

# Year 8 Maths – Homework Booklet

Autumn 1 Booklet 1

## Ratio and Proportion - Ratio



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

Class: \_\_\_\_\_

Due Date: \_\_\_\_\_



1)  $72 \div 8 =$

13)  $66 \div 11 =$

2)  $81 \div 9 =$

14)  $5 \div 5 =$

3)  $12 \times 7 =$

15)  $96 \div 12 =$

4)  $48 \div 4 =$

16)  $30 \div 5 =$

5)  $9 \times 8 =$

17)  $1 \times 11 =$

6)  $1 \times 8 =$

18)  $16 \div 2 =$

7)  $7 \times 7 =$

19)  $4 \times 11 =$

8)  $36 \div 3 =$

20)  $96 \div 8 =$

9)  $4 \div 4 =$

21)  $99 \div 11 =$

10)  $10 \times 3 =$

22)  $44 \div 4 =$

11)  $12 \times 9 =$

23)  $70 \div 10 =$

12)  $66 \div 6 =$

24)  $5 \times 12 =$

## Ratio

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

- 1 Here are some squares and circles.



- a) Write the ratio of circles to squares.

\_\_\_\_\_

1 mark

- b) Write the fraction of shapes that are circles.

1 mark

- 2 Write each ratio in its simplest form.

- a) 6:2

\_\_\_\_\_

1 mark

- b) 18:24

\_\_\_\_\_

1 mark

- 3 Work out the missing numbers to complete the equivalent ratios.

- a)  $12 : 10 = 36 :$

1 mark

- b)  $: 15 = 35 : 75$

1 mark

- 4 Aisha and Rosie share £32 in the ratio 3 : 5  
How much money does Rosie receive?

£

2 marks

- 5 A box contains milk chocolates and dark chocolates.  
The ratio of milk chocolates to dark chocolates is 7 : 3  
What fraction of the chocolates are milk chocolates?

1 mark

- 6 Tommy spends  $\frac{7}{9}$  of the money he earns.  
He saves the rest.  
Write the ratio of the money that Tommy spends to the money he saves.

\_\_\_\_\_

1 mark



1)  $96 \div 12 =$

13)  $72 \div 8 =$

2)  $70 \div 7 =$

14)  $9 \times 11 =$

3)  $35 \div 7 =$

15)  $24 \div 6 =$

4)  $7 \div 7 =$

16)  $40 \div 4 =$

5)  $12 \times 12 =$

17)  $30 \div 5 =$

6)  $5 \times 4 =$

18)  $11 \times 10 =$

7)  $48 \div 8 =$

19)  $44 \div 11 =$

8)  $11 \div 11 =$

20)  $40 \div 10 =$

9)  $5 \times 12 =$

21)  $14 \div 2 =$

10)  $55 \div 5 =$

22)  $10 \times 8 =$

11)  $8 \times 4 =$

23)  $1 \times 2 =$

12)  $7 \times 7 =$

24)  $22 \div 11 =$

7

The ratio of Year 8 to Year 9 students is 3:2

There are 180 students in Year 9

Work out the total number of students in Year 8 and Year 9

2 marks

8

Mr Trent is paid £2800 a month.

He spends half his money on rent.

He spends the rest on food, bills and savings in the ratio 8:5:7

How much money does he spend on food?

£

3 marks

9

- a)** The ratio of students to teachers in a group is 7:4

There are 60 more students than teachers.

Work out how many teachers there are in the group.

2 marks

- b)** Some more teachers join the group.

The ratio of students to teachers is now 7:5

Work out how many teachers joined the group.

1 mark

10

- a)** Write the ratio 2:5 in the form 1:n.

