

QUESTION BANK

CLASS VIII

MATHEMATICS

RATIONAL NUMBERS

PART : 1

Fill in the blanks

1. _____ has no reciprocal.
2. There are _____ numbers of a rational numbers between any two numbers.
3. The product of a number and its multiplicative inverse is _____.
4. Sum of a number and its negative is _____.
5. _____ is the multiplicative identity.
6. _____ is the additive identity.
7. Additive inverse of $\frac{3}{7}$ is _____.
8. Multiplicative inverse of -2 is _____.
9. The numbers _____ and _____ are their own reciprocals.

II. Find the value of the following:-

i) $\frac{-21}{25} \times \frac{15}{-49} \times \frac{-35}{9}$

ii) $\frac{-34}{23} \times \left(\frac{7}{9} + \frac{4}{7} \right)$

III. Verify $-(-x) = x$ by taking $x = \frac{-2}{5}$

IV. Represent $\frac{-3}{7}$ and $\frac{9}{7}$ on a number line

PART : 2

1. Tick the correct alternative :

i. If a is an integer, which of the following is always true

- a) $|a| = a$ b) $|a| < a$ c) $|a| > a$ d) $|a| > a$

ii. Which of the following rational numbers lies between $\frac{-1}{4}$ and $\frac{1}{4}$?

- a) $\frac{-1}{5}$ b) $\frac{-2}{5}$ c) $\frac{-1}{3}$ d) $\frac{1}{3}$

iii. $\frac{-7}{8} - \left(\frac{-3}{5}\right)$ is

- a) $\frac{-10}{40}$ b) $\frac{-11}{40}$ c) $\frac{-69}{40}$ d) $\frac{11}{40}$

iv. Which of the following is a false statement?

- a) $a + b$ is a rational number c) $-a + a = -1$
b) $(a + b) + c \neq a + (b + c)$ d) $(a - b) + c \neq a + \left(\frac{-b}{c}\right)$

2. Find 4 rational numbers between $\frac{1}{2}$ and $\frac{3}{4}$.

3. Evaluate : $\left(\frac{2}{11} \times \frac{-22}{15}\right) + \left(\frac{-1}{6} \times \frac{3}{4}\right) + \left(\frac{-1}{21} \times \frac{-3}{5}\right)$

4. Subtract the sum of $\frac{-4}{5}$ and $\frac{1}{4}$ from 1.

5. Evaluate using distributive property : $\frac{9}{5} \times \left(\frac{-3}{11}\right) + \frac{1}{5} \times \left(\frac{-3}{11}\right)$

6. The product of two rational numbers is $\frac{-16}{28}$. If one of them is $\frac{-18}{7}$, find the other.

7. Divide the sum of $\frac{5}{6}$ and $\frac{-4}{5}$ by their product.

8. Bhargav had a piece of ribbon $6\frac{3}{4}$ m long. She used $2\frac{5}{12}$ m from it. How much ribbon was left with her?

9. The area of a rectangle is $118\frac{4}{5}$ sq m. If its breadth is $6\frac{3}{5}$ m, find its length.

10. One sixth of the students of a class joined the sports club. Three fifth of these students opted to play table tennis. If 6 students play table tennis, how many students are there in the class?

11. Write 5 rational numbers between $\frac{-2}{3}$ and $\frac{7}{12}$.

12. If $x = \frac{-2}{5}$ and $y = \frac{1}{4}$ find $(x + y) + (x - y)$.

13. What should be subtracted from the product of $\frac{3}{7}$ and $\frac{2}{5}$ to get $\frac{-4}{35}$?

14. One coin weighs $5\frac{3}{4}$ g. Find the weight of 12 such coins.

15. Find at least four rational numbers between $\frac{-1}{2}$ and $\frac{1}{2}$.

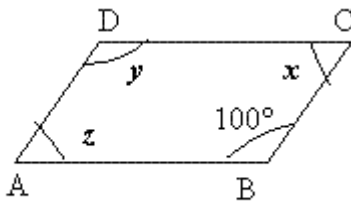
In the above question, one of the values is positive and the other one is negative. In the same manner, some people are optimistic (thinking positive) and others are pessimistic (thinking negative). In which category do you belong to?

