

## Rate and Ratio Math 8

## Outcome A4 & A5

What is a ratio?	Ratios are pairs of numbers and they are used to make comparisons. A ratio compares two numbers that are measured in the same units. For example the ratio of 7 minutes to 1 hour is not 7:1 but 7:60
How are ratios written? Part-to-Part Part-to- Whole	Part to Part Ratios can be written as 2 to 3 or 2:3 or $\frac{2}{3}$ (these expressions mean "2 parts as compared to 3" & are not to be confused with a <i>fraction which is 2 parts out of three</i> ) Part to Whole Ratios can be written as decimals, fractions or percents.
What is rate?	Rate compares two quantities measured in different units. \$4.29 per 4 L of milk or \$4.29/4 L. A rate can be expressed as a fraction that includes 2 different units.
What is an equivalent ratio?	Equivalent means of equal value. The only way you can write an equivalent ratio is to multiple or divide both terms of the ratio by the same number.
What is unit rate?	Unit rate is a rate in which the second term is one. For example 120km/hour means 120 km per 1 hour.
What is unit price? 1000 ml = 1L 1000 g = 1 kg	Unit price is a special type of rate used when shopping. Unit price makes it easier to compare the cost of similar items like orange juice in different sized containers. The second term is often 100ml or 100 g.
What is a proportion?	Proportion is a relationship that says that two ratios or two rates are equal. Proportions can be written as fractions. If two rates or ratios are proportional (equal) then their cross products are equal. $\frac{4}{5} = \frac{8}{10}$ <i>their cross products are equal</i>  $\frac{4}{5} \neq \frac{5}{6}$ <i>their cross product are not equal</i>
How do we solve problems using rate?	Set up a proportion and then use: logic or equivalent ratios or unit rate or cross multiplication (algebra) to find the missing term
What is %?	Percent is a special ratio or fraction that is always out of 100
How do I make any fraction a percent?	Any fraction can be written as a percent by dividing the numerator by the denominator and then rounding to the nearest 100 <sup>th</sup> $\frac{5}{7}$ becomes $5 \div 7 = 0.714285$ which rounds to $\frac{71}{100}$ which is 71%
How do I find the percent of any number? (Percent is a ratio because it compares quantities in the same units)	Turn the percent into a decimal and then multiply. Remember "of" means multiply. 12.5% of 20 becomes $0.125 \times 20 = 2.5$ You can find 10% of any number in your head by dividing the number by 10 or just moving the decimal place one place over to the left. 10% of 24 is 2.4