

$$(v) -85 \div 25\frac{1}{2}$$

$$(vi) 3\frac{1}{4} \div \left(\frac{7}{8} + \frac{3}{4}\right)$$

8. Find five rational numbers between $-\frac{2}{5}$ and $\frac{1}{2}$.

9. Find 20 rational numbers between 0.5 and 0.6.

10. The product of two rational numbers is $\frac{-5}{12}$. If one of the numbers is $\frac{-35}{18}$, find the other.

Multiple Choice Questions ?

1. $\frac{-6}{-17}$ is

- (i) a positive rational number.
- (ii) a negative rational number.
- (iii) neither a positive nor a negative rational number.
- (iv) either a positive or a negative rational number.

2. Rational number $\frac{-17}{3}$ lies between

- (i) 5 and 6
- (ii) 0 and -1
- (iii) -5 and -6
- (iv) -6 and -7

3. Rational number between $\frac{1}{3}$ and $\frac{1}{2}$ is

- (i) $\frac{5}{12}$
- (ii) $\frac{23}{48}$
- (iii) $\frac{3}{8}$
- (iv) $\frac{1}{5}$

4. If $\frac{1}{x} - \frac{1}{y} = \frac{1}{z}$, then z is equal to

- (i) $y - x$
- (ii) $x - y$
- (iii) $\frac{y-x}{xy}$
- (iv) $\frac{xy}{y-x}$

5. The property of rational numbers illustrated by the mathematical expression

$$\left(\frac{6}{13} + \frac{-4}{5}\right) \times \frac{5}{11} = \left(\frac{6}{13} \times \frac{5}{11}\right) + \left(\frac{-4}{5} \times \frac{5}{11}\right) \text{ is}$$

(i) commutativity of multiplication.

(ii) associativity of addition.

(iii) associativity of multiplication.

(iv) distributivity of multiplication over addition.

6. The sum of multiplicative inverse and additive inverse of 3 is

- (i) $\frac{8}{3}$
- (ii) $\frac{-8}{3}$
- (iii) $\frac{3}{8}$
- (iv) $\frac{-3}{8}$

7. The standard form of $\frac{144}{156}$ is

- (i) $\frac{-12}{13}$
- (ii) $\frac{12}{-13}$
- (iii) $\frac{12}{13}$
- (iv) $\frac{-12}{-13}$

8. The multiplicative inverse of $\frac{-13}{18}$ is

- (i) $\frac{13}{18}$
- (ii) $\frac{18}{13}$
- (iii) $\frac{-13}{18}$
- (iv) $\frac{18}{-13}$

9. The additive inverse of $\frac{-19}{-21}$ is

- (i) $\frac{-19}{21}$
- (ii) $\frac{19}{21}$
- (iii) $\frac{21}{19}$
- (iv) $\frac{-21}{19}$

10. By which of the following should the rational number $-2\frac{1}{3}$ be multiplied to get $-8\frac{3}{4}$ as a product?

- (i) $-4\frac{3}{4}$
- (ii) $3\frac{3}{4}$
- (iii) $-3\frac{3}{4}$
- (iv) $4\frac{3}{4}$

Mental Maths

1. Find: $735 + 469 + 265 + 531$

2. Solve: $\frac{11}{13} \times \frac{14}{33} + \frac{19}{33} \times \frac{11}{13}$

3. The missing rational number in the series $\frac{4}{9}, \frac{9}{20}, \dots, \frac{45}{100}$ is

- (i) $\frac{17}{40}$
- (ii) $\frac{19}{42}$
- (iii) $\frac{20}{45}$
- (iv) $\frac{29}{53}$

Multiple Choice Questions ?

1. The square of 2.9 is equal to
(i) 8.41 (ii) 0.841 (iii) 0.0841 (iv) 84.1
2. Which of the following numbers is not a perfect square?
(i) 1521 (ii) 1623 (iii) 1600 (iv) 2601
3. Which of the following is a square of an even number?
(i) 2601 (ii) 5929 (iii) 3969 (iv) 1600
4. Which of the following is a square of an odd number?
(i) 1681 (ii) 2500 (iii) 25600 (iv) 0
5. Which of the following can't be the ones digit of a square number?
(i) 0 (ii) 6 (iii) 8 (iv) 9
6. $1 + 3 + 5 + 7 + 9 + 11 + 13 + 15 + 17$ is equal to
(i) 64 (ii) 81 (iii) 99 (iv) 100
7. The least number to be added to 251 to make it a perfect square is
(i) 5 (ii) 4 (iii) 3 (iv) 1
8. The least number to be subtracted from 200 to make it a perfect square is
(i) 0 (ii) 1 (iii) 3 (iv) 4
9. The number of digits in the square root of 14641 is
(i) 1 (ii) 2 (iii) 3 (iv) 6
10. The value of $19^2 - 18^2$ is equal to
(i) 36 (ii) 0 (iii) 1 (iv) 37

