



FLORENCE INTERNATIONAL SCHOOL  
CLASS- VIII  
WORKSHEET NO: 8  
MATHS

NAME:

DATE: 08/04/2020

CONCEPT

**Rational Numbers**

- Rational numbers are **closed** under the operations of addition, subtraction and multiplication.
- The operations addition and multiplication are
  - (i) **commutative** for rational numbers.
  - (ii) **associative** for rational numbers.
- The rational number 0 is the **additive identity** for rational numbers.
- The rational number 1 is the **multiplicative identity** for rational numbers.
- The additive inverse of the rational number  $\frac{a}{b}$  is  $\frac{-a}{b}$  and vice-versa.
- The **reciprocal or multiplicative inverse** of the rational number  $\frac{a}{b}$  is  $\frac{b}{a}$  if  $\frac{a}{b} \times \frac{b}{a} = 1$
- Distributivity of rational numbers: For all rational numbers a, b and c,  
 $a(b + c) = ab + ac$  and  $a(b - c) = ab - ac$
- Rational numbers can be represented on a number line.
- Between any two given rational numbers there are countless rational numbers. The idea of mean helps us to find rational numbers between two rational numbers.
- **Positive Rationals:** Numerator and Denominator both are either positive or negative.  
Example:  $\frac{4}{7}, \frac{-3}{-4}$
- **Negative Rationals:** Numerator and Denominator both are of opposite signs.  
Example:  $\frac{-2}{11}, \frac{4}{-9}$
- **Additive Inverse:** Additive inverse (negative)  $\frac{a}{b} + \frac{-a}{b} = \frac{-a}{b} + \frac{a}{b} = 0$ ,  $\frac{-a}{b}$  is the additive inverse of  $\frac{a}{b}$  and  $\frac{a}{b}$  is the additive inverse of  $\frac{-a}{b}$ .
- **Multiplicative Inverse (reciprocal):**  $\frac{a}{b} \times \frac{b}{a} = 1 = \frac{c}{d} \times \frac{d}{c}$  where  $\frac{c}{d}$  is the reciprocal of  $\frac{a}{b}$ .  
Zero has no reciprocal. The reciprocal of 1 is 1 and of -1 is -1.

For further explanation please follow the given link:

<https://www.youtube.com/watch?v=SQ4cB9yXkHM>

[https://www.youtube.com/watch?v=9\\_Ak4tgnAt4&feature=youtu.be](https://www.youtube.com/watch?v=9_Ak4tgnAt4&feature=youtu.be)

**EXERCISE:**

**Answer the following question:**

**Q1. Write the additive inverse of the following.**

(a)  $\frac{8}{9}$       (b)  $\frac{-5}{9}$       (c)  $\frac{-6}{5}$       (d)  $\frac{2}{9}$       (e)  $\frac{19}{6}$

**Q2. Write the Multiplicative inverse of the following.**

(a) -13      (b)  $\frac{-12}{19}$       (c)  $\frac{-7}{8} \times \frac{-5}{3}$       (d) -1      (e)  $-1 \times \frac{2}{7}$

**Q3. Name the properties under multiplication used in each of the following.**

(a)  $\frac{-3}{5} \times 1 = \frac{-3}{5}$  \_\_\_\_\_

(b)  $\frac{-15}{17} \times \frac{-2}{7} = \frac{-2}{7} \times \frac{-15}{17}$  \_\_\_\_\_

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

**Q4. Multiply  $\frac{-6}{13}$  by the reciprocal of  $\frac{-15}{17}$**

