

# Maths Revision & Practice Booklet



## Ratio and Proportion

Name: \_\_\_\_\_

# Solve Problems Involving Ratio

A ratio shows the relationship between two values and can describe how one is related to another.

The total amount could get smaller or greater, but the relationships between the parts stay the same.

There are 6 marbles in a bag.

The ratio of orange to blue is 2:4.



Like fractions, ratios can be simplified by dividing by a common factor.

2:4 has a common factor of 2 and can be simplified to 1:2.

Ratios are written using a colon which relates to the order of the parts.

For every 2 blue marbles, there is 1 orange marble. This would be the same as 2:1.

For every 1 orange marble, there are 2 blue marbles. This would be the same as 1:2.



When solving problems involving ratio, you will need to be able to find the value of the parts and the whole. Drawing bar models to represent the problem and clearly labelling the information you've been given will help you to calculate the answer correctly.

There are 36 pieces of fruit in a box.

The ratio of apples to bananas is 4:5.

36 pieces of fruit								
apple	apple	apple	apple	banana	banana	banana	banana	banana

How many parts are there altogether?

What is each part worth?

How many apples are there?

How many bananas are there?

# Using and Calculating Scale Factor

Scaling is when you reduce or enlarge dimensions proportionally.

Scaling is commonly used in maps, building plans and models, and is described as a scale factor.

We can use multiplication and division facts to calculate with scale factors.



The length of shape A is 4.

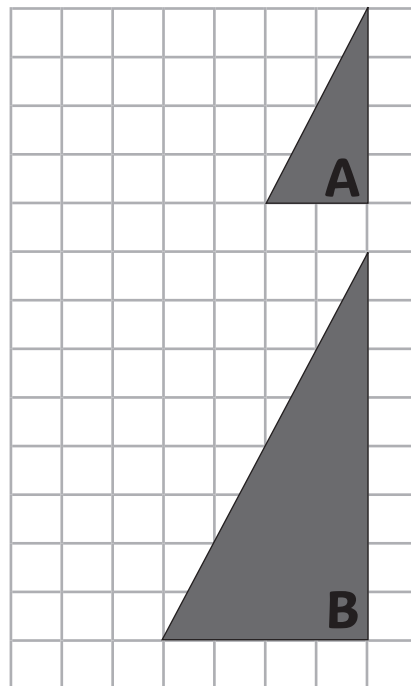
The length of shape B is 8.

The width of shape A is 2.

The width of shape B is 4.

The dimensions of shape B are twice as big as shape A.

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



The base of shape A is 4.

The base of shape B is 6.

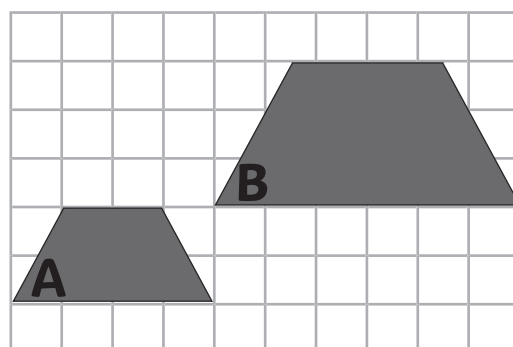
The height of shape A is 2.

The height of shape B is 3.

The dimensions of shape B are one and a half times as big as shape A.

Shape A has been enlarged by scale factor 1.5 to make shape B.

If shape B was enlarged by scale factor 1.5 again, what would the new dimensions be?



Base =

Height =

# Solve Problems Involving Calculating Percentages

Remember that we can find 10% or 1% of any number by using our place value understanding to divide by 10 or 100.



The price of this bike is £130.

In the sale, the price is reduced by 38%.

By how much was the price of the bike reduced?

- Find 10% of the price of the bike by dividing by 10.  
 **$£130 \div 10 = £13$  so 10% of £130 = £13**
- Find 30% of the price of the bike by multiplying 10% of the price by 3.  
 **$£13 \times 3 = £39$  so 30% of £130 = £39**
- Find 1% of the price of the bike by dividing by 100.  
 **$£130 \div 100 = £1.30$  so 1% of £130 = £1.30**
- Find 8% of the price of the bike by multiplying 1% of the price by 8.  
 **$£1.30 \times 8 = £10.40$  so 8% of £130 = £10.40**
- Add the value of 30% and 8% together to find the answer.  
 **$£39 + £10.40 = £49.40$**

What is the sale price of the bike?

- Subtract the percentage from the original price of the bike to calculate the bike's new price.  
 **$£130 - £49.40 = £80.60$**



Show  
your  
method

- What are the two possible values?

and

A blank coordinate grid with x and y axes ranging from 0 to 10. The grid is used for plotting the graph of the function  $y = \frac{1}{2}x^2$ .

1 mark



- ## How wide is my model?

Show  
your  
method

A blank grid for drawing a diagram. The grid is 10 units wide and 10 units high, with a 1-unit margin on the top and left sides.

1 mark



total for  
this page

Practise

3. At my allotment, I plant onions and carrots.  
I plant nine onions for every five carrots.  
Altogether, I plant 322 onions and carrots.  
How many carrots did I plant?

Show your method

carrots

1 mark

4. On a map, 1cm represents 15km.  
The distance between two cities is 142.5km.  
On the map, what is the distance between the two cities?

Show your method

cm

1 mark

5. Here are the lengths of two similar parallelograms.

Parallelogram	Length
A	6cm
B	18cm



What is the simplified ratio of parallelogram A to B?

:

1 mark

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## Practise

6. I am cooking a stir-fry. The recipe says I need 273g of chicken for three servings. How many kilograms of chicken will I need for 10 servings?

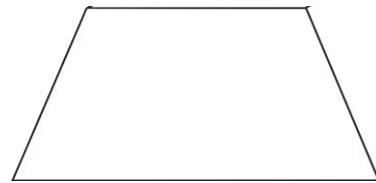
Show your method																				

1 mark



7. Here are the heights of two similar trapeziums.

Trapezium	Height
A	32cm
B	8cm



What is the simplified ratio of trapezium A to B?

1 mark



8. The price of this bike is £157.  
In the sale, the price is reduced by 28%.  
What is the sale price of the bike?

[illegible]

1 mark



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# Self-Assessment

Colour in the superhero strength-o-meter to show how you feel about each of these statements:

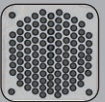
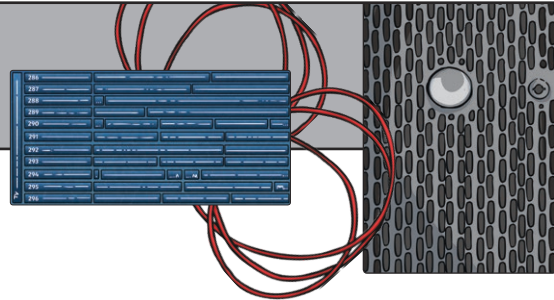
Solve problems involving ratio.

☐☐☐☐☐☐

Solve problems involving using and calculating scale factors.

☐☐☐☐☐☐

Solve problems involving calculating percentages.

☐☐☐☐☐☐

Comments