1 mark

- b)** Write the ratio 13:5 in the form  $n:1$

1 mark

E

# RATIO & PROPORTION...

# Ratio

## What do I need to be able to do?

- Understand ratio
- Ratio problems (whole given)
- Ratio problems (part given)
- Ratio problems (difference given)
- Simplify ratios
- Express ratios in the form  $1:n$  and  $n:1$  (E)
- Compare ratios and fractions
- Solve problems with ratio

## Keywords

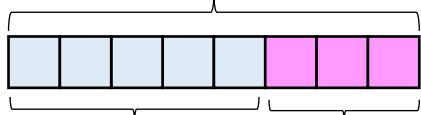
### Tier 2:

- Ratio:** a statement of how two numbers compare
- Equal Parts:** all parts in the same proportion, or a whole shared equally
- Proportion:** a statement that links two ratios
- Order:** to place a number in a determined sequence
- Part:** a section of a whole
- Equivalent:** of equal value
- Factors:** integers that multiply together to get the original value
- Scale:** the comparison of something drawn to its actual size

## Representing a ratio

"For every 5 boys there are 3 girls"

This is the "whole" – boys and girls together



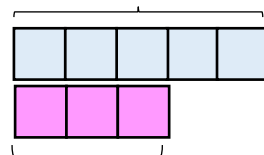
This represents the 5 boys

This represents the 3 girls

5:3

This represents the 5 boys

Double Number Line



This is the "whole" – boys and girls together

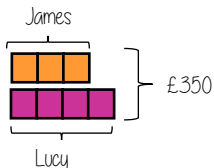
This represents the 3 girls

## Sharing a whole into a given ratio

James and Lucy share £350 in the ratio 3:4.  
Work out how much each person earns

### Model the Question

James: Lucy  
3:4



£350 ÷ 7 = £50

□ = one part  
= £50

### Find the value of one part

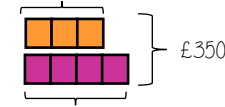
Whole: £350  
7 parts to share between  
(3 James, 4 Lucy)

### Put back into the question

James: Lucy

(x 50) 3:4 (x 50)  
→ £150:£200 ←

James = 3 x £50 = £150



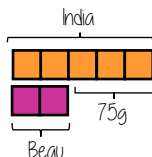
Lucy = 4 x £50 = £200

## Sharing in a ratio given a difference

India and Beau share some popcorn in the ratio of 5:2  
If India has 75g more popcorn than Beau, what was the original quantity?

### Model the Question

India: Beau  
5:2



### Find the value of one part

Difference: 75g

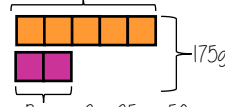
75g ÷ 3 = 25g

□ = one part  
= 25g

### Put back into the question

India: Beau  
(x 25) 5:2 (x 25)  
→ 125g:50g ←

India = 5 x 25g = 125g



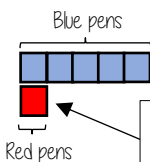
Beau = 2 x 25g = 50g

## Finding a value given 1:n (or n:1)

Inside a box are blue and red pens in the ratio 5:1  
If there are 10 red pens how many blue pens are there?

### Model the Question

Blue: Red  
5:1



□ = one part  
= 10 pens

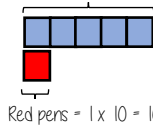
One unit  
= 10 pens

### Put back into the question

Blue: Red

(x 10) 5:1 (x 10)  
→ 50:10 ←

Blue pens = 5 x 10 = 50 pens



Red pens = 1 x 10 = 10 pens

There are 50 Blue Pens

## Simplifying a ratio

Cancel down the ratio to its lowest form

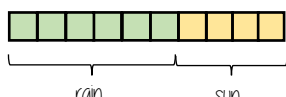
Find the biggest common factor that goes into all parts of the ratio  
For 6 and 4 the biggest factor (number that multiplies into them is 2)

"For every 6 days of rain there are 4 days of sun"

6:4

÷ by 2

3:2



rain

sun



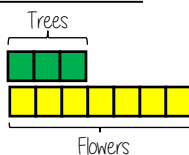
"For every 3 days of rain there are 2 days of sun"

## Ratio as a fraction



Trees: Flowers

3:7



Flowers

There are 3 parts for trees

Fraction of trees

Number of parts in group  
Total number of parts

3  
10

Tree parts 3 + Flower parts 7 = 10

## Ratio 1:n (or n:1)

This is asking you to cancel down until the part indicated represents 1

Show the ratio 4:20 in the ratio of 1:n

The question states that this part has to be 1 unit. Therefore Divide by 4

4:20  
1:5

This side has to be divided by 4 too – to keep in proportion

\*H\* the n part does not have to be an integer for this type of question

## Units are important:

When using a ratio – all parts should be in the same units

### Useful Conversions

