

Case Study 2

Rohan is a Class 7 student who helps his grandfather maintain a small vegetable garden behind their house. One weekend, they decided to plant different vegetables in equal-sized plots. The total garden area was divided into $\frac{5}{6}$ of a section for vegetables and the remaining part for flowers. Out of the vegetable section, $\frac{2}{3}$ was used to grow tomatoes and the rest was used for carrots.

Rohan measured water for irrigation using a measuring jar. Each tomato plot required 0.75 litres of water, while each carrot plot required 0.5 litres. Since there were two tomato plots and three carrot plots, Rohan calculated the total water needed by multiplying and adding decimals.

Later, Rohan recorded the harvest weight. The tomatoes weighed $1\frac{1}{2}$ kg and the carrots weighed $\frac{3}{4}$ kg. He converted the mixed fraction into an improper fraction and then added the weights to find the total harvest. Finally, Rohan wrote all measurements in decimal form such as 1.5 kg and 0.75 kg to make his record neat and easy to understand.

Through gardening, measuring, dividing land, and recording harvests, Rohan understood how fractions and decimals are used in real-life situations involving division, multiplication, addition, and conversion of quantities.

Questions

1. What fraction of the total garden was used for vegetables?
 - (a) (A) $\frac{1}{6}$
 - (b) (B) $\frac{5}{6}$
 - (c) (C) $\frac{2}{3}$
 - (d) (D) $\frac{3}{5}$
2. What fraction of the vegetable section was used for tomatoes?
 - (a) (A) $\frac{1}{3}$
 - (b) (B) $\frac{5}{6}$
 - (c) (C) $\frac{2}{3}$
 - (d) (D) $\frac{3}{4}$
3. How much water was required in total for two tomato plots?
 - (a) (A) 0.75 L
 - (b) (B) 1.25 L
 - (c) (C) 1.5 L
 - (d) (D) 2.0 L
4. What is the total weight of vegetables harvested?
 - (a) (A) $2\frac{1}{4}$ kg
 - (b) (B) $2\frac{3}{4}$ kg
 - (c) (C) $1\frac{1}{4}$ kg
 - (d) (D) $1\frac{3}{4}$ kg
5. Which decimal correctly represents the fraction $\frac{3}{4}$?
 - (a) (A) 0.34
 - (b) (B) 0.43
 - (c) (C) 0.75
 - (d) (D) 1.25

Answer Key

- Q1: (B)
- Q2: (C)
- Q3: (C)
- Q4: (A)
- Q5: (C)

Solutions

1. The vegetable section occupies $\frac{5}{6}$ of the total garden. Therefore, the correct answer is $\frac{5}{6}$.
2. Out of the vegetable section, $\frac{2}{3}$ was used for tomatoes. Hence, the correct answer is $\frac{2}{3}$.
3. Water needed for one tomato plot = 0.75 L. For two plots:

$$0.75 \times 2 = 1.5$$

So, the total water required is 1.5 litres.

4. Tomato weight = $1\frac{1}{2} = \frac{3}{2}$ kg, Carrot weight = $\frac{3}{4}$ kg.

$$\frac{3}{2} + \frac{3}{4} = \frac{6}{4} + \frac{3}{4} = \frac{9}{4} = 2\frac{1}{4}$$

Hence, the total weight harvested is $2\frac{1}{4}$ kg.

5. To convert $\frac{3}{4}$ into decimal:

$$3 \nabla \cdot 4 = 0.75$$

Therefore, the correct decimal is 0.75.