Topic: Understanding quadrilaterals

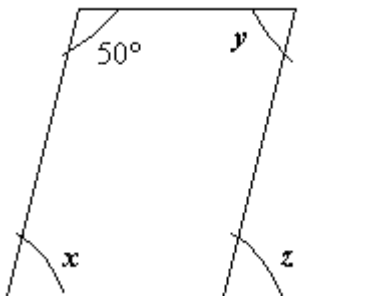
1. In a quadrilateral ABCD, the angles A, B, C and D are in the ratio 1: 2: 3: 4. Find the measure of each angle of the quadrilateral.
2. The interior angle of a regular is 108° . Find the number of sides of the polygon.
3. The exterior angle of a regular polygon is one-fifth of its interior angle. How many sides have the polygon?
4. The measures of two adjacent angles of a parallelogram are in the ratio 4: 5. Find the measure of each of the angles of the parallelogram.
5. If an exterior angle of a regular polygon is 45° , then find the number of its sides.
6. If an interior angle of a regular polygon is 162° , then find the number of its sides.
7. Find the measure of an interior angle of a regular polygon having 15 sides.
8. An angle of a parallelogram measures 70° . Find the measure of the remaining three angles.
9. One angle of a quadrilateral is 111° and the remaining three angles are equal. Find three angles.
10. What is the ratio of the interior angles of a pentagon and a decagon?

11. Consider the following parallelograms. Find the values of the unknowns x, y, z.

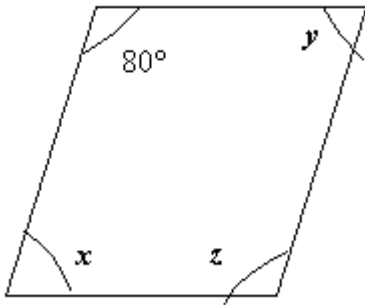
(i)



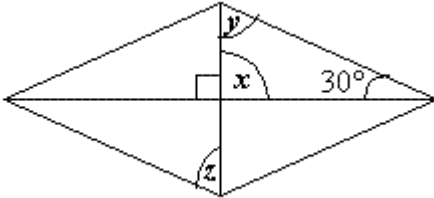
(ii)



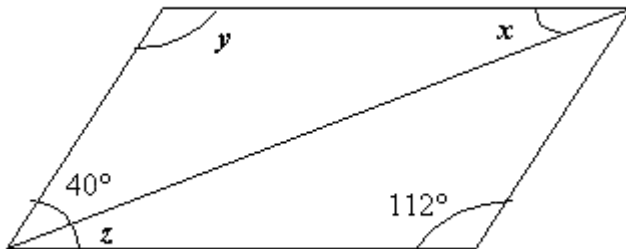
(iii)



(iv)



(v)



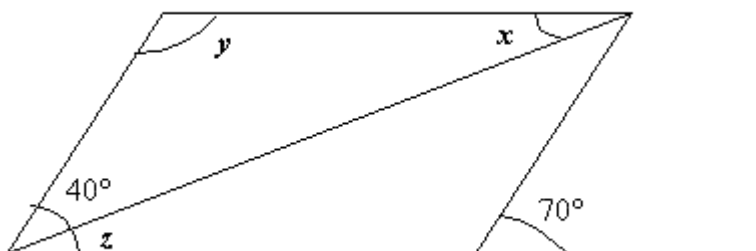
12. Can a quadrilateral ABCD be a parallelogram if

- (i) $\angle D + \angle B = 180^\circ$?
- (ii) $AB = DC = 8 \text{ cm}$, $AD = 4 \text{ cm}$ and $BC = 4.4 \text{ cm}$?
- (iii) $\angle A = 70^\circ$ and $\angle C = 65^\circ$?

