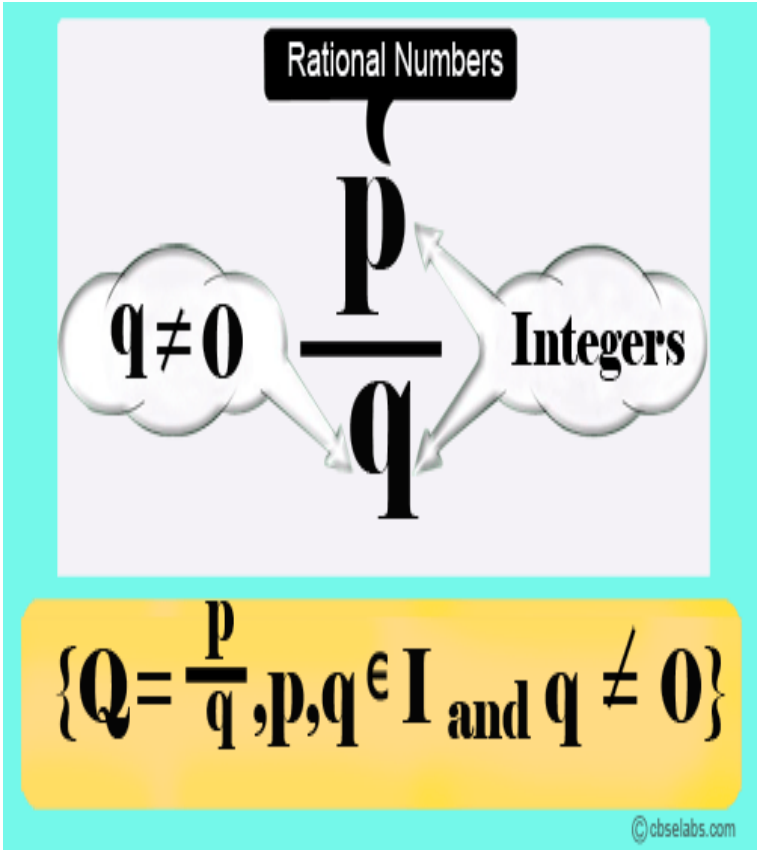
PROJECTION OF CLASS 8 BY NANDITA

NAME OF LESSONS

1. RATIONAL NUMBERS



Definition: Rational Number

A *ratio*nal number is any number that can be written as a *ratio*, a fraction where the numerator and denominator are integers.

Decimals that terminate or repeat are rational numbers since they can also be written as ratios (fractions)

Zero is a special rational number. It can be written as $0 = \frac{0}{q}$ where $q \neq 0$.

PROPERTIES OF RATIONAL NUMBERS

Properties of Rational Nos.

⇒ CLOSURE (Result is a Rational No.)

