RATIONAL NUMBERS – The numbers of the form $\frac{a}{b}$, where a and b are integers and $b \neq 0$ are known as rational numbers. Rational number is denoted by **Q**.

Remarks

i) 0 is a rational number. We can write $0 = \frac{0}{1} = \frac{0}{2} \ldots\ldots..$

ii) Every natural number is a rational number. $1 = \frac{1}{1}$, $2 = \frac{2}{1}$ etc

iii) Every integer is a rational number.

iv) $\frac{1}{0}$ is not a rational number.

EQUIVALENT RATIONAL NUMBERS –

$\frac{1}{2} = \frac{2}{4} = \frac{3}{6} = \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots = \frac{15}{30}$ are known as equivalent rational numbers.

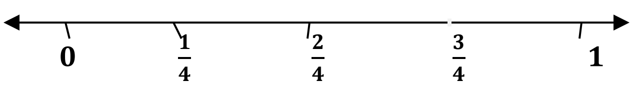
SIMPLEST FORM – A rational number $\frac{a}{b}$ is said to be simplest form or lowest terms or irreducible form, if a and b are integers having no common factors other than 1 and $b \neq 0$.

For Example – The simplest form of $\frac{6}{9}$ is $\frac{2}{3}$

Two rational numbers $\frac{a}{b}$ and $\frac{c}{d}$ are called equal, written as $\frac{a}{b} = \frac{c}{d}$, if and only if $ad = bc$.

REPRESENTATION OF RATIONAL NUMBERS – Every rational number has been represented by one and only one point on the line l.

For Example: $\frac{3}{4}$



IMPORTANT RESULTS

1) Let a and b be two rational numbers such that $a < b$ then $\frac{1}{2}(a + b)$ is a rational number lying between a and b.

- Find a rational number lying between $\frac{1}{3}$ and $\frac{1}{2}$.

  Here $a = \frac{1}{3}$ and $b = \frac{1}{2}$, clearly $a < b$

  A rational number lying between a and b $= \frac{1}{2}(a + b)$

$$= \frac{1}{2}\left(\frac{1}{3} + \frac{1}{2}\right)$$

$$= \frac{1}{2} * \frac{5}{6}$$

$$= \frac{5}{12} \quad \textbf{Ans.}$$

2) **Let a and b be two rational numbers such that a $< b$,**
suppose we want to find n rational numbers between a and b.
Let $\mathbf{d = \frac{b-a}{n+1}}$ **then n rational numbers lying between a and b are**

$$\mathbf{(a+d),\ (a+2d),\ (a+3d), \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots..(a+nd)}$$

There are infinitely many rational numbers between two different rational numbers

- **Insert five rational numbers between 2 and 3.**

Here, $\mathbf{a = 2}$ **and** $\mathbf{b = 3}$ **, clearly a** $< b$
We have to find 5 rational numbers between 2 and 3.

Let $\mathbf{d = \frac{3-2}{5+1} = \frac{1}{6}}$

Now, 1st rational number $\mathbf{(a+d) = \left(2+\frac{1}{6}\right) = \frac{13}{6}}$
2nd rational number $\mathbf{(a+2d) = \left(2+2*\frac{1}{6}\right) = \frac{7}{3}}$
3rd rational number $\mathbf{(a+3d) = (2+3*\frac{1}{6} = \frac{5}{2}}$
4th rational number $\mathbf{(a+4d) = \left(2+4*\frac{1}{6}\right) =}$
5th rational number $\mathbf{(a+5d) = (2+5*\frac{1}{6}) = \frac{17}{6}}$

HOMEWORK

EXERCISE – 1.1

QUESTION NUMBERS : 2, 4, 6 and 9

MATHS PRACTICAL

Points to remember .

**Read and understand the experiment.*

**In the Maths Practical Copy write down AIM, MATERIAL REQUIRED , METHODOLOGY , TABULAR COLUMN and CONCLUSION on the ruled page. DIAGRAM and CALCULATION on the plane page.*

**Follow the PROCEDURE properly to get the correct conclusion.*

**MATHS PRACTICAL COPY must be a soft cover Lab copy with atleast 50 to 60 pages.*

EXPERIMENT NO. 3

AIM

To determine the parallelogram with the maximum area , among all parallelograms with a constant perimeter and a fixed base.

MATERIALS REQUIRED

1. Plastic straw
2. Ruler and pencil
3. Protractor

METHODOLOGY

Area of a parallelogram= Base x height

Perimeter of a figure= Sum of all the sides.

PROCEDURE

Follow all the steps below in order

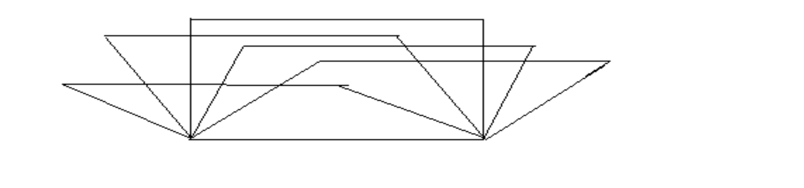
Step 1.Fold the given straw and hold the ends together so that a parallelogram is formed.

Step 2. Place the above made parallelogram on a paper and mark down its vertices.

Step 3. Join the vertices using ruler and pencil.

Step 4. Measure its base , height and one of the angles.Note down the data in the observation table.

Step 5. Repeat the step 2 , 3 and 4 at least five times with parallelograms with same base but different heights . Among these trials include a case of a parallelogram with one angle 90° (i.e. Rectangle).



OBSERVATION TABLE

Perimeter of the parallelogram = --------

Trial no.	Base (constant) b	Height h	Angle	Area b.h
1 2 3 4 5				

CONCLUSION

It is clear from the observation table that ,among parallelograms with same base and constant perimeter

----------------------is having maximum area.