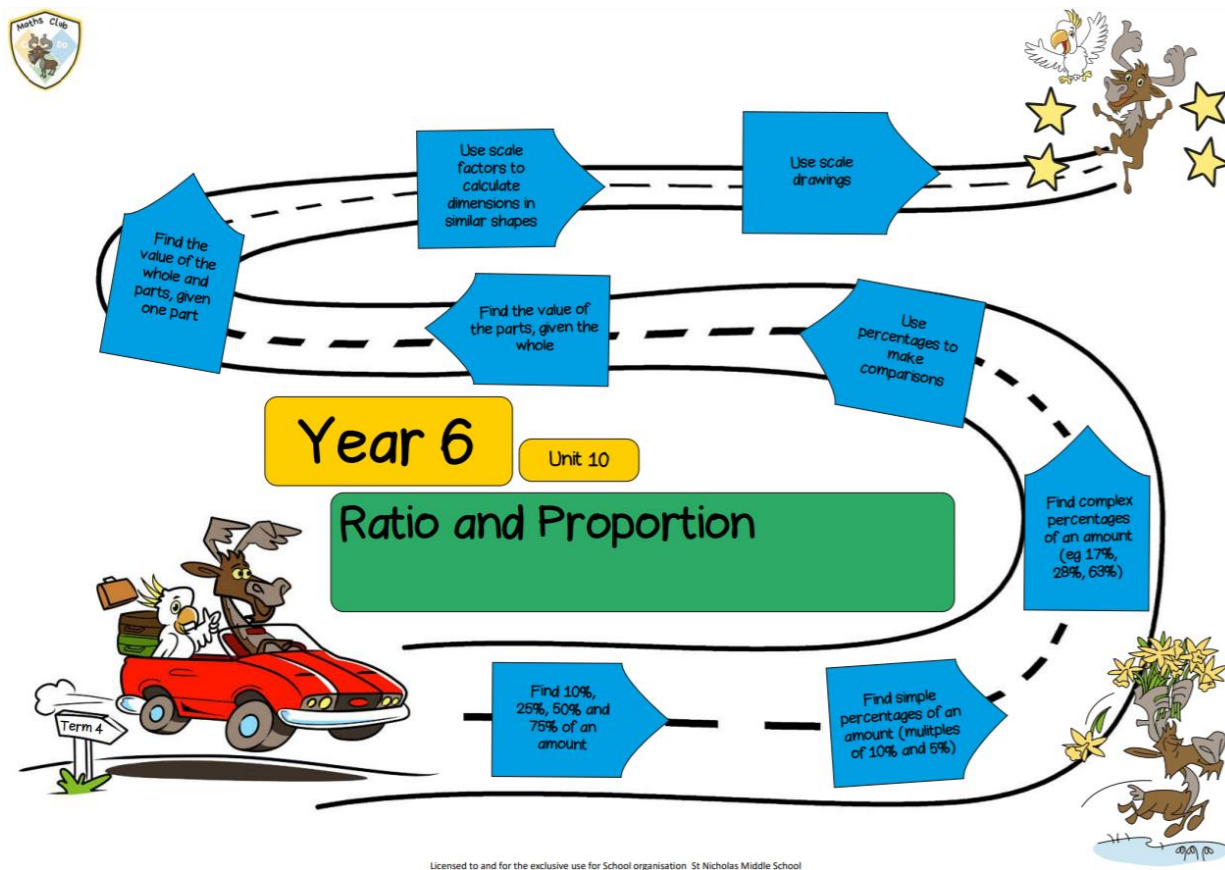


Year 6 – Maths – Ratio and Proportion



Key words

- Simple percentages
- Multiples
- Comparisons
- Value
- Scale factor
- Dimensions
- Shape
- Scale drawing

Outcomes

Pupils should be taught to: ♣ solve problems involving the relative sizes of two quantities where missing values can be found by using integer multiplication and division facts ♣ solve problems involving the calculation of percentages [for example, of measures, and such as 15% of 360] and the use of percentages for comparison ♣ solve problems involving similar shapes where the scale factor is known or can be found ♣ solve problems involving unequal sharing and grouping using knowledge of fractions and multiples.