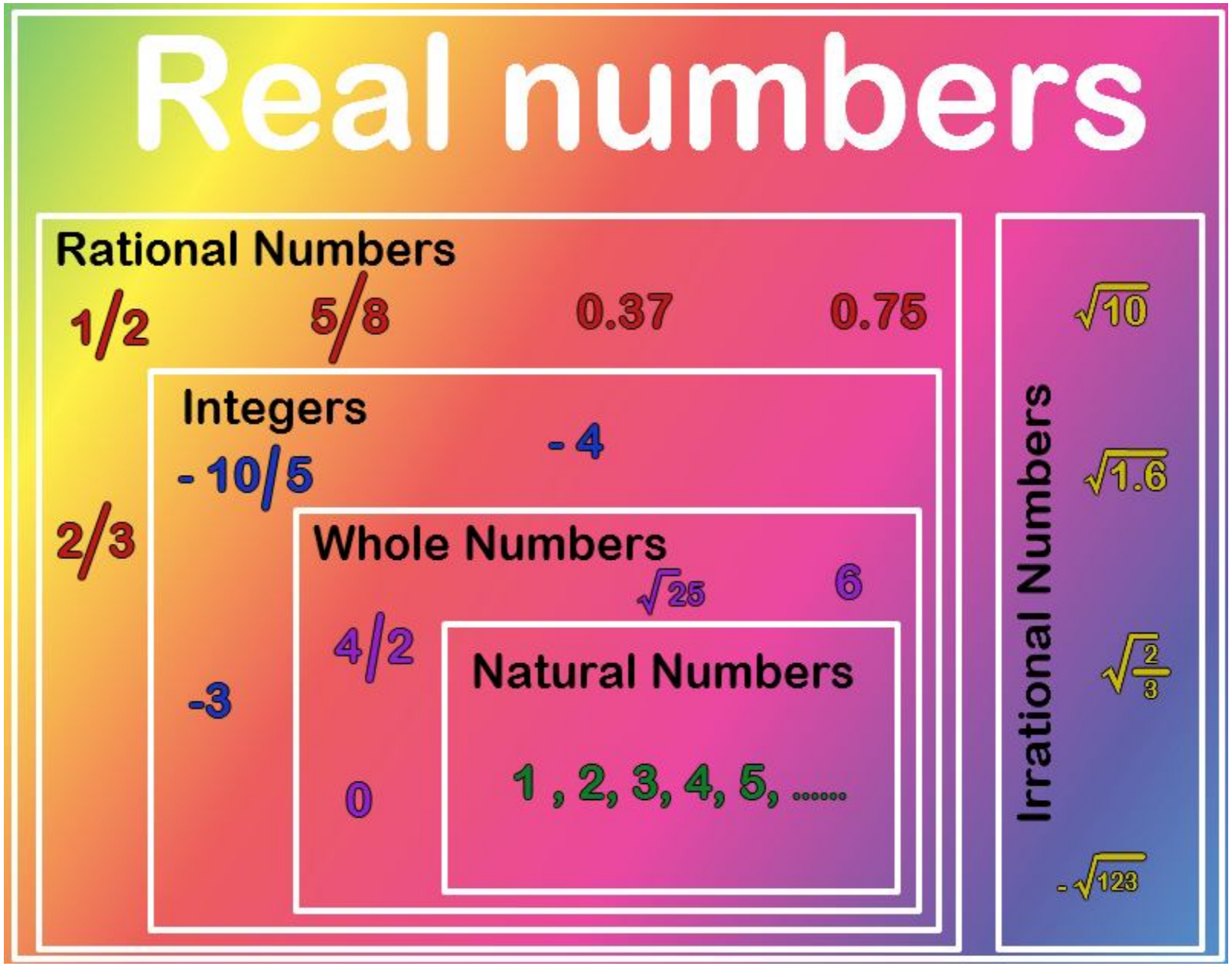
⇒ COMMUTATIVE $(a+b = b+a)$, $(a \times b = b \times a)$

