

## Two-Way Tables & Probability

### Practice Worksheet (Foundation Tier)

#### I DO

80 students visited a sports club. Each student chose swimming, gym, or tennis.

- 38 of the students are boys.
- 15 of the boys chose swimming.
- 12 of the girls chose tennis.
- A total of 25 students chose gym, of which 11 were boys.

(a) Draw and complete a two-way table to show this information.

(b) One of the girls is chosen at random. Find the probability that this girl chose swimming.

#### WE DO

60 people visited a cafe. Each person chose coffee, tea, or juice.

- 28 of the people are men.
- 10 of the men chose coffee.
- 9 of the women chose juice.
- A total of 20 people chose tea, of which 8 were men.

(a) Draw and complete a two-way table to show this information.

(b) One of the women is chosen at random. Find the probability that she chose coffee.

### YOU DO 1

100 students at a school chose Art, Music, or Drama.

- 45 of the students are girls.
- 18 of the girls chose Art.
- 14 of the boys chose Drama.
- A total of 35 students chose Music, of which 20 were girls.

(a) Draw and complete a two-way table to show this information.

(b) One of the boys is chosen at random. Find the probability that he chose Art.

### YOU DO 2

50 people at a leisure centre chose Squash, Badminton, or Table Tennis.

- 30 of the people are adults.
- 12 of the adults chose Squash.
- 8 of the children chose Table Tennis.
- A total of 15 people chose Badminton, of which 9 were adults.

(a) Draw and complete a two-way table to show this information.

(b) One of the children is chosen at random. Find the probability that they chose Badminton.

## CHALLENGE

120 students in Year 10 study French, Spanish, or German.

- The ratio of boys to girls is 3 : 5.
- $\frac{1}{3}$  of the boys study Spanish.
- 20% of the girls study German.
- A total of 45 students study French. The number of girls studying French is twice the number of boys studying French.

(a) Draw and complete a two-way table to show this information.

(b) A student who studies Spanish is chosen at random. Find the probability that they are a boy.

## PRACTICE PERFECT

Draw two-way tables to solve the following 3 problems.

1. 90 students in Year 8 chose either a packed lunch or a school dinner. 50 of the students are boys. 30 of the boys have a packed lunch. 15 of the girls have a school dinner. Draw a two-way table for this information.  
(b) A girl is chosen at random. Find the probability that she has a packed lunch.
2. 70 people take a driving test. They either pass or fail. 40 of the people are women. 25 of the women passed. 18 of the men failed. Draw a two-way table for this information.  
(b) A person who passed is chosen at random. Find the probability it is a man.
3. 150 members of a gym attend Yoga, Spin, or Weights. 70 are male. 20 males chose Yoga. 35 females chose Weights. 40 members chose Spin in total, of which 15 are female. Draw a two-way table for this information.  
(b) A male is chosen at random. Find the probability that he chose Spin.



**ANSWERS & WORKED SOLUTIONS****I Do**

(a)

|       | Swimming | Gym | Tennis | Total |
|-------|----------|-----|--------|-------|
| Boys  | 15       | 11  | 12     | 38    |
| Girls | 16       | 14  | 12     | 42    |
| Total | 31       | 25  | 24     | 80    |

(b) Total girls = 42. Girls who chose swimming = 16. Probability =  $\frac{16}{42}$  (or  $\frac{8}{21}$ ).**We Do**

(a)

|       | Coffee | Tea | Juice | Total |
|-------|--------|-----|-------|-------|
| Men   | 10     | 8   | 10    | 28    |
| Women | 11     | 12  | 9     | 32    |
| Total | 21     | 20  | 19    | 60    |

(b) Total women = 32. Women who chose coffee = 11. Probability =  $\frac{11}{32}$ .**You Do 1**

(a)

|       | Art | Music | Drama | Total |
|-------|-----|-------|-------|-------|
| Boys  | 26  | 15    | 14    | 55    |
| Girls | 18  | 20    | 7     | 45    |
| Total | 44  | 35    | 21    | 100   |

(b) Total boys = 55. Boys who chose Art = 26. Probability =  $\frac{26}{55}$ .**You Do 2**

(a)

|          | Squash | Badminton | Table Tennis | Total |
|----------|--------|-----------|--------------|-------|
| Adults   | 12     | 9         | 9            | 30    |
| Children | 6      | 6         | 8            | 20    |
| Total    | 18     | 15        | 17           | 50    |

(b) Total children = 20. Children who chose Badminton = 6. Probability =  $\frac{6}{20}$  (or  $\frac{3}{10}$ ).

## Challenge

Step 1: Boys =  $(120 \div 8) \times 3 = 45$ . Girls =  $120 - 45 = 75$ .

Step 2: Boys Spanish =  $45 \div 3 = 15$ . Girls German = 10% of 75 is 7.5, so 20% = 15.

Step 3: French total = 45.  $B + 2B = 45 \rightarrow 3B = 45 \rightarrow$  Boys French = 15. Girls French = 30.

(a)

|       | French | Spanish | German | Total |
|-------|--------|---------|--------|-------|
| Boys  | 15     | 15      | 15     | 45    |
| Girls | 30     | 30      | 15     | 75    |
| Total | 45     | 45      | 30     | 120   |

(b) Total studying Spanish = 45. Boys studying Spanish = 15. Probability = **15/45** (or 1/3).

## Practice Perfect

1. (a)

|       | Packed | Dinner | Total |
|-------|--------|--------|-------|
| Boys  | 30     | 20     | 50    |
| Girls | 25     | 15     | 40    |
| Total | 55     | 35     | 90    |

(b) Girls = 40. Packed = 25. Probability = **25/40** (or 5/8).

2. (a)

|       | Pass | Fail | Total |
|-------|------|------|-------|
| Men   | 12   | 18   | 30    |
| Women | 25   | 15   | 40    |
| Total | 37   | 33   | 70    |

(b) Total passed = 37. Men passed = 12. Probability = **12/37**.

3. (a)

|        | Yoga | Spin | Weights | Total |
|--------|------|------|---------|-------|
| Male   | 20   | 25   | 25      | 70    |
| Female | 30   | 15   | 35      | 80    |
| Total  | 50   | 40   | 60      | 150   |

(b) Males = 70. Spin = 25. Probability = **25/70** (or 5/14).

