



ACADEMIC WORLD SCHOOL™
BEMETARA

Class - VIII

Subject - Mathematics

SUMMER ASSIGNMENT -2020-21

Note: Watch the Video Lectures to solve the questions

CHAPTER – 1 (RATIONAL NUMBERS)

EXERCISE 1.1

1. Using appropriate properties find.

(i) $-\frac{2}{3} \times \frac{3}{5} + \frac{5}{2} - \frac{3}{5} \times \frac{1}{6}$

(ii) $\frac{2}{5} \times \left(-\frac{3}{7}\right) - \frac{1}{6} \times \frac{3}{2} + \frac{1}{14} \times \frac{2}{5}$

2. Write the additive inverse of each of the following.

(i) $\frac{2}{8}$

(ii) $-\frac{5}{9}$

(iii) $-\frac{6}{-5}$

(iv) $\frac{2}{-9}$

(v) $\frac{19}{-6}$

3. Verify that $-(-x) = x$ for

(i) $x = \frac{11}{15}$

(ii) $x = -\frac{13}{17}$

4. Find the multiplicative inverse of the following.

(i) -13

(ii) $-\frac{13}{19}$

(iii) $\frac{1}{5}$

(iv) $-\frac{5}{8} \times \frac{-3}{7}$

(v) $-1 \times \frac{-2}{5}$

(vi) -1

5. Name the property under multiplication used in each of the following.

(i) $\frac{-4}{5} \times 1 = 1 \times \frac{-4}{5} = \frac{-4}{5}$

(ii) $-\frac{13}{17} \times \frac{-2}{7} = \frac{-2}{7} \times \frac{-13}{17}$

(iii) $\frac{-19}{29} \times \frac{29}{-19} = 1$

6. Multiply $\frac{6}{13}$ by the reciprocal of $-\frac{7}{16}$.

7. Tell what property allows you to compute $\frac{1}{3} \times \left(6 \times \frac{4}{3}\right)$ as $\left(\frac{1}{3} \times 6\right) \times \frac{4}{3}$.

8. Is $\frac{8}{9}$ the multiplicative inverse of $-1\frac{1}{8}$? Why or why not?

10. Write.

(i) The rational number that does not have a reciprocal.

(ii) The rational numbers that are equal to their reciprocals.

(iii) The rational number that is equal to its negative.

11. Fill in the blanks.

(i) Zero has _____ reciprocal.

(ii) The numbers _____ and _____ are their own reciprocals

(iii) The reciprocal of -5 is _____.

(iv) Reciprocal of $\frac{1}{x}$, where $x \neq 0$ is _____.

(v) The product of two rational numbers is always a _____.

(vi) The reciprocal of a positive rational number is _____.

EXERCISE 1.2

1. Represent these numbers on the number line. (i) $\frac{7}{4}$ (ii) $\frac{-5}{6}$
2. Represent $\frac{-2}{11}$, $\frac{-5}{11}$, $\frac{-9}{11}$ on the number line.
3. Write five rational numbers which are smaller than 2.
4. Find ten rational numbers between $\frac{-2}{5}$ and $\frac{1}{2}$.
5. Find five rational numbers between.
(i) $\frac{2}{3}$ and $\frac{4}{5}$ (ii) $\frac{-3}{2}$ and $\frac{5}{3}$ (iii) $\frac{1}{4}$ and $\frac{1}{2}$
6. Write five rational numbers greater than -2 .
7. Find ten rational numbers between $\frac{3}{5}$ and $\frac{3}{4}$.

CHAPTER – 2 (LINEAR EQUATION IN ONE VARIABLE)

EXERCISE 2.1

Solve the following equations.