⇒ ASSOCIATIVE $[a \times (b \times c) = (a \times b) \times c]$

$[a+(b+c) = (a+b)+c]$

⇒ DISTRIBUTIVE $[a \times (b+c) = ab + ac)$

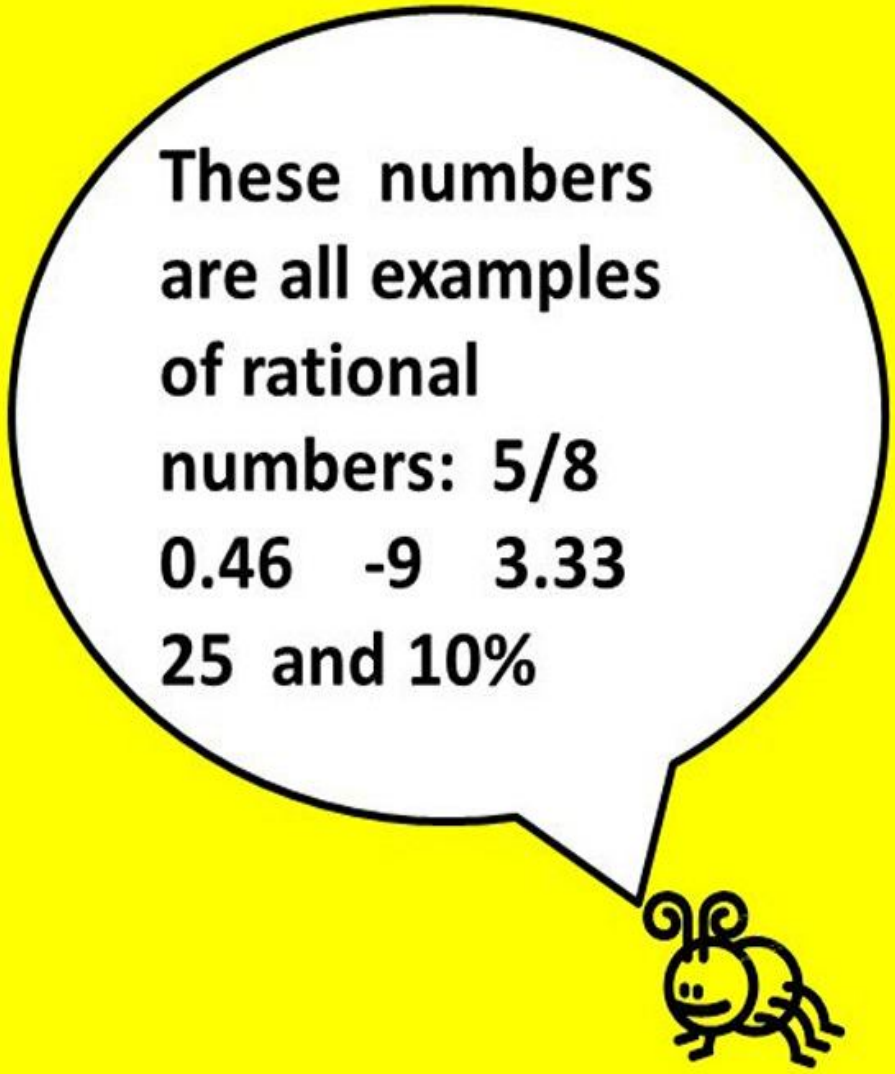
$[a \times (b-c) = ab - ac]$


Real numbers
Rational Numbers
1/2
5/8
0.37
0.75
Integers
- 4
- 10/5
2/3
Whole Numbers
√25
6
4/2
-3
Natural Numbers
0
1 , 2, 3, 4, 5, ...
Irrational Numbers
√10
√1.6
√2/3
- √123

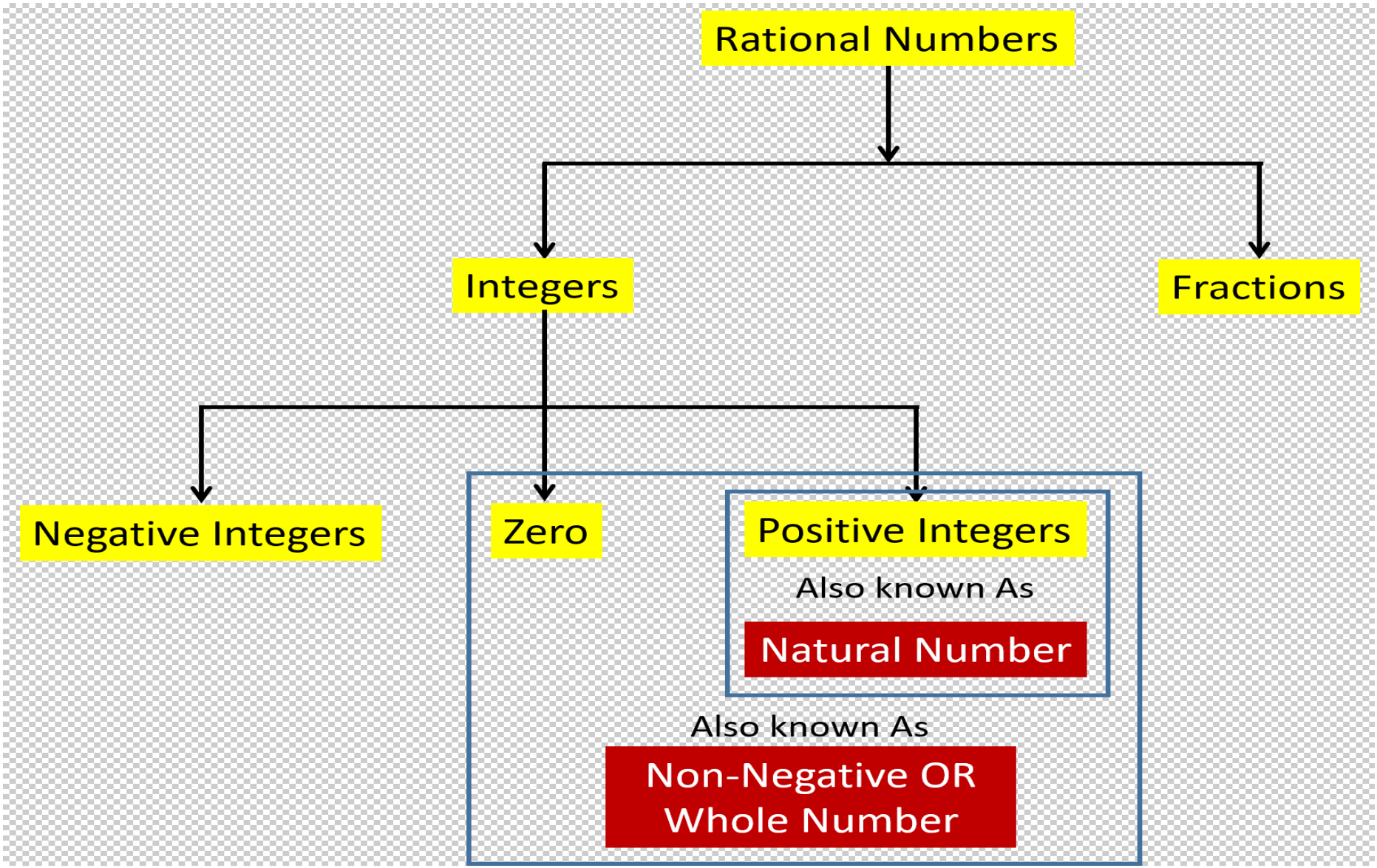
Rational numbers can be positive or negative.

