

# Knowledge Organiser- Maths: Ratio

## Ratio

### Key Vocabulary

ratio

proportion

"for every... there are..."

part

whole

scale factor

enlargement

similar shapes

length

width

perimeter

### 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 Fractions



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 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

### Ratio and Proportion Problem-Solving

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

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

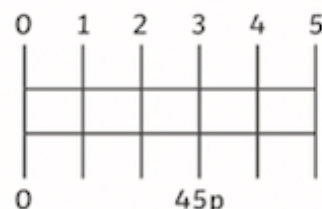
800g of bananas  
500g of strawberries  
200g of raspberries  
700ml of milk  
300ml of natural yogurt

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

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

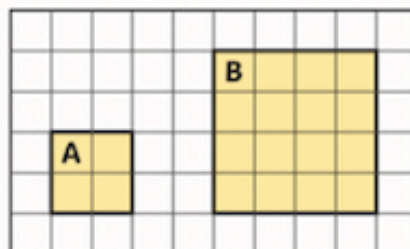
In a bag of 15 sweets, there is 1 smiley face sweet for every 4 love heart sweets.

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



3 bananas cost 45p.  
So, one banana costs  $45 \div 3 = 15p$ .  
5 bananas cost  $5 \times 15 = 75p$ .

## 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.



## Similar Shapes

Where one shape is an enlargement of the other, the two shapes are similar. All sides have been enlarged by the same scale factor. These 3 triangles are similar.