Mental Maths

1. Find the square root of the number $2 \times 3 \times 5 \times 3 \times 5 \times 2 \times 4 \times 4$.
2. What is the possible number of digits in the square of a 2-digit number?
3. Express 13^2 as the sum of consecutive odd numbers.
4. The value of $\sqrt{0.01}$ is equal to

(iv) 1

4. Find the cube roots of the following numbers:
 (i) 53 (ii) 69 (iii) 86
5. Which of the following numbers are cubes of negative integers?
 (i) -4913 (ii) -3456 (iii) -9261
6. Find the cube roots of the following numbers by estimation.

9. Evaluate:

(i) $\left\{ \sqrt{3^2 + 4^2} \right\}^3$ (ii) $\left\{ \sqrt{5^2 + 12^2} \right\}^3$

10. The area of one face of a cube is 36 sq. m. What is its volume?

Multiple Choice Questions ?

- The cube of a 1-digit number will contain
 (i) 1 digit (ii) 2 digits
 (iii) 3 digits (iv) 1, 2 or 3 digits
- If a number has 0 in its ones place, then the number of zeros its cube will have
 (i) 1 (ii) 2 (iii) 3 (iv) 4
- The ones digit of the cube of 1624 is
 (i) 4 (ii) 6 (iii) 8 (iv) 2
- If the ones digit of the cube of a number is 2, then the ones digit of its cube root is
 (i) 2 (ii) 4 (iii) 6 (iv) 8
- Which of the following numbers is a perfect cube?
 (i) 144 (ii) 256 (iii) 496 (iv) 512
- The cube of -1.4 is
 (i) -2744 (ii) -2.744
 (iii) -27.41 (iv) -0.002744
- The number which is not a perfect cube is
 (i) 0.512 (ii) 5.12
 (iii) 512 (iv) 0.000512
- The value of $\sqrt[3]{343} \times \sqrt[3]{-729}$ is
 (i) 36 (ii) -36 (iii) -63 (iv) 63

9. The prime factorisation of a number is $2 \times 2 \times 2 \times 5 \times 5 \times 7 \times 7 \times 7 \times 11 \times 11$. By which number should it be multiplied to make it a perfect cube?

(i) 5

(ii) 11

(iii) $5 \times 5 \times 11$

(iv) 5×11

10. The cube root of 0.001331 is

(i) -11

(ii) -0.11

(iii) 0.11

(iv)

Mental Maths

1. Write true (T) or false (F) for the following statements.

(i) 492 is a perfect cube.

(iii) There is no perfect cube which ends in 4.

(v) If a^2 ends in 4, then a^3 ends in 8.

(vii) If a and b are integers such that $a^2 > b^2$, then $a^3 > b^3$.

(viii) No perfect cube can end with exactly two zeros.

(ii) 110592 is not a perfect cube.

(iv) If a divides b , then a^3 divides b^3 .

(vi) If a^2 ends in 5, then a^3 ends in 5.

2. The cube root of 134217728 is

(i) always positive

(ii) always negative

(iii) positive and negative

(iv) none of these

3. The cube root of -0.003375 is

(i) always positive

(ii) always negative

(iii) positive and negative

(iv) none of these

4. The value of $\frac{\sqrt[3]{125} + \sqrt[3]{64}}{\sqrt[3]{125} - \sqrt[3]{64}}$ is

(i) 1

(ii) -1

(iii) $\frac{1}{9}$

(iv) 9

4. The price of an article is reduced by 10% from its original price of the article, if the reduced price is ₹ 4000.
5. If an article is sold at a profit of 4% instead of 6% loss, a man gets ₹ 60 more. Find the actual CP.
6. A man buys an agricultural land for ₹ 32,00,000. He sells 25% of the land at a profit of 15% and another 20% at a profit of 10%. Determine the price at which he should sell the remaining land, so as to earn an overall profit of 40%.

- of VAT. Find the discount on the price of goods.
10. A cycle merchant allows 25% commission on the advertised price and still makes a profit of 10%. If he gains ₹ 60 over the sale of one cycle, find the advertised price.

Multiple Choice Questions ?

