Relative Frequency

Prior Knowledge:

Before attempting this sheet, students should be able to calculate probabilities of independent events and enter discrete data in tables.

Relative frequency is a way of **estimating probabilities** of events. We can use information about the outcomes of these events to estimate probabilities by using the formula:

$$\text{Relative frequency} = \frac{\text{number of times the event occurs}}{\text{total number of outcomes}}$$

For example,

The table shows some information about the colour of cars passing a school.

Colour	Frequency
red	15
white	21
black	19
other	17

Find the relative frequency that the next car to pass the school is white.

We begin by finding the total number of outcomes. In this case, that's the total number of cars that pass the school.

$15 + 21 + 19 + 17 = 72$

21 of these are white.

Relative frequency $= \frac{21}{72} = \frac{7}{24}$

Your Turn

1. Find a coin. Throw the coin 10 times and record the number of heads and tails that you get. What is the relative frequency of throwing tails? If you can't find a coin, you could search for a coin simulator online!

2. A spinner has red, green and blue sections. The spinner is spun 20 times and the colours are recorded as:

red	blue	red	red	green	red	green	blue	blue	green
red	red	blue	green	green	blue	red	blue	red	red

a. Complete the frequency table:

Colour	Frequency
red	
blue	
green	

b. Ben spins the spinner one more time. What colour is it most likely to land on?

c. Find the relative frequency of the spinner landing on blue, giving your answer as a fraction in its simplest form.

3. 100 people were asked to name their favourite meal. The results are shown in the table.

Meal	Frequency
breakfast	17
lunch	32
dinner	40
snacks	?

a. Work out the number of people who said their favourite meal was snacks.

b. Calculate the relative frequency that a person chosen at random says their favourite meal is breakfast.

4. The two-way table shows the number of students in year 10 and 11 who study French and Geography.

	French	Geography	Total
Year 10	17	24	
Year 11	32	27	
Total			

a. Complete the table.

b. A student is chosen at random. Find the relative frequency that this student studies French.

c. A year 10 student is chosen at random. Find the relative frequency that this student studies geography.

Challenge:

A bag contains red and blue counters. There are 60 counters in the bag. The relative frequency of choosing a red counter is $\frac{1}{4}$. How many red counters are there?