1. $x - 2 = 7$
2. $y + 3 = 10$
3. $6 = z + 2$
4. $\frac{3}{7} + x = \frac{17}{7}$
5. $6x = 12$
6. $\frac{t}{5} = 10$
7. $\frac{2x}{2} = 18$
8. $1.6 = \frac{y}{1.5}$
9. $7x - 9 = 16$
10. $14y - 8 = 13$
11. $17 + 6p = 9$
12. $\frac{x}{3} + 1 = \frac{7}{15}$

EXERCISE 2.2

1. If you subtract $\frac{1}{2}$ from a number and multiply the result by $\frac{1}{2}$, you get $\frac{1}{8}$. What is the number?
2. 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?
3. 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?
4. Sum of two numbers is 95. If one exceeds the other by 15, find the numbers.
5. Two numbers are in the ratio 5:3. If they differ by 18, what are the numbers?
6. Three consecutive integers add up to 51. What are these integers?
7. The sum of three consecutive multiples of 8 is 888. Find the multiples.

8. 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.
9. 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?
10. 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?
11. Baichung's father is 26 years younger than Baichung's grandfather and 29 years older than Baichung. The sum of the ages of all the three is 135 years. What is the age of each one of them?
12. Fifteen years from now Ravi's age will be four times his present age. What is Ravi's present age?
13. 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?
14. Lakshmi is a cashier in a bank. She has currency notes of denominations ₹ 100, ₹ 50 and ₹ 10, respectively. The ratio of the number of these notes is 2:3:5. The total cash with Lakshmi is ₹ 4,00,000. How many notes of each denomination does she have?
15. I have a total of ₹ 300 in coins of denomination ₹ 1, ₹ 2 and ₹ 5. The number of ₹ 2 coins is 3 times the number of ₹ 5 coins. The total number of coins is 160. How many coins of each denomination are with me?
16. The organisers of an essay competition decide that a winner in the competition gets a prize of ₹ 100 and a participant who does not win gets a prize of ₹ 25. The total prize money distributed is ₹ 3,000. Find the number of winners, if the total number of participants is 63.

EXERCISE 2.3

Solve the following equations and check your results.

1. $3x = 2x + 18$
2. $5t - 3 = 3t - 5$
3. $5x + 9 = 5 + 3x$
4. $4z + 3 = 6 + 2z$
5. $2x - 1 = 14 - x$
6. $8x + 4 = 3(x - 1) + 7$
7. $x = \frac{4}{5}(x + 10)$
8. $\frac{2x}{3} + 1 = \frac{7x}{15} + 3$
9. $2y + \frac{5}{3} = \frac{26}{3} - y$
10. $3m = 5m - \frac{8}{5}$

EXERCISE 2.4

1. Amina thinks of a number and subtracts $\frac{5}{2}$ from it. She multiplies the result by 8. The result now obtained is 3 times the same number she thought of. What is the number?
2. A positive number is 5 times another number. If 21 is added to both the numbers, then one of the new numbers becomes twice the other new number. What are the numbers?
3. Sum of the digits of a two-digit number is 9. When we interchange the digits, it is found that the resulting new number is greater than the original number by 27. What is the two-digit number?

- One of the two digits of a two digit number is three times the other digit. If you interchange the digits of this two-digit number and add the resulting number to the original number, you get 88. What is the original number?
- Shobo's mother's present age is six times Shobo's present age. Shobo's age five years from now will be one third of his mother's present age. What are their present ages?
- There is a narrow rectangular plot, reserved for a school, in Mahuli village. The length and breadth of the plot are in the ratio 11:4. At the rate ₹100 per metre it will cost the village panchayat ₹75000 to fence the plot. What are the dimensions of the plot?
- Hasan buys two kinds of cloth materials for school uniforms, shirt material that costs him ₹50 per metre and trouser material that costs him ₹90 per metre.

EXERCISE 2.5

Solve the following linear equations.

$$1. \quad \frac{x}{2} - \frac{1}{5} = \frac{x}{3} + \frac{1}{4}$$

$$2. \quad \frac{n}{2} - \frac{3n}{4} + \frac{5n}{6} = 21$$

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

$$4. \quad \frac{x-5}{3} = \frac{x-3}{5}$$

$$5. \quad \frac{3t-2}{4} - \frac{2t+3}{3} = \frac{2}{3} - t$$

$$6. \quad m - \frac{m-1}{2} = 1 - \frac{m-2}{3}$$

Simplify and solve the following linear equations.

