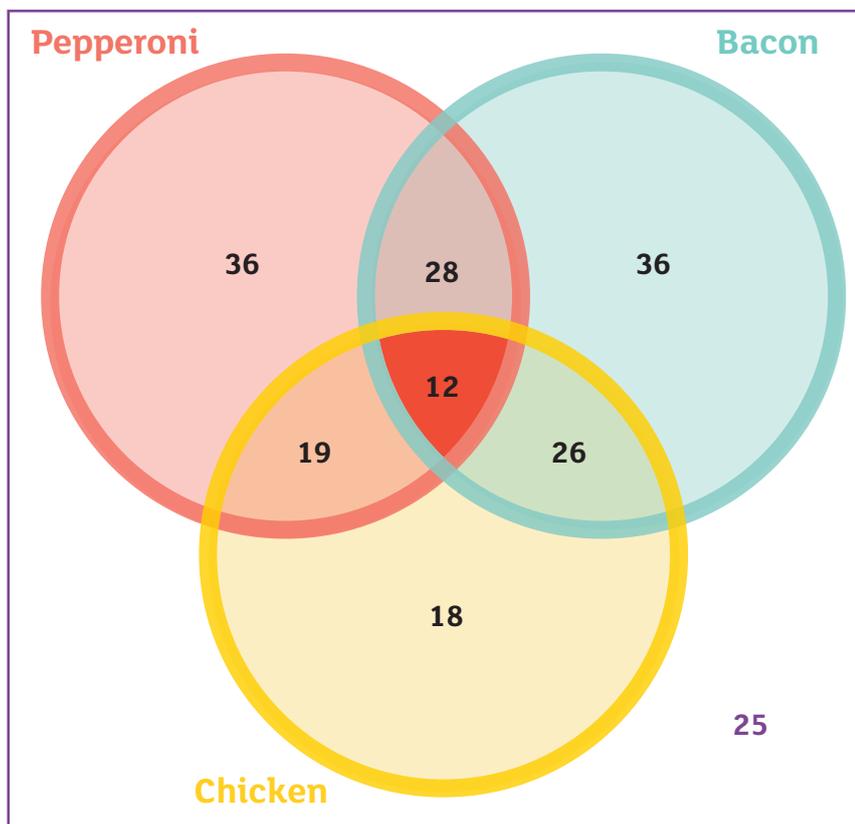
If they add all those numbers together, they will get 181.

$$36 + 36 + 18 + 26 + 28 + 12 + 25 = 181$$

As there are 200 customers, then there are **19** ($200 - 181$) remaining customers not accounted for!

Pupils should figure out that these customers **must** have had two toppings of pepperoni and chicken.

Pupils can then add this to the Venn diagram to complete it.



Finally, to find the most popular topping, the pupils total the number of customers having each topping.

- Pepperoni: $36 + 28 + 12 + 19 = 95$
- Bacon: $36 + 26 + 12 + 28 = 102$
- Chicken: $18 + 19 + 12 + 26 = 75$

They conclude that **bacon is Tony's most popular topping!**