Rational numbers include:

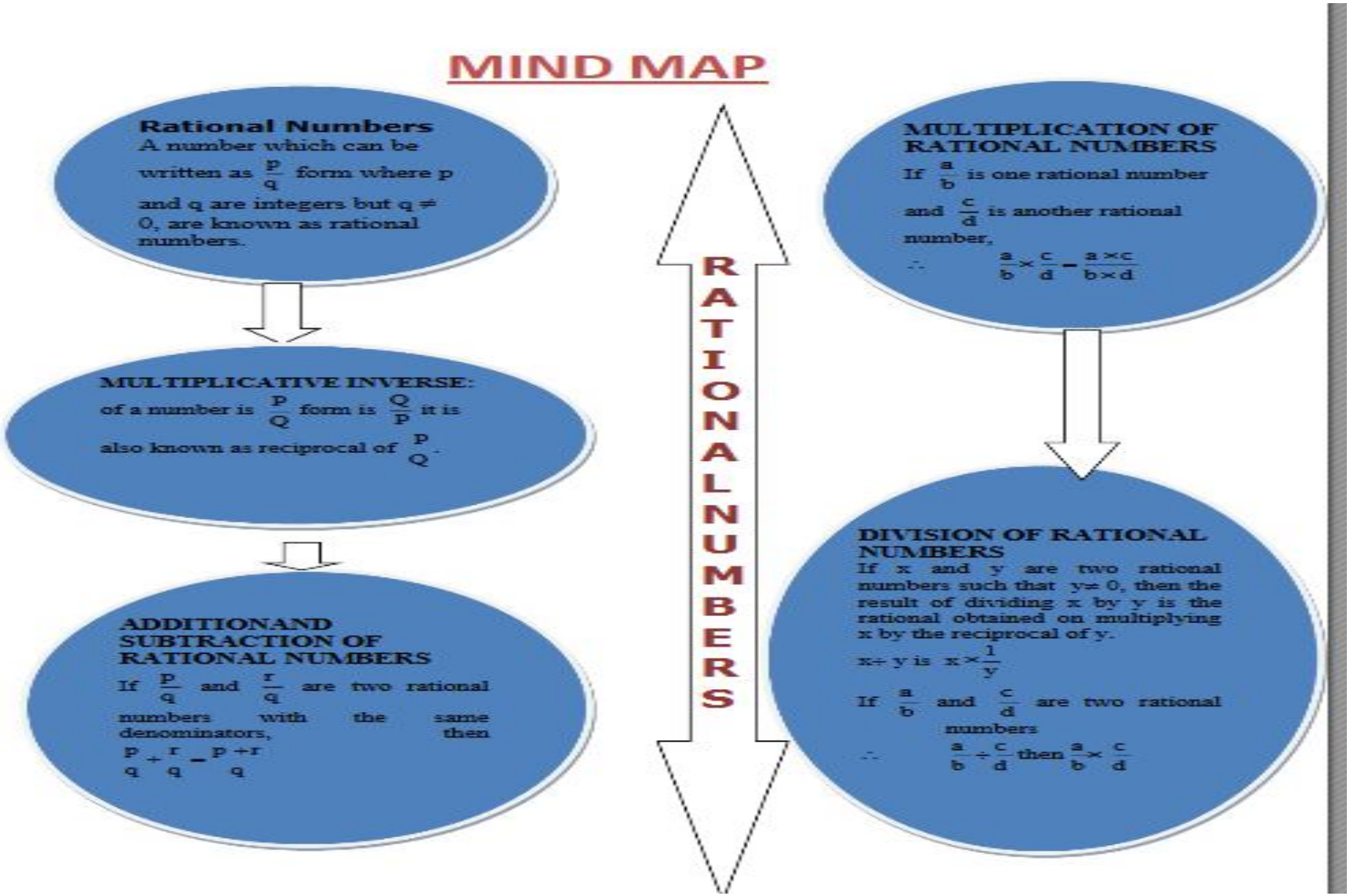
- Integers
- Fractions
- Mixed numbers
- Percents
- Terminating decimals
- Repeating decimals

