



QT Product rule for counting

1. There are 14 boys and 12 girls in a class. One boy and one girl will be asked to represent the school at a local council meeting.

Work out the total number of ways to choose a boy and a girl.

$$14 \times 12 = \underline{\underline{168}}$$

2. There are x boys and 15 girls in a cooking competition. One boy and one girl will be chosen to demonstrate how to cook an omelette. There are 165 different ways of choosing a boy and a girl.

Show that this could be correct.

$$\begin{aligned} 15 \times x &= 165 \\ 15x &= 165 \\ x &= 11 \end{aligned}$$

3. There is a choice of 5 starters, 9 main courses and 6 deserts at Ida's restaurant.

Work out the total number of ways of choosing a starter, a main course and a desert.

$$5 \times 9 \times 6 = \underline{\underline{270}}$$

4. There is a choice of 7 cakes and x hot drinks at Papa Joe's American Diner. Rohan says there are 82 ways to choose a cake and a hot drink.

Could Rohan be correct?

You must show your working.

$$\begin{aligned} 7 \times x &= 82 \\ 7x &= 82 \\ x &= 11.714 \dots \end{aligned}$$

Not correct
- there would
need to be a
whole number
of drinks.



5. There are 52 cards in a deck of cards. Zaid is the dealer in a game of 'Chase the ace.' He gives one card to Eesha and one card to Ryan.
How many different ways are there of doing this?

$$52 \times 51 = \underline{\underline{2652}}$$

6. There are 20 teams in a cricket league. Two teams are going to be chosen at random to play a match.
Work out the number of matches that could take place.

$$A \rightarrow B \quad \frac{20 \times 19}{2} = \underline{\underline{190 \text{ matches}}}$$

7. There are 15 teams in a general knowledge tournament. Each team will compete against every other team once.
Work out the number of competitions.

$$C \rightarrow D \quad \frac{15 \times 14}{2} = \underline{\underline{105 \text{ competitions}}}$$

8. There are 52 cards in a deck of cards. Chris is the dealer in a game of 'Go Fish.' She gives one card to Jo, one card to John, and one card to Simon.
How many different ways are there of doing this?

$$52 \times 51 \times 50 = \underline{\underline{132,600}}$$