1. If x is 75% of y , the percentage of y to x is
- (i) $133\frac{1}{3}\%$ (ii) 125%
(iii) 25% (iv) $33\frac{1}{3}\%$
2. $5\frac{1}{2}\%$ of ₹ 2000 is
- (i) ₹ 100 (ii) ₹ 110 (iii) ₹ 150 (iv) ₹ 200
3. If $x > y$, then the percentage by which $x > y$ is
- (i) $\frac{x-y}{x}$ (ii) $\frac{100(x-y)}{x}$
(iii) $\frac{100(x-y)}{y}$ (iv) $\frac{x-y}{y}$
4. Nirmal got 10% more marks than Sudha. Then Sudha got
- (i) $9\frac{1}{11}\%$ less marks than Nirmal
(ii) 10% less marks than Nirmal
(iii) 9% less marks than Nirmal
(iv) 11% less marks than Nirmal
5. If $x\%$ of 200 = 50, then the value of x is
- (i) 20 (ii) 25 (iii) 30 (iv) 35
6. An article costing ₹ 1500 was sold for ₹ 1230. The loss per cent is
- (i) 10% (ii) 15% (iii) 18% (iv) 20%
7. On selling an article for ₹ 100.8 a shopkeeper gains 12%. The cost price of the article is
- (i) ₹ 80 (ii) ₹ 88 (iii) ₹ 90 (iv) ₹ 96

8. If the MP on an article is ₹ 880 and discount offered is 5%, then SP of the article is

- (i) ₹ 836 (ii) ₹ 840 (iii) ₹ 844 (iv) ₹ 860

9. The selling price of an article is one and half times of its CP. Then, profit per cent is

- (i) 75% (ii) 50% (iii) 25% (iv) 105%

10. The SP of an article is ₹ 150 and gain is ₹ 30. Then gain % is

- (i) 25% (ii) 20% (iii) 18% (iv) 20%

Mental Maths

1. If 10% of $x = 50$, then $x =$ _____.

3. 200 is 20% of which number?

2. 5000 is 1% of the number _____.

4. 61% of which number is 122?

CHALLENGE

1. Rani's weight is 25% that of Meena and 40% that of Tara. What percentage of Tara's weight is Meena's weight?
2. By reducing the selling price of an article by ₹ 100, a gain of 5% turns a loss of 5%. Find the original selling price of the article?
3. A man sold a suitcase at 8% gain. Had he purchased it for 5% less and sold it for ₹ 36 less than what he actually sold it for, he would have gained $12\frac{1}{2}\%$. For how much did the man purchase the suitcase?



Multiple Choice Questions ?

- The distance covered by a car in 36 minutes when the speed of the car is 60 km/h, is
 (i) 60 km (ii) 54 km
 (iii) 45 km (iv) 36 km
- If the cost of 20 roll sheets is ₹ 20, then the cost of 1 ream of roll sheet is
 [Given 1 ream = 500 roll sheets]
 (i) ₹ 100 (ii) ₹ 200
 (iii) ₹ 500 (iv) ₹ 800
- If 10 pens cost ₹ 300, then the cost of a dozen of pens is
 (i) ₹ 360 (ii) ₹ 375 (iii) ₹ 390 (iv) ₹ 400
- An aeroplane flies 2160 km in 3 hours. At the same rate, time taken to fly 5760 km is
 (i) 7 hours (ii) 7.5 hours
 (iii) 8 hours (iv) 9 hours
- If 3 girls can do a piece of work in 2 days, then one girl can do it in
 (i) 6 days (ii) 4 days (iii) 2 days (iv) 1 day
- If 6 men can build a wall in 8 days, how many men can build it in 12 days?
 (i) 6 (ii) 8 (iii) 4 (iv) 3
- Two quantities x and y are related in such a way that increase in x causes proportionate decrease in y (and vice versa). If their product remains constant, then x, y are said to be
 (i) directly proportional
 (ii) inversely proportional
 (iii) independent (iv) none of these
- The rate of working of A and B are in the ratio 3 : 4. The number of days taken by them to finish the work will be in the ratio
 (i) 3 : 1 (ii) 3 : 4 (iii) 4 : 3 (iv) 1 : 3
- Three pumps working 8 hours a day can empty a tank in 2 days. The number of hours in a day 4 pumps must work to empty the tank in 1 day is
 (i) 13 hours (ii) 12 hours
 (iii) 10 hours (iv) 9 hours
- If x men can do a job in p days, then $(x + y)$ men can do the job in
 (i) $\frac{px}{x + y}$ days (ii) px days
 (iii) $\frac{1}{x + y}$ days (iv) $(a + x)$ days

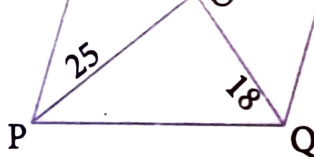


Fig. 14.41



Fig. 14.43

Multiple Choice Questions ?