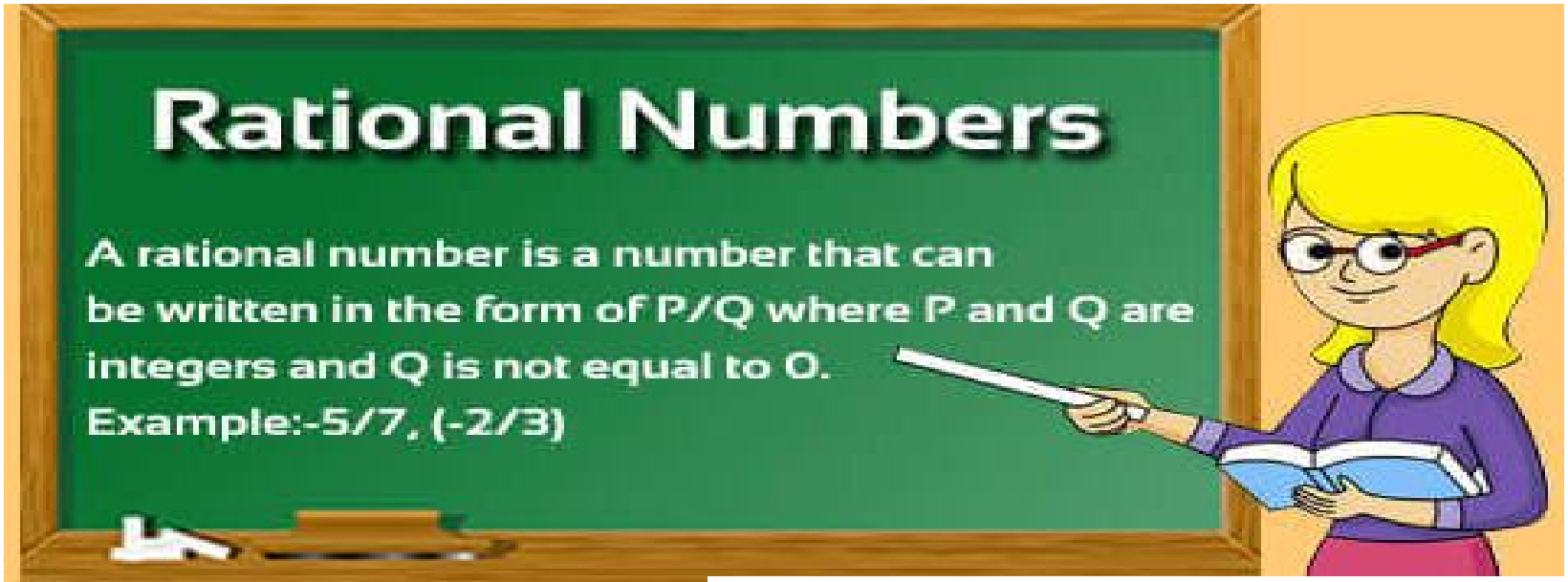


FLOW CHART


Rational Numbers
Integers
Fractions
Negative Integers
Zero
Positive Integers
Also known As
Natural Number
Also known As
Non-Negative OR
Whole Number

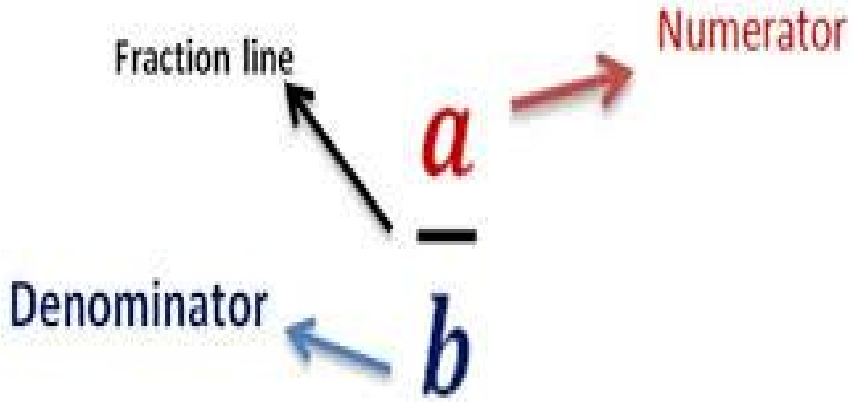
DIFFERENT FUNCTION



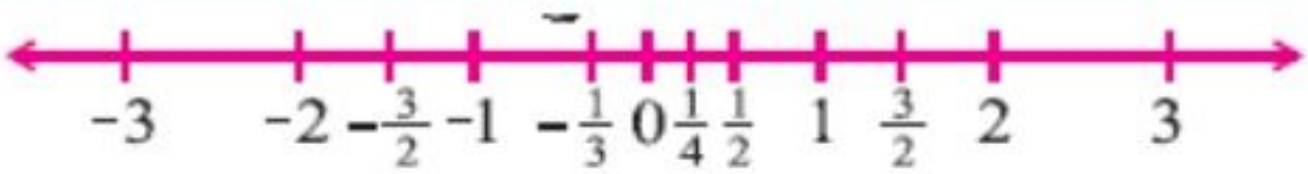


Rational Numbers To Standard Form

9/15 = 3/5



Representation of Rational Numbers on the Number Line



To express rational numbers appropriately on the number line, divide each unit length into as many number of equal parts as the denominator of the rational number and then mark the given number on the number line.