Scale

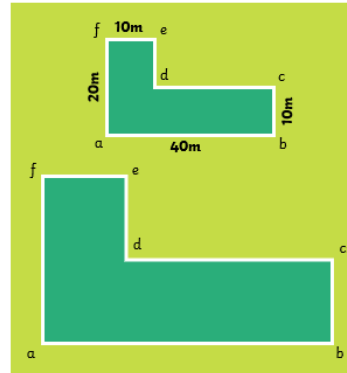
What is Ratio?

Scale is a way of representing real things using ratio, for instance on a map you may have a ratio 1cm:100km, where every centimetre on the map represents 100km in real life.



We use scaling (reduction and enlargement) to represent simplified versions of objects and distances.

Scale Factor



If the smaller shape has been enlarged by **scale factor 2**, what are the measurements of the sides of the enlarged shape?

ab 80m

bc 20m

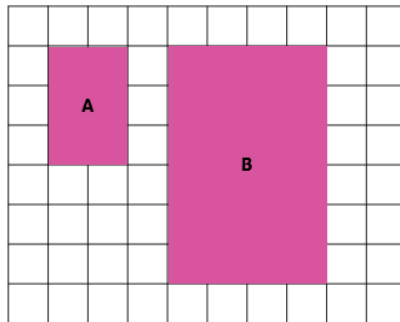
cd 60m

de 20m

ef 20m

fa 40m

Scale Factor

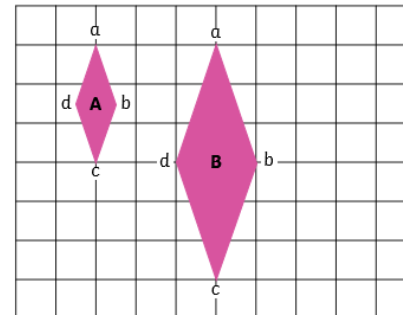


In rectangle A, the length is 3 squares and the width 2 squares.

In rectangle B, the length is 6 squares and the width 4 squares.

The width and length has doubled ($\times 2$). We call this **scale factor 2**.

Scale Factor



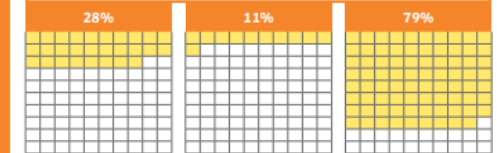
In rhombus A, the measurement **ac** is 3 squares and the measurement **bd** is 1 square.

In rhombus B, the measurement **ac** is 6 squares and the measurement **bd** is 2 squares.

Do you agree that the shape has increased by a scale factor of 2? **Yes, as each measurement has doubled.**

Finding Percentages of Amounts

The word percent comes from the Latin words **per** and **cent** meaning **out of every 100**. The symbol for percent is %.



Use one of these methods to find a percentage of an amount.

Convert to a Decimal

Find 30% of 80

- Convert the percentage into a decimal.
 $30 \div 100 = 0.3$
- Multiply the amount by the decimal.
 $80 \times 0.3 = 24$

$30\% \text{ of } 80 = 24$

Finding 10%

Find 70% of 60

- Find 10% by dividing the amount by 10.
 $60 \div 10 = 6$
- Multiply this answer by the number of tens in the percentage.
 $6 \times 7 = 42$

$70\% \text{ of } 60 = 42$

Finding 1%

Find 18% of 250

- Find 1% by dividing the amount by 100.
 $250 \div 100 = 2.5$
- Multiply this answer by the number of the percentage.
 $2.5 \times 18 = 45$

$18\% \text{ of } 250 = 45$