Things - to - remember

Chapter 9 : Rational Numbers.

1) Rational Numbers : The number of the form $\frac{p}{q}$ where p and q are integers and $q \neq 0$, are called rational numbers.
e.g. $\frac{4}{5}$, $\frac{-5}{7}$, $3\frac{2}{7}$ etc are all rational number.

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

3) Equivalent rational number : By multiplying the numerator and denominator of a rational number by the same non-zero integer, we obtain equivalent rational number

$$\frac{-3}{7} = \frac{-3 \times 2}{7 \times 2} = \frac{-6}{14} \qquad \frac{-16}{64} = \frac{-16 \div 4}{64 \div 4} = \frac{-1}{4}$$

4) Positive Rational number : if its numerator and denominator are either both positive or both negative.

e.g. $\frac{5}{7}$, $\frac{-13}{-8}$, $\frac{17}{9}$, $\frac{-72}{-40}$ etc

5) Negative Rational Numbers : if its numerator and denominator is such that one of it is negative.

e.g. $\frac{-3}{5}$, $\frac{3}{-5}$, $\frac{-18}{7}$, $\frac{18}{-7}$ etc.

6) 0 (zero) is neither a positive nor a negative rational number.

7) Rational number in Standard form / Lowest form : When they have 1 as common factor.

8) Comparison of rational numbers: make denominators same.

9) Rational number between two rational numbers.

Example, $\frac{-3}{5}$ and $\frac{-1}{3}$

$$\frac{-3}{5} = \frac{-3\times3}{5\times3} = \frac{-9}{15} \qquad \frac{-1}{3} = \frac{-1\times5}{3\times5} = \frac{-5}{15}$$

$$\frac{-9}{15} < \frac{-8}{15} < \frac{-7}{15} < \frac{-6}{15} < \frac{-5}{15}$$

$$\frac{-3}{5} < \frac{-8}{15} < \frac{-7}{15} < \frac{-6}{15} < \frac{-1}{3}$$

10) Additive inverse: of $\frac{-9}{6}$ is $\frac{+9}{6}$ or vice versa.

Additive inverse of $\frac{-4}{7}$ is $\frac{4}{7}$ such that $\frac{-4}{7} + \frac{4}{7} = 0$

11) Operations on rational numbers:

- Addition
- Subtraction
- Multiplication
- Division

} Same as operation of fractions.

12) Reciprocal : inverse of rational number e.g $\frac{4}{5}$ is $\frac{5}{4}$

such that $\frac{4}{5} \times \frac{5}{4} = 1$

The product of rational number with its reciprocal is 1.