We can use ratios to compare things.

Example

Use a ratio to compare the distances from the Sun of Mercury and Earth.

Mercury : Earth

58 000 000 km : 150 000 000 km

(Divide both sides by the smallest number)

1 : 2.586

1 : 2.6 to one decimal place

This shows that the Earth is 2.6 times further from the Sun than Mercury.

Planet	Distance from Sun (1 000 000 km)	Length of year (Earth years)
Mercury	58	0.25
Venus	108	0.6
Earth	150	1
Mars	230	1.9
Jupiter	780	11.8
Saturn	1430	29.5
Uranus	2870	84
Neptune	4500	164.8

1 Use ratios to compare the distances from the Sun of:

   a Earth and Mars

   b Mars and Jupiter.

2 Write the comparisons from question **1** in words.

3 Use ratios to compare the lengths of the years of:

   a Earth and Mars

   b Mars and Jupiter.

4 Write the comparisons from question **3** in words. Round the numbers up to the nearest whole numbers.

You can make comparisons using fractions, decimals and percentages. The distance of Mercury from the Sun is shorter than the distance of Earth from the Sun.

Example: write the shorter distance as a fraction of the longer one.

$\dfrac{\text{distance of Mercury}}{\text{distance of Earth}} = \dfrac{58\,000\,000\,\text{km}}{150\,000\,000\,\text{km}}$ (fraction)

Use your calculator to convert the fraction into a decimal.

= 0.39 (2 decimal places)   (decimal)

= 39%   (percentage)

Convert a decimal to a percentage by multiplying by 100.

This shows that the distance of Mercury from the Sun is only 39% of the distance between the Earth and the Sun.

5 Convert your answers to questions **1** and **3** to decimals.

6 Convert your answers to question **5** to percentages.

7 Choose two other planets from the table.

   a Compare their distances from the Sun as a ratio and describe your answer in words.

   b Compare their distances by working out a fraction and a percentage.

I can…
- calculate ratios and percentages
- convert fractions to decimals.