- Three angles of a quadrilateral are 100° , 75° and 105° . The fourth angle is
 (i) 50° (ii) 60° (iii) 70° (iv) 80°
- Three angles of a quadrilateral are 75° , 90° and 75° . The fourth angle is
 (i) 95° (ii) 90° (iii) 105° (iv) 120°
- In a quadrilateral ABCD, the angles, A, B, C, D are in the ratio 1 : 2 : 3 : 4. The measure of angles are
 (i) $30^\circ, 60^\circ, 90^\circ, 120^\circ$ (ii) $36^\circ, 72^\circ, 108^\circ, 144^\circ$
 (iii) $45^\circ, 90^\circ, 135^\circ, 180^\circ$ (iv) $36^\circ, 72^\circ, 109^\circ, 154^\circ$
- If angles A, B, C and D of a quadrilateral ABCD, taken in order are in the ratio 3 : 7 : 6 : 4. Then ABCD is a
 (i) rhombus (ii) parallelogram
 (iii) trapezium (iv) kite
- A quadrilateral having one pair of opposite sides parallel is called a
 (i) square (ii) parallelogram
 (iii) rectangle (iv) trapezium
- A rhombus is a square, if
 (i) all sides are equal
 (ii) opposite angles are equal
 (iii) diagonals are perpendicular bisector to each other
 (iv) diagonals are equal
- If the diagonals of a quadrilateral are equal and bisect each other at right angles, then it is a
 (i) rectangle (ii) parallelogram
 (iii) rhombus (iv) square

8. An equiangular parallelogram is known as
 (i) rectangle (ii) rhombus
 (iii) kite (iv) trapezium

9. In which of the quadrilaterals, only one pair of opposite sides are parallel?
 (i) Rectangle (ii) Square

(iii) Kite

(iv) Trapezium

10. In which of the quadrilaterals, only one pair of opposite angles are equal?

(i) Kite

(ii) Rhombus

(iii) Isosceles trapezium (iv) Square

Mental Maths

1. In Fig. 14.44, PQRS is a parallelogram in which a pair of opposite angles are given. Find the value of x .
2. Can the following figures be parallelogram? Justify your answer.

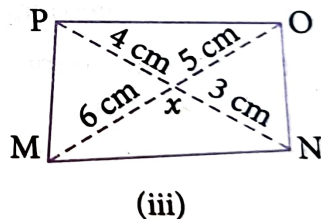
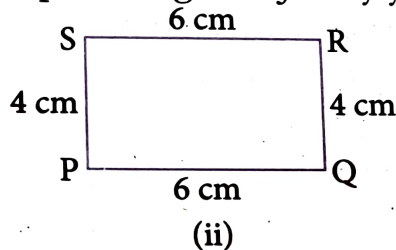
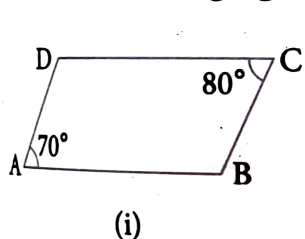
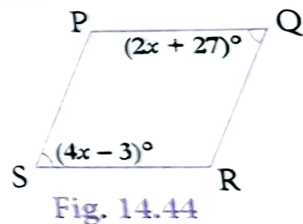


Fig. 14.45



Multiple Choice Questions ?

- Which of the following is not a linear equation?
 - $y + 3 = 2y - 1$
 - $y^2 + 1 = 5$
 - $y - \left(\frac{y}{2} + 4\right) = y$
 - $4y - 1 = 10$
- The solution of the equation $ay + b = 0$ is
 - $-\frac{b}{a}$
 - $\frac{b}{a}$
 - $\frac{a}{b}$
 - $-\frac{a}{b}$
- The solution of the equation $3x - 9 = 0$ is
 - -3
 - $\frac{1}{3}$
 - $-\frac{1}{3}$
 - 3
- 1 is the solution of the equation
 - $x + 1 = 1$
 - $x - 1 = 1$
 - $x + 1 = 2$
 - $x - 1 = 2$
- The solution of the equation $\frac{2}{3}(6x - 1) = 2$ is
 - $\frac{2}{3}$
 - $-\frac{2}{3}$
 - $\frac{3}{2}$
 - $-\frac{3}{2}$
- The solution of the equation $4x - \frac{2}{3} = \frac{25}{3} + x$ is
 - 2
 - 3
 - 4
 - 6
- If $b \neq d$, then $\frac{ax+b}{cx+d} = \frac{b}{d}$, if
 - $a = b = 0$
 - $a = c = 0$
 - $x = 0$
 - None
- The solution of the equation $2(x - 3) + \frac{1}{3}(2x - 5) = 3$ is
 - 0
 - 2
 - 4
 - 6
- The value of x for which $\frac{2x-3}{3x+2} = \frac{-2}{3}$ is
 - $\frac{5}{10}$
 - $\frac{5}{11}$
 - $\frac{11}{5}$
 - $\frac{5}{12}$
- $\frac{1}{x-1} = \frac{2}{x-2}$ is satisfied by
 - $x = 1$ or 2
 - $x = 1$
 - $x = 2$
 - $x = 0$