TYPES OF RATIONAL NUMBERS

Positive rational number

Rational number is positive if its numerator and denominator are both either positive integers or negative integers. Eg : 2/5 , -8/-5.

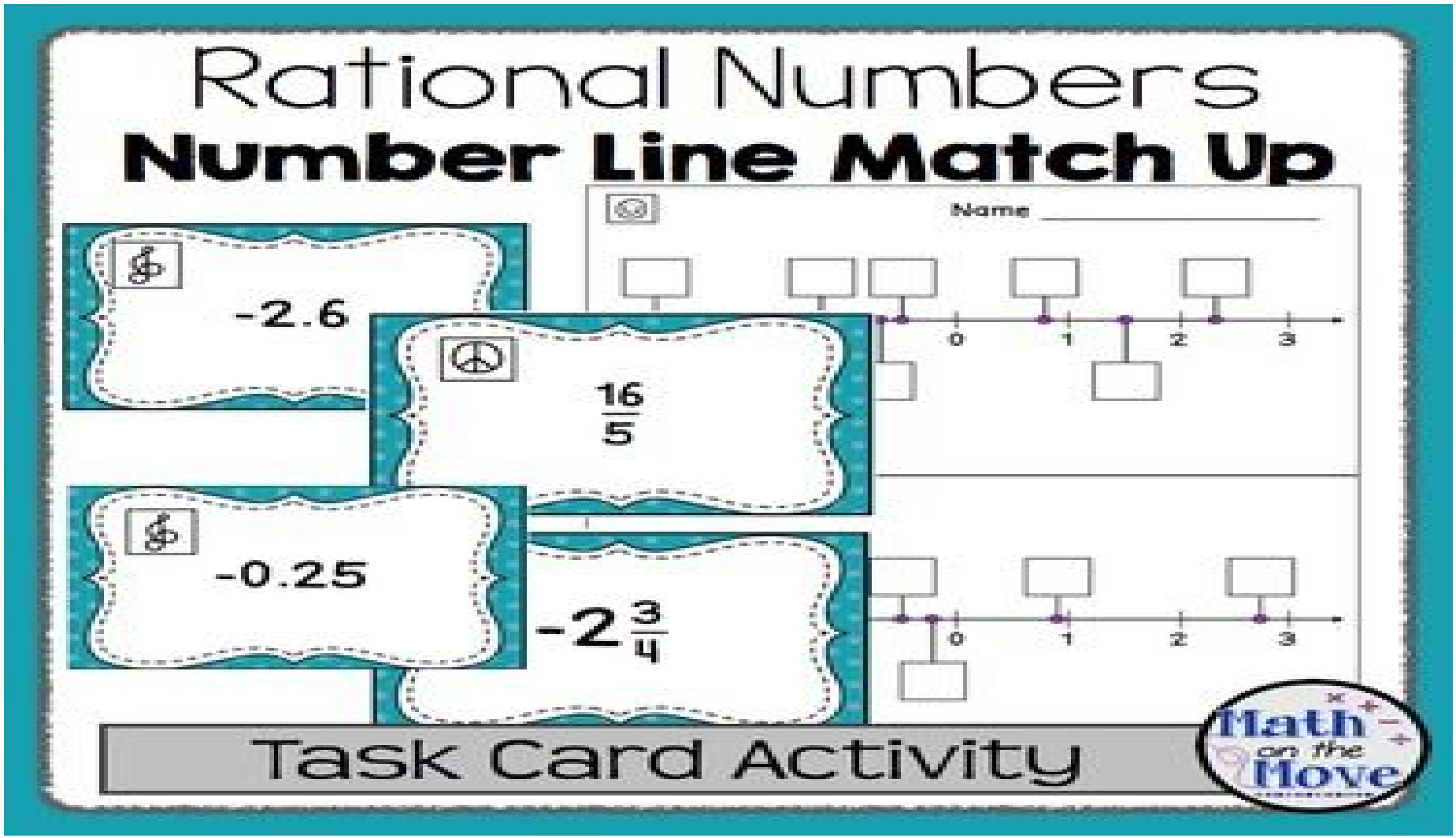
Negative rational number

If either the numerator or the denominator of a rational number is a negative integer ,then the rational number is called a negative rational number. Eg: -2/5

