

Foundation Check In - 5.01 Calculations with ratio

1. A school canteen has 45 chairs and 18 tables. Write the ratio of tables to chairs in its simplest form.
2. Share 1.5 litres of juice in the ratio 3 : 5 : 2. Give the quantities in millilitres.
3. Some flour is shared in the ratio 4 : 3. The smaller share weighs 120g. Find the weight of the flour that was shared out.
4. *Seaweed green* is made by mixing yellow paint, blue paint and orange paint in the ratio 3 : 7 : 1. What fraction of the mixture is blue paint?
5. Write 5 g : 200 mg in the ratio $n : 1$.
6. A piece of wood is cut into three pieces, A , B and C . A is $\frac{1}{4}$ of the total length. The lengths of B and C are in the ratio 1 : 2. Explain why B is the same length as A .
7. Lily and Rema win a sum of money which they agree to share in the ratio 1 : 4. Lily says, "I will have a quarter of the winnings". Explain why Lily is wrong and correct her answer.
8. A large pack of gravy granules weighs 700 g and costs £2.80. A small pack of gravy granules weighs 250 g and costs £1.05. Show that the larger pack gives better value for money.
9. Jan has this recipe for macaroni cheese that serves 4 people.

400 g	macaroni pasta
300 ml	evaporated milk
150 g	mature cheddar cheese
2	shallots

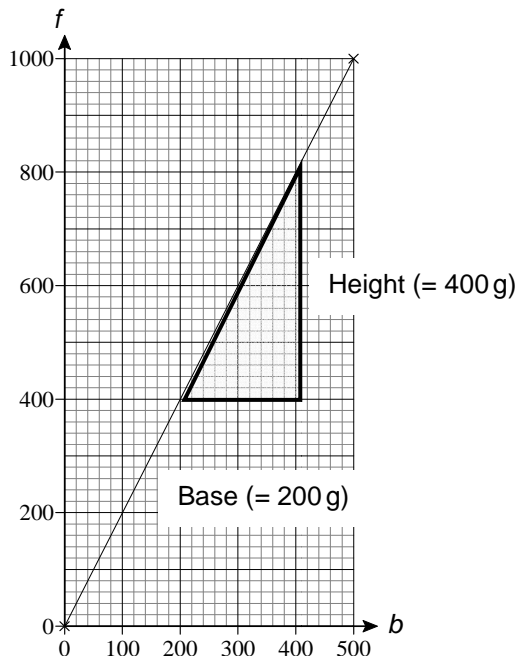
If Jan has 2.5 kg of macaroni pasta, 2 L of evaporated milk, 1 kg of mature cheddar cheese and 15 shallots and she makes as much macaroni cheese as possible, how many people will it serve?

10. During a one hour training session, Darren walks, jogs and runs in the ratio 1 : 5 : 2. The length of his stride is 0.8 m when walking, 1.1 m when jogging and 1.4 m when running. His pedometer records 5600 strides in a session. Work out his average speed in km/h.



Extension

The graph below shows the relationship between f , the amount of flour in grams, and b , the amount of butter in grams, used to make pastry.



The **gradient** of this line is 2 because, for any right-angled triangle joining two points on the line as shown, the height is twice the base.

The **equation** of the line is $f = 2b$.

- Write the ratio $f : b$ in its simplest form.
Find how much butter is used when 1.2 kg of flour is used.
- Draw a graph for when the ratio is $f : b = 3 : 1$.
Write down the equation of the graph.
- Draw a graph for when $f = 0.5b$.
Write the ratio $f : b$ in its simplest form.
Find how much flour is used when 550 g of butter is used.



GCSE (9–1) MATHEMATICS

Answers

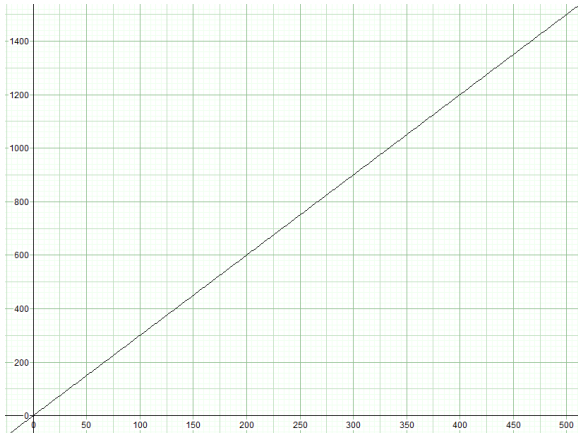
1. 2 : 5
2. 450 ml, 750 ml, 300 ml
3. 280 g
4. $\frac{7}{11}$
5. 25 : 1
6. A is $\frac{1}{4}$ of the whole so $B + C$ is $\frac{3}{4}$ of the whole. These are shared in the ratio 1 : 2 or $\frac{1}{4} : \frac{2}{4}$ so B is the same fraction of the whole as A .
7. 1 : 4 means there are 5 parts, so Lily will get $\frac{1}{5}$ of the total.
8. Cost per 100 g of the larger pack = $7\overline{)280}^{\text{40}}$, whilst cost per 100 g of the smaller pack = $5\overline{)210}^{\text{42}}$. The larger pack is better value than the smaller pack oe.
9. 25 people
10. 6.37 km/h



Extension

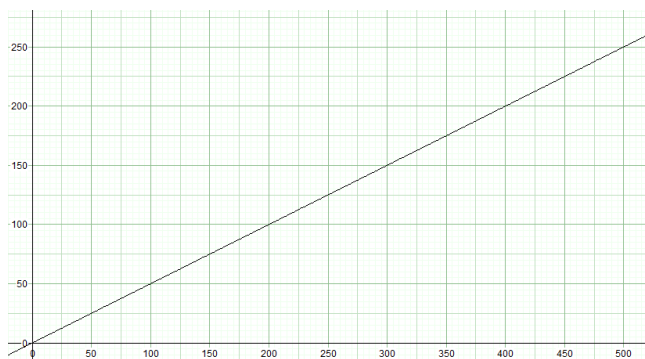
- (a) $f : b = 2 : 1$
0.6 kg or 600 g of butter used

(b)



$$f = 3b$$

(c)



$$f : b = 1 : 2$$

275 g of flour used

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Assessment Objective	Qu.	Topic	R	A	G
AO1	1	State a ratio of quantities in its simplest form			
AO1	2	Split a quantity into three parts given the ratio			
AO1	3	Calculate one quantity from another, given the ratio of the two quantities			
AO1	4	Interpret a ratio as a fraction of a whole			
AO1	5	Find a ratio of mixed unit quantities in the form $n : 1$			
AO2	6	Interpret a ratio as a fraction			
AO2	7	Interpret a ratio as a fraction of a whole			
AO2	8	Use ratios to determine value for money			
AO3	9	Solve a proportion problem			
AO3	10	Solve a problem involving a quantity split into three parts			

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