GCSE Maths – Ratio, Proportion and Rates of Change

Ratio

Worksheet

NOTES

SOLUTIONS

This worksheet will show you how to work out different types of ratio questions. Each section contains a worked example, a question with hints and then questions for you to work through on your own.

Section A

Worked Example

Meringue is made by mixing cups of egg whites and cups of sugar in the ratio 2:5. How many cups of sugar are needed if 6 cups of egg whites are used in the mixture?

Step 1: Scale the ratio.

This question involves scaling a ratio and to do this, we need to multiply by a common factor. We know that $6 = 2 \times 3$, so we need to multiply the ratio by 3.

$$\times 3 \qquad \begin{array}{c} 2 : 5 \\ 6 : 15 \end{array} \qquad \times 3$$

Step 2: Identify the required scaled value.

*When 6 cups of egg whites are used, **15 cups of sugar** are needed in the mixture.*

$$6 \quad : \quad \boxed{15} \qquad number\ of\ cups\ of\ sugar$$

Guided Example

For a cement mixer, cement and sand is mixed in the ratio 1:5. If 30kg of sand is used, how many kilograms of cement is needed?

Step 1: Work out the total number of parts in the ratio.

Step 2: Calculate the scale required to have sand represented by 30 parts in the ratio.

Step 3: Identify the required scale value.

1. If 100 grams of one ingredient is used in a cake recipe, which calls for a ratio of 3: 7 with a second ingredient, how much of the second ingredient is needed?

2. In a class of 21 students, the ratio of male students to female students is 3 : 4. How many female students are there?

3. A recipe for 10 cupcakes needs 300 g flour. How much flour is needed for 15 cupcakes?

Section B

Worked Example

Laila, John and Emma split £4000 in the ratio 1:3:4. How much money does John receive?

Step 1: Find the total number of parts in the ratio.

$$1 : 3 : 4$$

$$1 + 3 + 4 = \mathbf{8\ parts}$$

Step 2: Find the value of 1 part.

Divide the total amount, which is £4000, by the total number of parts, which is 8. This will give you the value of 1 part.

$$£4000 \div 8 = £500 = \mathbf{1\ part}$$

Step 3: Multiply the value of 1 part by the number of parts John has.

$$£500 \times 3 = \mathbf{£1500}$$

John receives £1500

Guided Example

There is £100 in a pot which is shared out amongst 3 people. Charlotte gets £15, Amy gets £55 and Jack gets £30.

What ratio of the money does each person receive?

Step 1: First write out the three amounts of money as a ratio (Charlotte:Amy:Jack)

Step 2: Simplify the ratio.

To do this, find a common factor (a number that is a multiple of 20, 35 and 25) and divide each of the three values in the ratio by this common factor.

Now it's your turn!
If you get stuck, look back at the worked and guided examples.

4. Ben, Luke and Jess save their money in a ratio of $1:3:6$. If Luke saves £20 a week, how much do they save in total?

5. There is £500 in a prize fund which is shared between 3 people. Daisy gets £150, Carol gets £250 and Joe gets £100. What ratio of the money does each person receive?

6. In a classroom, 125 sweets are shared out in a ratio of $13:7:5$ to groups Red, Orange and Blue. How many sweets does each group receive?