$$7. \quad 3(t-3) = 5(2t+1) \quad 8. \quad 15(y-4) - 2(y-9) + 5(y+6) = 0$$

$$9. \quad 3(5z-7) - 2(9z-11) = 4(8z-13) - 17$$

$$10. \quad 0.25(4f-3) = 0.05(10f-9)$$

EXERCISE 2.6

Solve the following equations.

$$1. \quad \frac{8x-3}{3x} = 2$$

$$2. \quad \frac{9x}{7-6x} = 15$$

$$3. \quad \frac{z}{z+15} = \frac{4}{9}$$

$$4. \quad \frac{3y+4}{2-6y} = \frac{-2}{5}$$

$$5. \quad \frac{7y+4}{y+2} = \frac{-4}{3}$$

- The ages of Hari and Harry are in the ratio 5:7. Four years from now the ratio of their ages will be 3:4. Find their present ages.
- The denominator of a rational number is greater than its numerator by 8. If the numerator is increased by 17 and the denominator is decreased by 1, the number obtained is $\frac{3}{2}$. Find the rational number.

For every 3 metres of the shirt material he buys 2 metres of the trouser material. He sells the materials at 12% and 10% profit respectively. His total sale is ₹36,600. How much trouser material did he buy?

- Half of a herd of deer are grazing in the field and three fourths of the remaining are playing nearby. The rest 9 are drinking water from the pond. Find the number of deer in the herd.
- A grandfather is ten times older than his granddaughter. He is also 54 years older than her. Find their present ages.
- Aman's age is three times his son's age. Ten years ago he was five times his son's age. Find their present ages.

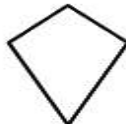


EXERCISE 3.1

1. Given here are some figures.



(1)



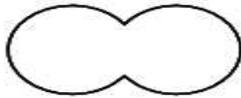
(2)



(3)



(4)



(5)



(6)



(7)



(8)

Classify each of them on the basis of the following.

- (a) Simple curve (b) Simple closed curve (c) Polygon
 (d) Convex polygon (e) Concave polygon

2. How many diagonals does each of the following have?

- (a) A convex quadrilateral (b) A regular hexagon (c) A triangle

3. What is the sum of the measures of the angles of a convex quadrilateral? Will this property hold if the quadrilateral is not convex? (Make a non-convex quadrilateral and try!)

4. Examine the table. (Each figure is divided into triangles and the sum of the angles deduced from that.)

Figure				
Side	3	4	5	6
Angle sum	180°	$2 \times 180^\circ$ $= (4 - 2) \times 180^\circ$	$3 \times 180^\circ$ $= (5 - 2) \times 180^\circ$	$4 \times 180^\circ$ $= (6 - 2) \times 180^\circ$

What can you say about the angle sum of a convex polygon with number of sides?

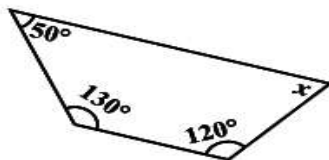
- (a) 7 (b) 8 (c) 10 (d) n

5. What is a regular polygon?

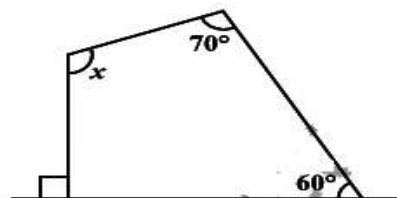
State the name of a regular polygon of

- (i) 3 sides (ii) 4 sides (iii) 6 sides

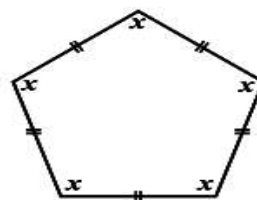
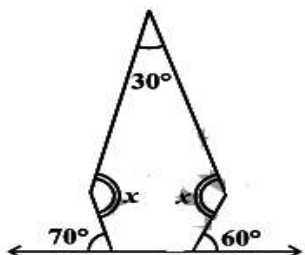
6. Find the angle measure x in the following figures.