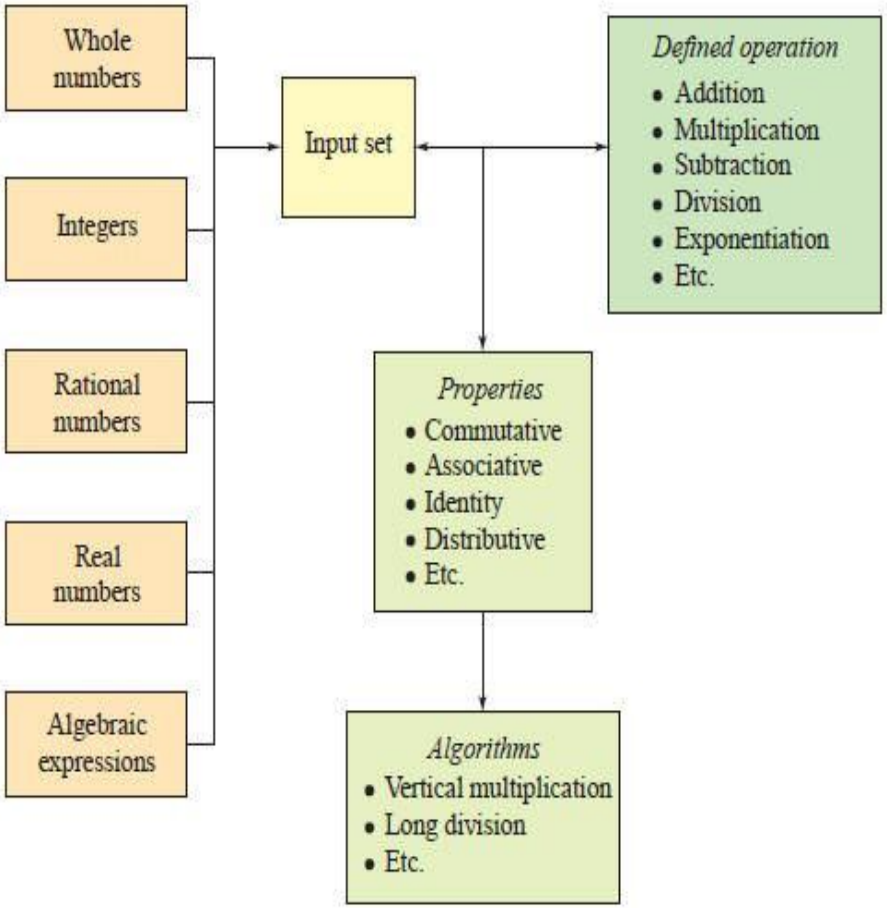
Standard form

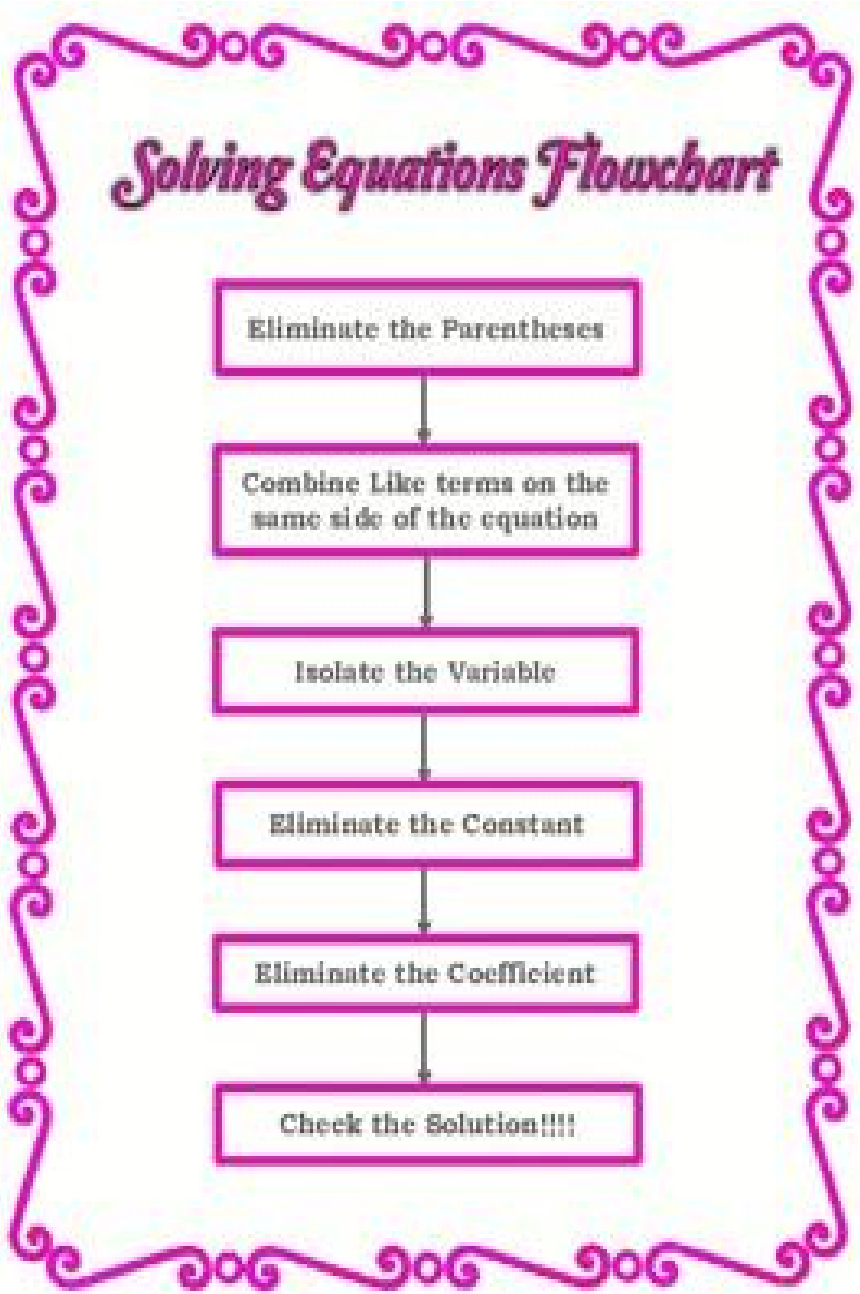
A rational number is said to be in its standard form if its numerator and denominator have no common factor other than 1,and its denominator is a positive integer . Eg: 4/7

ACTIVITY


Rational Numbers
Number Line Match Up
Name
-2.6
16/5
-0.25
-2 3/4
0
1
2
3
0
1
2
3
Task Card Activity
Math on the Move

RECAPITULATION





ASSESSMENT

Answer The Following

1) Find the multiplicative inverse of following

A) $\frac{-7}{16}$

B) $\frac{12}{23}$

C) $\frac{-4}{3}$

D) $\frac{-3}{11}$

2) What is the smallest rational number that can be formed using 2 of the numbers below in the form of $\frac{p}{q}$?

434, 769, 203, 933, 175, 355

3) Find the 7 rational numbers between $\frac{3}{9}$ and $\frac{2}{14}$.

4) Find the following and simplify it to lowest term:

A) $\frac{2}{23} \times \frac{-8}{2} \times \frac{-3}{16} \times \frac{-5}{13}$

B) $\frac{5}{6} \times \frac{8}{16} \times \frac{-9}{15} \times \frac{4}{13}$

5) Is $\frac{6}{9}$ the multiplicative inverse of $1\frac{3}{6}$? Why or why not ?

Fill in the blanks

6) Add the following rational numbers

