

# Worksheet 8: Ratio and proportion

Answers on separate paper so you can hand them in!

## Simplify these ratios / make ratios from words

- 1) Simplify 600 : 400
- 2) Write 250 : 150 : 300 : 450 as a ratio in its simplest form
- 3) Simplify 900 : 15 : 300
- 4) Write £2.50 : 75p as a ratio in its simplest form  
Hint: change £ to pence as ratios can't have units
- 5) Simplify 300ml : 1.5 litres  
Hint: change litres to ml
- 6) Write 0.42 : 0.7 as a ratio in its simplest form  
Hint: multiply all numbers in the ratio so all whole numbers...
- 7) Simplify 1.25 : 0.8 : 2.5 : 0.4  
Hint: write each number as a % or multiply so all whole numbers...
- 8) Write  $\frac{3}{4} : \frac{2}{3}$  as a ratio in its simplest form  
Hint: write fractions over a common denominator then just don't write the denominator
- 9) Simplify the ratio  $\frac{2}{5} : \frac{7}{10} : 2\frac{1}{2}$  so that it uses integers
- 10) Francine is making up reagents in the lab.  
She takes 125ml of hydrazine and adds water to make 1 litre  
Write the ratio of hydrazine to water as a ratio in its simplest form
- 11) Nusut is making a drink.  
She uses 300ml of orange juice, 60ml of lemon juice and 600ml of water.  
Write the ratio of orange juice, lemon juice and water as a ratio in its simplest form

## Dividing in a ratio

- 1) Divide 360 in the ratio 3 : 4 : 5
- 2) The angles in a triangle are in the ratio 2 : 2 : 5
  - a) Find the size of each of the angles in the triangle
  - b) What kind of triangle is this?
- 3) Bill and Ben share the profits of a used car business in the ratio 4 : 7  
Last month, the business made a profit of £12 100  
Calculate Ben's share of the profits
- 4) The profits of a small business are distributed between the partners in the ratio 2 : 4 : 4  
Write the smallest share as a percentage
- 5) Nigel has £600 to give away.  
He donates 40% of the money to a local charity  
He splits the remainder in the ratio 4 : 5 to give to his nieces
  - a) Calculate how much each niece receives
  - b) Express the smallest share as a fraction of the £600

## Find one part given the other one

- 1) The profits of a small business are split in the ratio 3:4  
The smaller share is worth £180.  
Calculate the value of the larger share.
- 2) A sum of money is divided in the ratio 3:7.  
The largest share was £63. Work out the value of the smaller share.
- 3) Bill and Ben share seeds out in the ratio 3 : 5  
Ben has 40 more seeds than Bill  
Work out the total number of seeds that they shared
- 4) Alice, Bob and Charlie share the costs of a craft market stall in the ratio 5 : 2 : 3.  
The largest share of the costs is £450 larger than the smallest share of the costs. Work out the amount that Charlie has to pay.

## Direct proportion questions

- 1) Five apples cost £1.40.  
Work out the cost of 7 apples at the same rate.
- 2) 12 turnips cost £1.80.  
Work out the cost of 5 turnips at the same rate.
- 3) You need to combine 16 hydrogen atoms with 8 oxygen atoms to make water.  
How many hydrogen atoms would you need to combine with 60 oxygen atoms?
- 4) A recipe that serves 4 requires 240g of green split peas.  
What weight of green split peas will you need to serve 10 people?
- 5) You can make 16 ships' biscuits from 500g of flour, 300ml of water and 5g of salt.
  - a) How much flour will you need to make 72 ships' biscuits?
  - b) Nigel has 5 kg of flour and 20g of salt and plenty of water  
How many ships' biscuits can he make?
- 6) Wooden planks are priced at £3.40 per metre length.  
You need 3.5 metres of plank. How much will that cost?
- 7) A taxi company charges £4.50 for a 9 mile journey.  
The same company charges £6.00 for a 12 mile journey.
  - a) Is the cost of a journey directly proportional to the distance?  
Show a calculation to support your answer
  - b) Calculate the cost of a journey of 15 miles
- 8) (\*) A delivery firm charge £15 for a 5 mile journey and they charge £19 for a 7 mile journey.
  - a) Work out their charge for a journey of 2 miles
  - b) Is their cost for a journey directly proportional to the distance?
- 9) 8 kilometres is roughly equivalent to 5 miles.
  - a) How many miles is 48 kilometres?
  - b) How many kilometres is 25 miles?

## Mixed up questions (exam style)

- 1) Nigel and Asif share the costs of a small business in the ratio 7 : 5  
Nigel paid £70 more than Asif last week  
Work out the total of the costs for the small business
- 2) Hermione and Asra share the profits from a craft market stall in the ratio 3 : 5  
Hermione received £75 yesterday as her share.  
How much more did Asra receive?
- 3) The instructions on the back of the bottle of lawn feed say  
“Add 125ml to 5 litres of water”  
Algernon wants to use 3 litres of water as he has a very small lawn.  
Write some new instructions for Algernon so he can make his solution.
- 4) The profits of a small company are shared out in the ratio 2:3:5  
What percentage of the whole profit is the median share?
- 5) A bag contains red, yellow and blue counters.  
20% of the counters in the bag are red,  $\frac{1}{4}$  of the counters are yellow, and the remainder are blue.  
What is the smallest number of blue counters that could be in the bag?  
Hint: find % of each colour then think about simplifying
- 6) Johan and Inderjit run a small company.  
They agree to put 30% of the profit each month away as provision against bad times.  
They share the remainder of the profits in the ratio 2:5.  
Inderjit received £4 500 more than Johan last month  
Calculate the total profits of the small company for that month