

# TWO WAY TABLES AND PROBABILITY TABLES

## Probability

### Key Concepts

**Two way tables** are used to tabulate a number of pieces of information.

Probabilities can be formulated easily from two way tables.

**Probabilities** can be written as a **fraction, decimal or a percentage** however we often work with fractions. You do not need to simplify your fractions in probabilities.

**Estimating** the number of times an event will occur  
Probability  $\times$  no. of trials

### Examples

There are only red counters, blue counters, white counters and black counters in a bag.

Colour	Red	Blue	Black	White
No. of counters	9	$3x$	$x-5$	$2x$

A counter is chosen at random, the probability it is red is  $\frac{9}{100}$ . Work out the probability it is black.

$$9 + 3x + x - 5 + 2x = 100$$

$$6x + 4 = 100$$

$$x = 16$$

$$\begin{aligned} \text{Number of black counters} &= 16 - 5 \\ &= 11 \end{aligned}$$

$$\text{Probability of choosing black} = \frac{11}{100}$$

80 children went on a school trip. They went to London or to York.

23 boys and 19 girls went to London. 14 boys went to York.

	London	York	Total
Girls	19	24	43
Boys	23	14	37
Total	42	38	80

What is the probability that a person is chosen that went to London?  $\frac{42}{80}$

If a girl is chosen, what is the probability that she went to York?  $\frac{24}{38}$



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**Key Words**  
Two way table  
Probability  
Fraction  
Outcomes  
Frequency

	1	2	3
Prob	0.37	$2x$	$x$

- 1a) Calculate the probability of choosing a 2 or a 3.  
b) Estimate the number of times a 2 will be chosen if the experiment is repeated 300 times.

2a) Complete the two way table:

	Year Group			Total
	9	10	11	
Boys			125	407
Girls		123		
Total	303	256		831

b) What is the probability that a Y10 is chosen, given that they are a girl .