1. Do the following pair of linear equations have no solution? Justify your answer.

(i) $2x + 4y = 3$
$12y + 6x = 6$

(ii) $x = 2y$
$y = 2x$

(iii) $3x + y - 3 = 0$
$2x + \frac{2}{3}y = 2$

2. Do the following equations represent a pair of coincident lines? Justify your answer.

(i) $3x + \frac{1}{7}y = 3$
$7x + 3y = 7$

(ii) $-2x - 3y = 1$
$6y + 4x = -2$

(iii) $\frac{x}{2} \quad y \quad \frac{2}{5} = 0$
$4x + 8y + \frac{5}{16} = 0$

3. Are the following pair of linear equations consistent? Justify your answer.

(i) $-3x - 4y = 12$
$4y + 3x = 12$

(ii) $\frac{3}{5}x - y = \frac{1}{2}$
$\frac{1}{5}x - 3y = \frac{1}{6}$

(iii) $2ax + by = a$
$4ax + 2by - 2a = 0; \; a, b \neq 0$

(iv) $x + 3y = 11$
$2(2x + 6y) = 22$

4. For the pair of equations

$\lambda x + 3y = -7$

$2x + 6y = 14$

to have infinitely many solutions, the value of λ should be 1. Is the statement true? Give reasons.

5. For all real values of c, the pair of equations

$x - 2y = 8$

$5x - 10y = c$

have a unique solution. Justify whether it is true or false.

6. The line represented by $x = 7$ is parallel to the x–axis. Justify whether the statement is true or not.