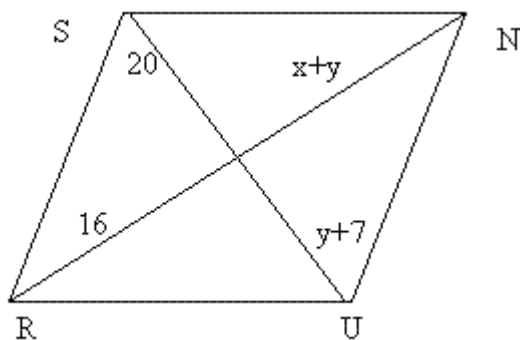
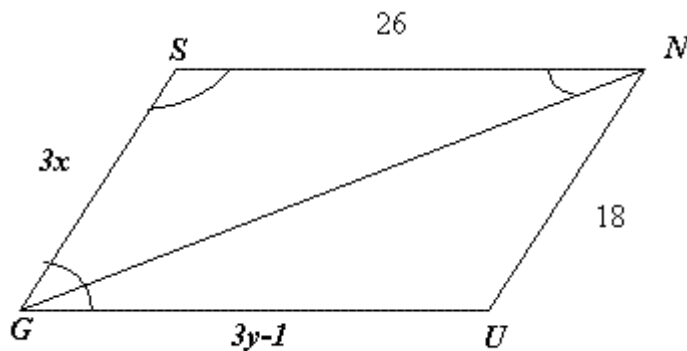
13. The measures of two adjacent angles of a parallelogram are in the ratio 3:2. Find the measure of each of the angles of the parallelogram.

14. Two adjacent angles of a parallelogram have equal measure. Find the measure of each of the angles of the parallelogram.

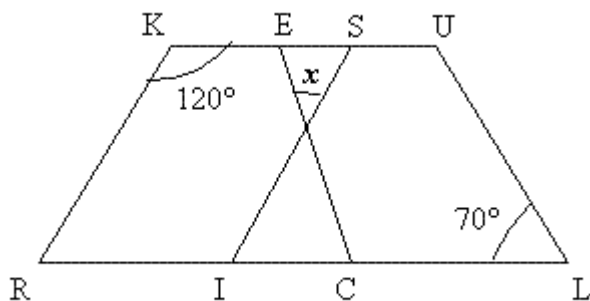
15. The adjacent figure HOPE is a parallelogram. Find the angle measures x , y and z . State the properties you use to find them.



16. The following figures GUNS and RUNS are parallelograms. Find x and y . (Lengths are in cm)



17. In the given figure both RISK and CLUE are parallelograms. Find the value of x .



18. The sum of the angles of a polygon with n – sides is _____.

19. The external angle of a regular polygon is 200 . How many sides does it have ? What is the measure of each interior angle? What is the total measure of its angles.

20. Is it possible to have a regular polygon with measure of each exterior angle as 580 ? Why? can it be an interior angle of a regular polygon ?

21. Find the measure of each exterior angle of a (i) Regular octagon (ii) Regular Decagon

22. Find the perimeter of a parallelogram with sides 9cm and 5cm.

23. Find the perimeter of a rhombus whose diagonals are 16cm and 12cm

24. The adjacent angles of a parallelogram are in the ratio 5:4 . Find all the angles.

25. If one of the angles of a parallelogram is a right angle, prove that it is a rectangle.

26. If all the angles of a parallelogram are equal. Prove that it is a rectangle.

27. Find the length of the diagonal of a rectangle whose length is 15cm and breadth is 8cm.

28. A square is a convex polygon. Explain why ?

29. The measure of two adjacent angles of a quadrilateral are 110 and 50 and the other two acute angles are equal. Find the measure of each angle.

30. The five angles of a pentagon are in the ratio 5 : 6 : 7 : 8 :10. Find all the angles.

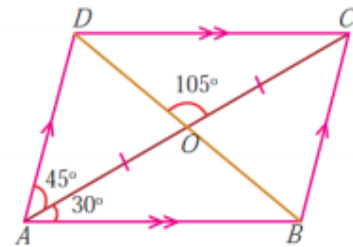
IMPORTANT QUESTIONS

1. In a quadrilateral $ABCD$, the angles $\angle A$, $\angle B$, $\angle C$ and $\angle D$ are in the ratio 2:3:4:6. Find the measure of each angle of the quadrilateral.