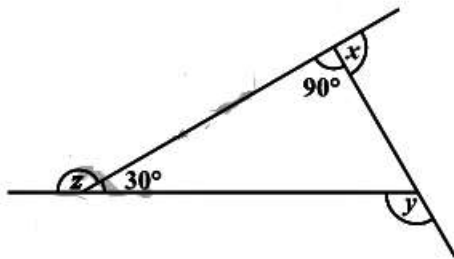
(a)



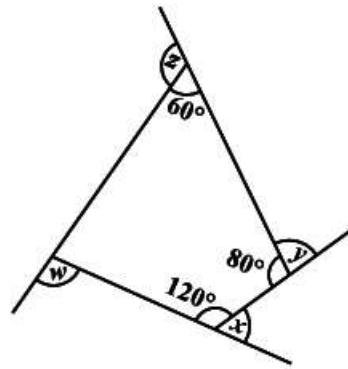
(b)



7.



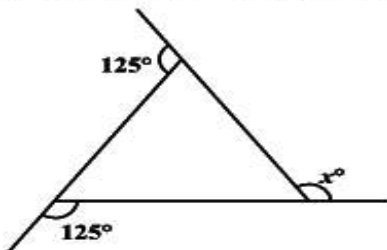
(a) Find $x + y + z$



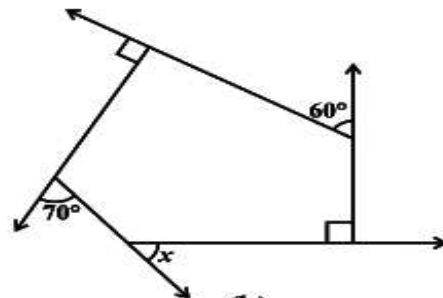
(b) Find $x + y + z + w$

EXERCISE 3.2

1. Find x in the following figures.



(a)



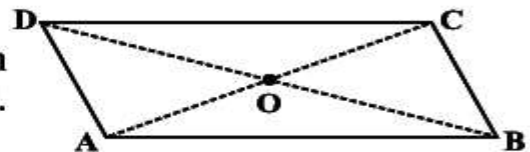
(b)

- Find the measure of each exterior angle of a regular polygon of
 - 9 sides
 - 15 sides
- How many sides does a regular polygon have if the measure of an exterior angle is 24° ?
- How many sides does a regular polygon have if each of its interior angles is 165° ?
- Is it possible to have a regular polygon with measure of each exterior angle as 22° ?
 - Can it be an interior angle of a regular polygon? Why?
- What is the minimum interior angle possible for a regular polygon? Why?
 - What is the maximum exterior angle possible for a regular polygon?

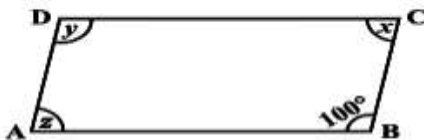
EXERCISE 3.3

1. Given a parallelogram ABCD. Complete each statement along with the definition or property used.

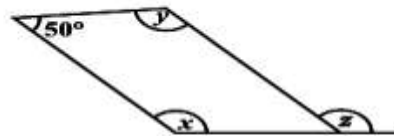
- $AD = \dots\dots$
- $\angle DCB = \dots\dots$
- $OC = \dots\dots$
- $m\angle DAB + m\angle CDA = \dots\dots$



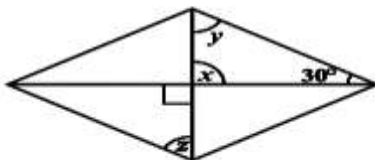
2. Consider the following parallelograms. Find the values of the unknowns x, y, z .



