Maths - Year 6

Calculating 7: Ratio and Proportion

Key Vocabulary

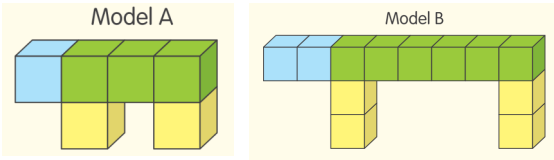
Ratio	A way of comparing two or more quantities measured in the same units, e.g. if *a* is 3 times as much as *b* this comparison can be written as the ratio *a* : *b* is 3 : 1.
Proportion	Used to express a fraction of a whole, e.g. the proportion of
Congruent	Identical in form.
Dimensions	A measure of a particular kind, such as length, breadth, depth,
Scaling	Describes the amount by which something is increased or reduced to make it larger or smaller in proportion, e.g. when scaling up a recipe for 2 to a recipe for 6, you would multiply the quantities by 3.
Scale factor	Describes the factor by which the length of each side is multiplied when a shape is made larger or smaller in proportion.
Equivalent fractions	Fractions of equal value, represented in different ways, e.g. 2/8 = 1/4 = 0·25.
Simplify	To reduce a fraction to the smallest numbers possible, e.g. 2/4 to 1/2 .

Mathematical Skills

- Describe and explain patterns and relationships when exploring ratios and proportions.
- Describe a relationship in terms both of ratio and proportion, e.g. 'the ratio of green to blue cubes is two to one', 'two out of every three cubes are green'.
- Read and express equivalent ratios, e.g. 4:2 and 2:1, by identifying common factors.
- Apply their knowledge of multiplying and dividing facts to solve problems involving scaling, similar shapes and unequal sharing.
- Explain in simple terms how survey data can be used to draw conclusions or make predictions.

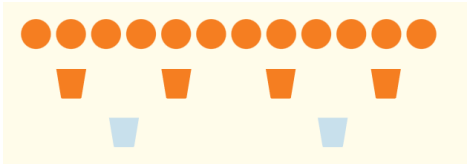
Mathematical Methods

- Exploring ratio and proportion

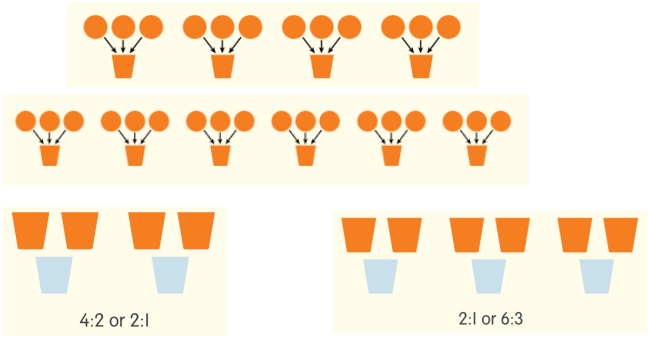


Ratio of cubes	Model A	Model B
Green to blue	3:1	6:2
Blue to green	1:3	2:6
Yellow to green	2:3	4:6
Green to yellow	3:2	6:4
Blue to yellow	1:2	2:4
Yellow to blue	2:1	4:2

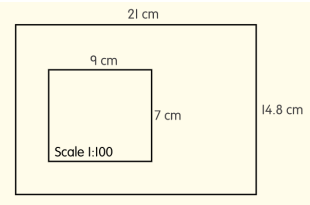
- Solving problems using ratio and proportion e.g. 12 oranges are squeezed to make 4 glasses of pure juice and then diluted with 2 glasses of water.



How many glasses of pure orange juice can be squeezed from 18 oranges?

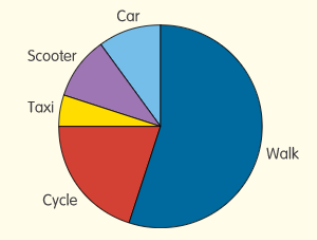


- Solving geometric scaling problems.

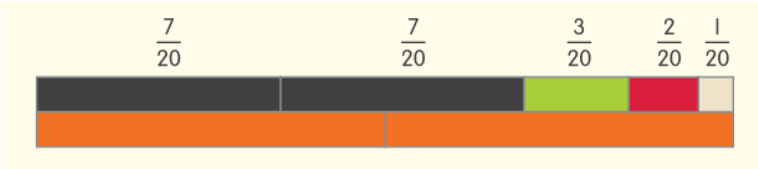


- Making use of data

Method of travel	Number of pupils
Walk	22
Cycle	8
Taxi	2
Scooter	4
Car	4
Total	**40**



- Solving problems involving unequal sharing e.g. a family of five have been saving spending money for a holiday. They have agreed that, out of every £20 saved, the parents (who will be paying for tickets and food) will get £7 each, the eldest child (who is going sailing) will get £3, the middle child (who is going to the water park) will get £2 and the youngest child (who will be buying snacks) will get £1. Illustrate each family member's share of the holiday spending.



Can you..?

- Kriti's car travels approximately 62 miles for each gallon of fuel. How far will she travel if she uses 2 gallons, 4 gallons or 8 gallons of fuel? Can you write a general rule for the distance travelled for any amount of fuel?

- I make a mosaic design using blue and white tiles. There are 2 blue tiles for every 4 white tiles. How many of each colour will there be if I use 72 tiles?

- For a summer fair, Jason makes 18 litres of squash using 1 part cordial to 2 parts water. Prakash makes the same amount of squash, using 2 parts cordial to 4 parts water. Who do you think uses more cordial? Can you explain?