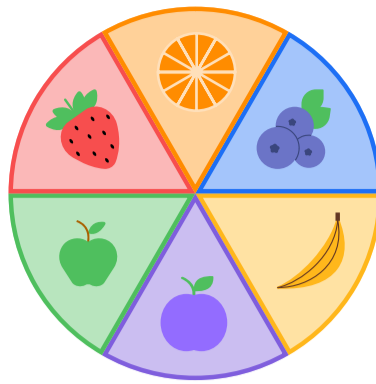# 🏔 Pie Charts

Pie charts are a useful way of expressing **proportions** of a **whole**. Different **slices** of 'pie' are used to represent different **portions** of the whole.

Each slice represents a **different category**. The **size** of the slice shows the **value** or **quantity** of the items in that category.

> The **larger** the pie slice, the **more** there is of that category!

This pie chart shows **24 people**'s favourite fruit. All of the slices are the **same size**. This means **equal numbers** of people chose each type of fruit as their favourite.

There are six slices, so each slice is a **sixth** ($\frac{1}{6}$) of the total pie. We are told that there are 24 people in total, so: **24 ÷ 6 = 4**. Each slice represents **4 people**!
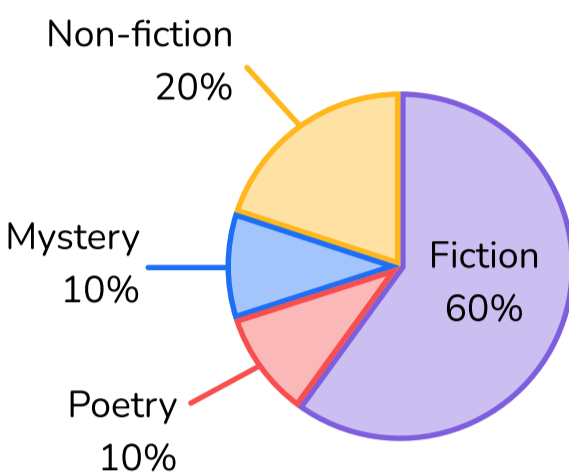
⚙ Method

Let's look at how to read a pie chart from its percentages!

The pie chart on the right shows the favourite book genres of **200 people**.

Each section represents the **percentage of votes** for each genre.

How many people voted for **fiction** as their favourite genre of book?

- Non-fiction 20%
- Mystery 10%
- Poetry 10%
- Fiction 60%

1 Convert the percentages into a **fraction**.

First we need to **rewrite** the percentage as a fraction by putting the percentage **over 100**. So:
$$60\% = \frac{60}{100}$$

2 **Multiply** the fraction by the total number represented in the pie chart.

The total number represented by the pie chart is **200**, so:
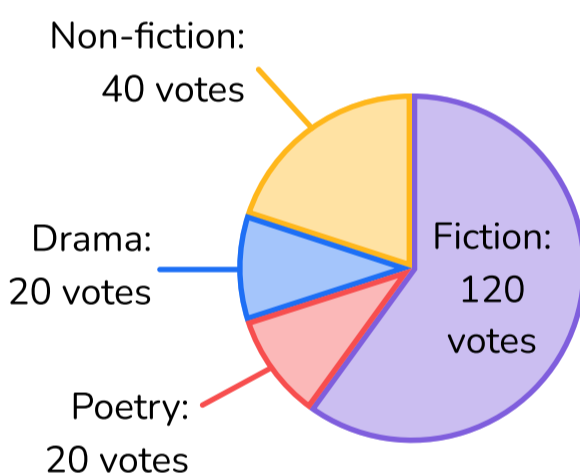$$200 \times \frac{60}{100} = \frac{12000}{100}$$

3 Divide the fraction

Remember that fractions are technically divisions so, now we can divide the **numerator** (top number) by the **denominator** (bottom number):
$$\frac{12000}{100} = \frac{120\cancel{00}}{1\cancel{00}} = 120 \div 1 = \textbf{120}$$
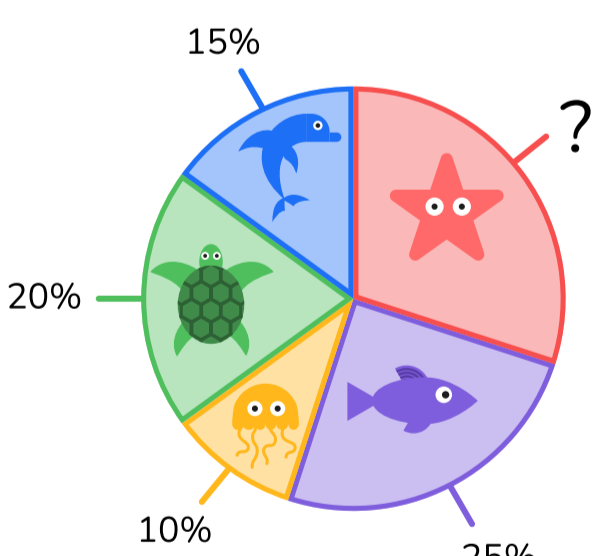
4 Fiction is the favourite genre of **120 people**!

If we followed the **same process** for the other genres we would find that:
- Drama = 20 people
- Poetry = 20 people
- Non-fiction = 40 people

- Non-fiction: 40 votes
- Drama: 20 votes
- Poetry: 20 votes
- Fiction: 120 votes

✏ Example Question

Ato went on a scuba diving trip and recorded all of the wildlife they saw in the pie chart below. They saw 80 forms of wildlife in total.

- 15%
- 20%
- 10%
- 25%
- ?

How many starfish did Ato see?

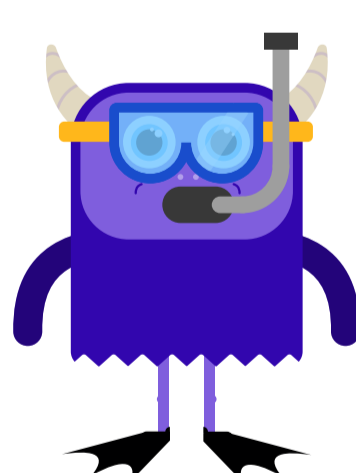| **A** 12 | **B** 16 | **C** 20 | **D** 24 | **E** 30 |

We need to find the **percentage of starfish** and **convert** it into a **number**.

1 Find the **percentage** of starfish.

Remember that **all of the slices** of a pie chart should add up to **100%**, so to work out the percentage of starfish we simply need to **subtract** all of the other percentages from 100%.
$$100\% - 10\% - 15\% - 20\% - 25\% = \textbf{30}\%$$
Therefore, the percentage of starfish is **30%**!

2 **Convert** the percentage into a **fraction**

Now that we have our percentage we can rewrite it as a **fraction**:
$$30\% = \frac{30}{100}$$

3 **Multiply** the fraction by the total number of wildlife and simplify the answer.

Remember the total number is **80**, so:
$$80 \times \frac{30}{100} = \frac{2400}{100}$$ which simplifies to **24**

✅ The correct answer is **D** - Ato saw 24 starfish!