(i)



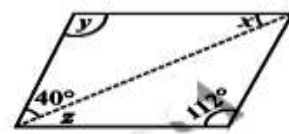
(ii)



(iii)

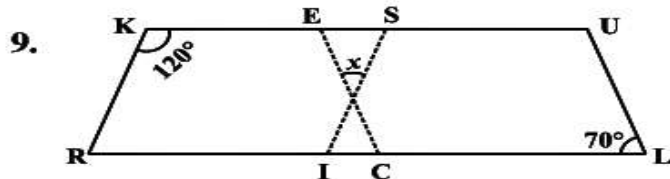
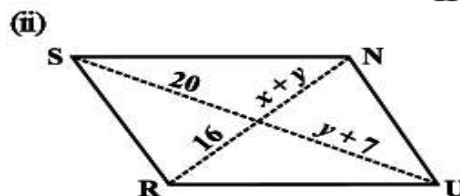
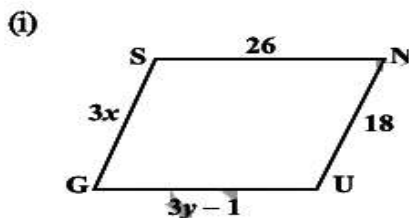
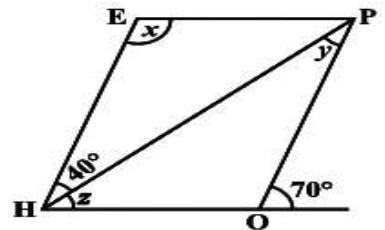


(iv)



(v)

3. Can a quadrilateral ABCD be a parallelogram if
- $\angle D + \angle B = 180^\circ$?
 - $AB = DC = 8$ cm, $AD = 4$ cm and $BC = 4.4$ cm?
 - $\angle A = 70^\circ$ and $\angle C = 65^\circ$?
4. Draw a rough figure of a quadrilateral that is not a parallelogram but has exactly two opposite angles of equal measure.
5. 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.
6. Two adjacent angles of a parallelogram have equal measure. Find the measure of each of the angles of the parallelogram.
7. The adjacent figure HOPE is a parallelogram. Find the angle measures x , y and z . State the properties you use to find them.
8. The following figures GUNS and RUNS are parallelograms. Find x and y . (Lengths are in cm)



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

10. Explain how this figure is a trapezium. Which of its two sides are parallel? (Fig 3.32)

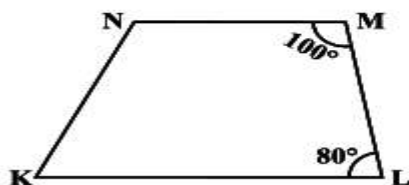


Fig 3.32

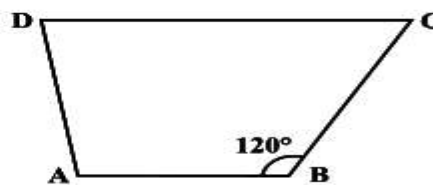


Fig 3.33

11. Find $m\angle C$ in Fig 3.33 if $\overline{AB} \parallel \overline{DC}$.
12. Find the measure of $\angle P$ and $\angle S$ if $\overline{SP} \parallel \overline{RQ}$ in Fig 3.34. (If you find $m\angle R$, is there more than one method to find $m\angle P$?)

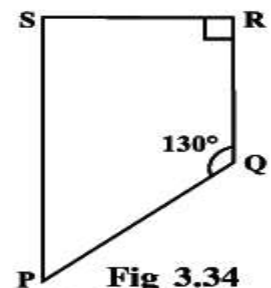


Fig 3.34

EXERCISE 3.4

1. State whether True or False

- (a) All rectangles are squares
- (b) All rhombuses are parallelograms
- (c) All squares are rhombuses and also rectangles
- (d) All squares are not parallelograms.
- (e) All kites are rhombuses.
- (f) All rhombuses are kites.
- (g) All parallelograms are trapeziums.
- (h) All squares are trapeziums.

2. Identify all the quadrilaterals that have.

- (a) four sides of equal length
- (b) four right angles

3. Explain how a square is.

- (i) a quadrilateral
- (ii) a parallelogram
- (iii) a rhombus
- (iv) a rectangle

4. Name the quadrilaterals whose diagonals.

- (i) bisect each other
- (ii) are perpendicular bisectors of each other
- (iii) are equal

5. Explain why a rectangle is a convex quadrilateral.

6. ABC is a right-angled triangle and O is the mid point of the side opposite to the right angle. Explain why O is equidistant from A, B and C. (The dotted lines are drawn additionally to help you).

