

Get Ready for Grade 9 Ratio and Proportion Worked Examples and Practice

Example 1: Moshe purchased 24 muffins for \$10. Express the ratio between the number of muffins and the cost in lowest terms.

Solution:

$$\begin{aligned}r &= \frac{24}{10} \\ &= \frac{12}{5} \\ &= 12 : 5\end{aligned}$$

Example 2: Tests by an independent laboratory show that a 4 L can of concrete paint will cover 27 m² of cement floor. Suzette's Auto Repair has a floor with an area of 81 m². How many litres of paint will she need to paint it?

Solution: The ratio of area to volume of paint is 4:27, or $\frac{4}{27}$. Suzette needs to express this with a denominator of 81.

$$\frac{81}{27} = 3 \quad \text{Therefore,}$$

$$\begin{aligned}\frac{4}{27} &= \frac{4 \times 3}{27 \times 3} \\ &= \frac{12}{81}\end{aligned}$$

Suzette needs 12 L of paint.

Example 3: Serena's Catering Service mixes large batches of tropical fruit punch using 12 L of orange juice, 9 L of papaya juice, and 6 L of mango juice. Express this ratio in lowest terms.

Solution: The ratio is 12:9:6. The greatest common factor is 3.

$$\begin{aligned}12 : 9 : 6 &= \frac{12}{3} : \frac{9}{3} : \frac{6}{3} \\ &= 4 : 3 : 2\end{aligned}$$

Example 4: How many litres of punch will result from the recipe given in Example 3?

Solution: The number of litres of punch can be calculated by adding the volumes of the juices used:

$$12 + 9 + 6 = 27 \text{ L}$$

Example 5: Serena has purchased a 135 L cooler so that she can make and store the punch in a large batch. How many litres of each juice will she need to fill the cooler?

Solution: One recipe makes 27 L of punch.

$$\frac{135}{27} = 5$$

Suzette needs 5 recipes.

$$\begin{aligned} 12 : 9 : 6 &= 12 \times 5 : 9 \times 5 : 6 \times 5 \\ &= 60 : 45 : 30 \end{aligned}$$

She needs 60 L of orange juice, 45 L of papaya juice, and 30 L of mango juice.

Practice:

1. Heinz bought a basket of apples at the market for \$8. He counted the apples, and found that there were 52 in the basket. Express the ratio of the number of apples to the cost in lowest terms.
2. Roof shingles come in a packet of 12, which covers 17 m² of roof. Sandra's garage roof has an area of 102 m². How many shingles does she need?
3. Sales records show that sales of small, medium and large sizes of Rice Bubbles cereal sold 12, 32, and 24 boxes in one week. Express this ratio in lowest terms.
4. How many boxes of cereal were sold during the week?
5. Sammy has been given the job of making a display using 408 boxes of cereal. How many of each size should he use to match the sales ratio?

Answers:

1. 13:2 2. 72 3. 3:8:6 4. 68 5. 72:192:144