

Numeracy

1. Life and death

1.1. Robins – chances of surviving to the following year

There are 50 male and 50 female robins all capable of breeding in a given area. They come together to form 50 breeding pairs.

Each pair will have two broods.

The average number of chicks raised per pair and per brood is 3.

How many young robins are produced and how many robins must die to support a stable population of 50 breeding pairs? We will assume that the number of male and female robins hatched is in the same ratio and that they die in the same ratio.

Number of robins produced = Number of pairs X brood per pair X chicks per brood raised	$50 \times 2 \times 3$ 300
Total number of robins = Breeding + produced	$100 + 300$ 400
Number of robins to die = Total number of robins – required population, i.e. 100	$400 - 100$ 300

Of the 400 robins, 300 must die.

This can be explained as 1 in 4 robins survive, or 3 in 4 die.	
This is a fraction.	$100 / 400$
Divide top and bottom by 100	$\frac{1}{4}$

Adult robins will be more experienced at surviving. But their risk of dying from old age will be greater.

Assume that 40% of adults survive to the next year.

Calculate how many newly hatched robins will survive and a newly hatched robin's chances of surviving to the next year.

Number of adults surviving = Number adults X 40%	$100 \times 40 / 100$ 40
Number of young robins surviving = Required population - Number of adults surviving	$100 - 40$ 60 young robins
Chances of surviving = Number of young robins left / Total young robins produced Divide top and bottom by 60	$60 / 300$ $1 / 5$ 1 in 5 chance of surviving

1.2. Cause of death not related to disease

It is very difficult to find out the reason for birds dying of natural causes. A sick bird may hide away in a bush and eventually die. As we will probably never recover its body we cannot find out why it died.

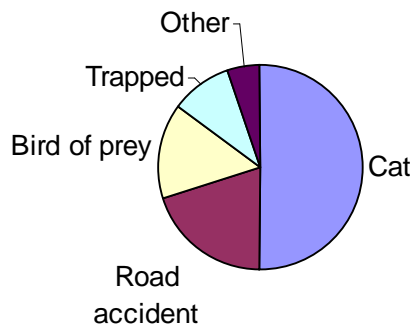
However there are other reasons why birds die.

Imagine you were able to carry out a survey in to the reasons why young songbirds died in your area. Imagine that you recorded the following results:

Reason	Number of deaths
Killed by cat	50
Killed on road	20
Killed by bird of prey	15
Trapped in a building and died of starvation	10
Other	5

Produce a pie chart to demonstrate the main reasons for birds dying in your survey.

Number of non disease related deaths



2. Migration, distance, speed

2.1. Swallow travelling to and from South Africa

A swallow travels 6,000 miles on its journey from South Africa to the UK.

On average it travels 200 miles in a day at a speed of 20 miles per hour.

How many days does it take to fly from South Africa to the UK?

Number of days taken =	
Distance travelled / average speed	$6,000 / 200$ Days
	30 Days

How many hours are spent flying per day?

Number of hours flying =	
Distance travelled in a day / average speed	$200 / 20$ hours
	10 hours