2. Suppose $ABCD$ is a parallelogram in which $\angle A = 108^\circ$. Calculate $\angle B$, $\angle C$ and $\angle D$.

3. In the figure at right, $ABCD$ is a parallelogram $\angle BAO = 30^\circ$, $\angle DAO = 45^\circ$ and $\angle COD = 105^\circ$. Calculate

(i) $\angle ABO$ (ii) $\angle ODC$ (iii) $\angle ACB$ (iv) $\angle CBD$

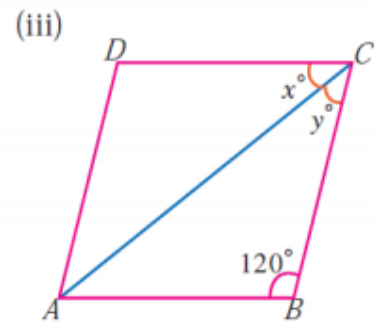
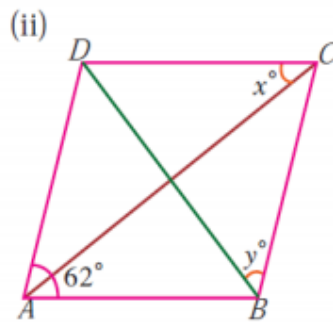
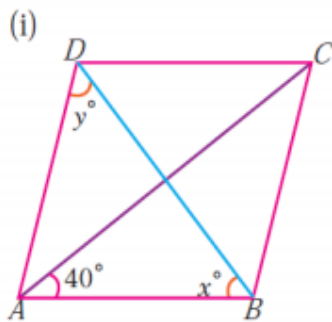


4. Find the measure of each angle of a parallelogram, if larger angle is 30° less than twice the smaller angle.

5. Suppose $ABCD$ is a parallelogram in which $AB = 9$ cm and its perimeter is 30 cm. Find the length of each side of the parallelogram.

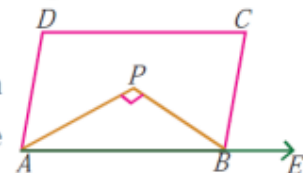
6. The length of the diagonals of a rhombus are 24 cm and 18 cm. Find the length of each side of the rhombus.

7. In the following figures, $ABCD$ is a rhombus. Find the values of x and y .



8. The side of a rhombus is 10 cm and the length of one of the diagonals is 12 cm. Find the length of the other diagonal.

9. In the figure at the right, $ABCD$ is a parallelogram in which the bisectors of $\angle A$ and $\angle B$ intersect at the point P . Prove that $\angle APB = 90^\circ$.



LINEAR EQUATION IN ONE VARIABLE:

Type :1

1. Solve for x : i. $4x - 7 - (x+4) = 3x + 4 - (2x - 1)$ ii. $17 (2 - x) - 5 (x + 12) = 81 - 7x$
2. The sum of three consecutive even numbers is 30. Find the numbers.
3. The sum of three consecutive odd numbers is 63. Find the numbers.
4. The sum of two twin primes is 60. Find the two prime numbers.
5. The measures of the angles of a triangle are in the ratio 1 : 2 : 3. Find the angles.
6. The numerator of a fraction is 3 less than its denominator. If we add 1 to both numerator and denominator, it becomes equal to . Find the fraction.
7. Renu's mother is four times as old as Renu. After 5 years her mother will be three times as old as she will then be. Find their present ages.
8. The sum of four consecutive multiples of 7 is 70. Find these multiples.
9. The sum of two numbers is 50. If the larger number is divided by the smaller number we get . Find the numbers.
10. The perimeter of a triangle is 49 cm. One side is 7cm longer than another side and 5cm shorter than the third side. Find the sides.
11. In a quadrilateral ABCD, $A = (2x + 4)^\circ$, $B = (2x - 13)^\circ$, $C = (3x + 11)^\circ$ and $D = (4x - 5)^\circ$. Find the measures of the angles.
12. Half of the number of boys of Class 8 B went to the football ground to play. One-fourth of the number of boys went to the Library to take books. Remaining 10 boys went to the 3rd Language room. Find the number of boys of Class 8 B.

