

## Knowledge Organiser

Year Group	Subject	Topic
6	Mathematics	Ratio and Proportion

### The Big Picture

Children will understand that a ratio shows the relationship between two values and can describe how one is related to another.

They will start by making simple comparisons between two different quantities. For example, they may compare the number of boys to girls in the class and write statements such as, "For every one girl, there are two boys".

Children often think a ratio 1 : 2 is the same as a fraction of  $\frac{1}{2}$ . In this step, they use objects and diagrams to compare ratios and fractions.

Children are introduced to the colon notation as the ratio symbol, and continue to link this with the language 'for every..., there are...' They need to read ratios e.g. 3 : 5 as "three to five". Children understand that the notation relates to the order of parts. For example, 'For every 3 bananas there are 2 apples would be the same as 3 : 2 and for every 2 apples there are 3 bananas would be the same as 2 : 3

Children build on their knowledge of ratios and begin to calculate ratios. They answer worded questions in the form of 'for every... there are ...' and need to be able to find both a part and a whole. They should be encouraged to draw bar models to represent their problems, and clearly label the information they have been given and what they want to calculate.

### Enquiry Question

How would your sentences change if there were 2 more blue flowers?

How would your sentences change if there were 10 more pink flowers?

Can you write a "For every..." sentence for the number of boys and girls in your class?

How many counters are there altogether?

How does this help you work out the fraction?

What does the denominator of the fraction tell you?

What does the : symbol mean in the context of ratio?

Why is the order of the numbers important when we write ratios?

### Key Vocabulary

proportion	ratio
similar shapes	"for every... there are..."
length	part
width	whole
perimeter	scale factor
enlargement	

### Ratio Language

For every 1 circle, there are 2 triangles.



For every 2 bananas, there are 3 apples.



For every 1 football, there are 3 rugby balls.



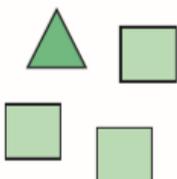
### Ratio and fraction



For every 1 rugby ball, there are 2 footballs.

Ratio of rugby balls to footballs: 1:2

$\frac{1}{3}$  of the balls are rugby balls.



For every 1 triangle, there are 3 squares.

Ratio of triangles to squares: 1:3

$\frac{1}{4}$  of the shapes are triangles.

## The Ratio Symbol



The ratio of footballs to rugby balls: 1:4

The ratio of rugby balls to footballs: 4:1



The ratio of circles to triangles: 2:3

The ratio of triangles to circles: 3:2



The ratio of circles to triangles: 2:3

The ratio of triangles to circles: 3:2



The ratio of apples to bananas: 1:2

The ratio of bananas to oranges: 2:3

The ratio of apples to bananas to oranges: 1:2:3

The ratio of oranges to bananas to apples: 3:2:1

## Ratio and Proportion Problem-Solving

**Ingredients for Fruit Smoothie**  
(serves 10 people)

- 800g of bananas
- 500g of strawberries
- 200g of raspberries
- 700ml of milk
- 300ml of natural yogurt

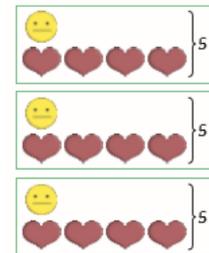
To use the ingredients for 1 person, you divide all the quantities by 10 ( $\div 10$ ).

To use the ingredients for 5 people, you halve all the quantities ( $\div 2$ ).

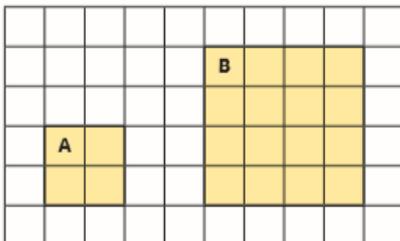
To use the ingredients for 20 people, you double all the quantities ( $\times 2$ ).

In a bag of 15 sweets, there is 1 smiley face sweet for every 4 love heart sweets.

Therefore, there will be 3 smiley face sweets and 12 love heart sweets in the bag.

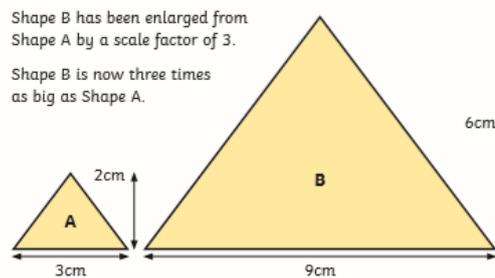


## Scale Factors



Shape A has been enlarged by a scale factor of 2 to make Shape B.

Shape B is now two times as big as Shape A.



Shape B has been enlarged from Shape A by a scale factor of 3.

Shape B is now three times as big as Shape A.

### What can my child do at home?

- ✓ Have a look through the Knowledge Organiser and study the key terminology, ensuring that they understand what they mean.
- ✓ Use the useful links above, particularly if there is a unit that you find more difficult to grasp
- ✓ Learn weekly times tables and number facts. These will be tested on the same day as spellings.
- ✓ Login to Mathletics to revise topics taught.



