# KS3 1: Unit 7 Ratio and proportion — Knowledge Organiser

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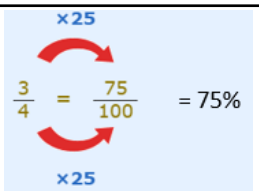
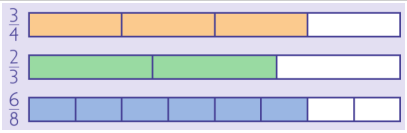
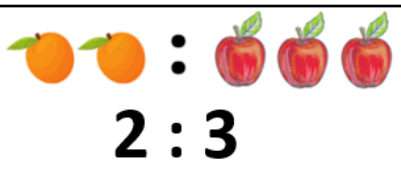
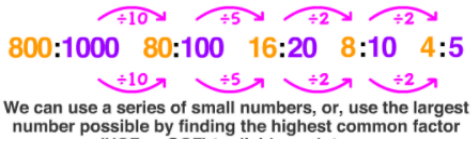
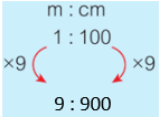
| **Prior Knowledge** | | | |
| 1 | Converting fractions to percentages |   | Write an equivalent fraction with a denominator of 100, then the numerator can be written as a percentage. |
| 2 | Highest common factor | The HCF of 12 and 16 = 4<br>12: 1, 2, 3, 4, 6, 12<br>16: 1, 2, 4, 8, 16 | To find the HCF of two numbers, list the factors in order and find the largest one in common to both. |
| 3 | Metric conversions | Length: 1km = 1000m<br>1m = 1000mm<br>1m = 100cm<br>1cm = 10mm | Mass: 1 tonne (t) = 1000kg<br>1kg = 1000g<br>Capacity: 1 litre = 1000ml<br>1ml = 1cm$^3$ |
| 4 | Comparing fractions |   | You can use bar models to compare fractions. |
| **Core Knowledge** | | | |
| 5 | Direct proportion | Example: 1 brick weighs 3kg<br>So, 2 bricks weigh 3 x 2 = 6kg<br>And 6 bricks weigh 6 x 2 = 12kg<br>The weight of the bricks is in direct proportion. | When two quantities are in direct proportion, as one increases or decreases, the other increases or decreases at the same rate. This means that when one quantity is zero, so is the other, when one doubles so does the other, when one is multiplied by 3, so is the other, etc. |
| 6 | Unitary method | 3 memory sticks cost £24.<br>How much do 7 memory sticks cost?<br>1 memory stick = £24 ÷ 3 = £8<br>7 memory sticks = £8 × 7 = £56 | Find the value of one item before finding the value of more. |
| 7 | Ratio |   | A ratio is a way of comparing two or more quantities.<br>Ratios are written as numbers separated by a colon (:). |
| 8 | Simplify a ratio |   | Simplify a ratio by dividing the numbers in the ratio by their highest common factor. |
| 9 | Equivalent ratios | | Find equivalent ratios by multiplying each number in a ratio by the same number. |
| 10 | Converting units |   | Use ratios to convert between metric units |
| 11 | Proportion | There are 10 chocolate and 4 shortbread biscuits.<br>What proportion are:<br>a chocolate b shortbread?<br>10 + 4 = 14 — Work out the total number of biscuits.<br>a $\frac{\text{chocolate biscuits}}{\text{total biscuits}} = \frac{10}{14} = \frac{5}{7}$<br>b $\frac{\text{shortbread biscuits}}{\text{total biscuits}} = \frac{4}{14} = \frac{2}{7}$ | Proportion compares a part with a whole. You can write a proportion as a fraction, decimal or percentage. |