Type: 2

1. Find the solution of $\frac{3x+5}{2x+1} = \frac{1}{3}$
2. Find the solution of $\frac{x+6}{4} + \frac{x-3}{5} = \frac{5x-4}{8}$
3. Solve: $\frac{x}{4} + \frac{x}{6} = x - 7$
4. Solve: $\frac{2}{3}x + 1 = \frac{7}{3}$
5. Solve: $\frac{x}{3} + \frac{5}{2} = \frac{-3}{2}$
6. Solve: $\frac{15}{4} - 7x = 9$

7. Solve: $x = \frac{4}{5}(x+10)$
8. Solve: $\frac{2x}{3} + 1 = \frac{7x}{15} + 3$
9. Solve: $2y + \frac{5}{3} = \frac{26}{3} - y$
10. Solve: $3m - 5m - \frac{8}{5}$
11. Solve: $5x + \frac{7}{2} = \frac{3}{2}x - 14$
12. The perimeter of a rectangular swimming pool is 154 m. Its length is 2 m more than twice its breadth. What are the length and the breadth of the pool?
13. The base of an isosceles triangle is $\frac{4}{3}$ cm. The perimeter of the triangle is $4\frac{2}{15}$ cm. What is the length of either of the remaining equal sides?
14. Sum of two numbers is 95. If one exceeds the other by 15, find the numbers.
15. Two numbers are in the ratio 5:3. If they differ by 18, what are the numbers?
16. Three consecutive integers add up to 51. What are these integers?
17. The sum of three consecutive multiples of 8 is 888. Find the multiples.
18. Three consecutive integers are such that when they are taken in increasing order and multiplied by 2, 3 and 4 respectively, they add up to 74. Find these numbers.
19. The ages of Rahul and Haroon are in the ratio 5:7. Four years later the sum of their ages will be 56 years. What are their present ages?
20. The number of boys and girls in a class are in the ratio 7:5. The number of boys is 8 more than the number of girls. What is the total class strength?
21. Fifteen years from now Ravi's age will be four times his present age. What is Ravi's present age?
22. A rational number is such that when you multiply it by $\frac{5}{2}$ and add $\frac{2}{3}$ to the product, you get $-\frac{7}{12}$. What is the number?
23. Lakshmi is a cashier in a bank. She has currency notes of denominations Rs 100, Rs 50 and Rs 10, respectively. The ratio of the number of these notes is 2:3:5. The total cash with Lakshmi is Rs 4,00,000. How many notes of each denomination does she have?
24. I have a total of Rs 300 in coins of denomination Re 1, Rs 2 and Rs 5. The number of Rs 2 coins is 3 times the number of Rs 5 coins. The total number of coins is 160. How many coins of each denomination are with me?
25. The organisers of an essay competition decide that a winner in the competition gets a prize of Rs 100 and a participant who does not win gets a prize of Rs 25. The total prize money distributed is Rs 3,000. Find the number of winners, if the total number of participants is 63.
26. Deveshi has a total of Rs 590 as currency notes in the denominations of Rs 50, Rs 20 and Rs 10. The ratio of the number of Rs 50 notes and Rs 20 notes is 3:5. If she has a total of 25 notes, how many notes of each denomination she has?

27. Solve: $\frac{6x+1}{3} + 1 = \frac{x-3}{6}$

28. Solve: $5x - 2(2x - 7) = 2(3x - 1) + \frac{7}{2}$

29. Solve: $\frac{3x-2}{4} - \frac{2x+3}{3} = \frac{2}{3} - x$

30. Solve: $\frac{3x+2}{7} + \frac{4(x+1)}{5} = \frac{2}{3}(2x+1)$

31. Solve: $x - \frac{x-1}{2} = 1 - \frac{x-2}{3}$

32. Solve: $\frac{x}{2} - \frac{3x}{4} + \frac{5x}{6} = 21$

33. Solve: $x + 7 - \frac{8x}{3} = \frac{17}{6} - \frac{5x}{2}$

34. Solve: $\frac{3x+4}{2-6x} = \frac{-2}{5}$

35. Solve: $\frac{7x+4}{x+2} = \frac{-4}{3}$