

A. Select the correct answer.

1. The simplest form of the ratio 75 cm to 1.5 m is
a. 2:1 ☐ b. 1:2 ☐ c. 1:3 ☐ d. 3:1 ☐
2. If $x\%$ of $\frac{25}{3}$ is 17, then x equals
a. 102 ☐ b. 170 ☐ c. 204 ☐ d. 408 ☐
3. $a\%$ of $b - b\%$ of a equals
a. 1% of ab ☐ b. 2% of ab ☐ c. 1% of $(a + b)$ ☐ d. 0 ☐
4. In how much time would the simple interest on a certain sum be one-eighth of the principal at 10% per annum?
a. $1\frac{3}{4}$ years ☐ b. $1\frac{1}{4}$ years ☐ c. $2\frac{1}{4}$ years ☐ d. $2\frac{3}{4}$ years ☐
5. If 4 pencils are bought for ₹1 and sold at the rate of 3 pencils for ₹1, then the gain % is
a. 33% ☐ b. $\frac{100}{3}\%$ ☐ c. $\frac{50}{3}\%$ ☐ d. 30% ☐
6. The rational number to be added to $\frac{-8}{19}$ to get $\frac{-29}{57}$ is
a. $\frac{-5}{19}$ ☐ b. $\frac{-5}{57}$ ☐ c. $\frac{5}{57}$ ☐ d. $\frac{5}{19}$ ☐
7. $1 \div \frac{1}{3}$ equals
a. $\frac{1}{3}$ ☐ b. 3 ☐ c. $\frac{4}{3}$ ☐ d. $\frac{3}{4}$ ☐
8. If $-\frac{35}{81} \div x = \frac{10}{9}$, then x equals
a. $\frac{9}{10}$ ☐ b. $\frac{-9}{10}$ ☐ c. $\frac{-7}{18}$ ☐ d. $\frac{7}{18}$ ☐

D. Long-answer type questions

1. The sum of the squares of three numbers which are in the ratio $1:2:3$ is 350. What are the numbers?
2. A grocer purchases 20 crates of eggs (each crate having 20 eggs) for ₹400. A total of 25 eggs were found to be broken. If he sells all the remaining eggs for ₹1.20 each, then find his loss or profit per cent.
3. A man invested ₹50000, so that he gets ₹102500 at the end of certain number of years. The rate of interest is 21%. What is the simple interest he will get? What is the period for which the sum is deposited?

5. Aaryav scores 25% more than Armaan. Find out how much per cent less are Armaan's marks than Aaryav.
6. Divide the sum of $\frac{12}{7}$ and $\frac{-13}{5}$ by the reciprocal of the product of $\frac{-7}{31}$ and -2 .

B. Rational numbers can be added, subtracted, multiplied or divided. An additive inverse is a rational number, which when added to the given rational number gives the sum zero. A multiplicative inverse is the reciprocal of a non-zero rational number. The product of a rational number and its multiplicative inverse is always 1.

1. The sum of $\frac{9}{4}$ and $\frac{-5}{10}$ is

a. $\frac{7}{10}$.

b. $\frac{7}{4}$.

c. $\frac{14}{20}$.

d. $\frac{13}{4}$.

2. What should be subtracted from $\frac{9}{4}$ to get $\frac{9}{15}$?

a. $\frac{33}{20}$

b. $\frac{9}{15}$

c. $\frac{-18}{30}$

d. $\frac{-6}{5}$

3. If cost of 1 kg cotton is ₹ $12\frac{3}{5}$, find the price of $\frac{115}{3}$ kg of cotton.

a. ₹ $\frac{65}{15}$

b. ₹ 483

c. ₹ 225

d. ₹ $\frac{230}{30}$

4. The product of two rational numbers is $\frac{-45}{15}$. If one of them is $\frac{7}{3}$, the other is

a. $\frac{7}{5}$.

b. $\frac{-49}{25}$.

c. $\frac{-7}{5}$.

d. $\frac{-9}{7}$.

5. $\left(\frac{7}{3} \times \frac{-15}{21} + \frac{3}{4}\right) \div \left(\frac{16}{3} - \frac{-5}{4}\right) =$

a. $\frac{-11}{79}$

b. $\frac{-11}{12}$

c. $\frac{1}{79}$

d. $\frac{11}{79}$