

CLASS NOTES

Class: VII

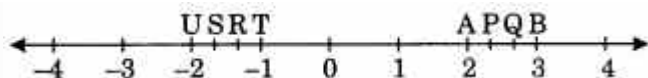
Ch.9. RATIONAL NUMBERS

Subject: Mathematics

Topic: Exe- 9.1

EXERCISE – 9.1

Que.5. The points P, Q, R, S, T, U, A and B on the number line are such that, $TR = RS = SU$ and $AP = PQ = QB$. Name the rational numbers represented by P, Q, R and S.



Solution:

Rational numbers represented by P, Q, R and S:

$\frac{7}{3}, \frac{8}{3}, \frac{-4}{3}$ and $\frac{-5}{3}$ respectively.

Que 6. Which of the following pairs represent the same rational number?

- (i) $\frac{-7}{21}$ and $\frac{3}{9}$ (ii) $\frac{-16}{20}$ and $\frac{20}{-25}$
 (iii) $\frac{-2}{-3}$ and $\frac{2}{3}$ (iv) $\frac{-3}{5}$ and $\frac{-12}{20}$
 (v) $\frac{8}{-5}$ and $\frac{-24}{15}$ (vi) $\frac{1}{3}$ and $\frac{-1}{9}$

(i) $\frac{-7}{21}$ and $\frac{3}{9}$
 $\Rightarrow \frac{-7 \times 9}{21 \times 9}$ and $\frac{3 \times 21}{9 \times 21}$
 $\Rightarrow \frac{-63}{189}$ and $\frac{63}{189}$
 Since $-63 \neq 63$, so $\frac{-7}{21}$ and $\frac{3}{9}$ do not represent the same rational numbers.

(ii) $\frac{-16}{20}$ and $\frac{20}{-25}$
 $\Rightarrow \frac{-16 \times -25}{20 \times -25}$ and $\frac{20 \times 20}{-25 \times 20}$
 $\Rightarrow \frac{400}{-500}$ and $\frac{400}{-500}$
 Since $400 = 400$, so $\frac{-16}{20}$ and $\frac{20}{-25}$ represent the same rational numbers.

(iii) $\frac{-2}{-3}$ and $\frac{2}{3}$
 Here, we have the same numerator and denominator. So $\frac{-2}{-3}$ and $\frac{2}{3}$ represent the same rational numbers.

Que.7. Rewrite the following rational numbers in the simplest form:

- (i) $\frac{-8}{6}$ (ii) $\frac{25}{45}$ (iii) $\frac{-44}{72}$

Solution:

$$(i) \frac{-8}{6} = \frac{-8 \div 2}{6 \div 2} = \frac{-4}{3}$$

[\because HCF of 8 and 6 = 2]

$$(ii) \frac{25}{45} = \frac{25 \div 5}{45 \div 5} = \frac{5}{9}$$

[\because HCF of 25 and 45 = 5]

Que.8. Fill in the boxes with the correct symbol out of $>$, $<$ and $=$.

$$(i) \frac{-5}{7} \square \frac{2}{3} \quad (ii) \frac{-4}{5} \square \frac{-5}{7}$$

$$(iii) \frac{-7}{8} \square \frac{14}{-16} \quad (iv) \frac{-8}{5} \square \frac{-7}{4}$$

$$(v) \frac{1}{-3} \square \frac{-1}{4} \quad (vi) \frac{5}{-11} \square \frac{-5}{11}$$

$$(vii) 0 \square \frac{-7}{6}$$

Solution:

$$(i) \frac{-5}{7} \square \frac{2}{3} \Rightarrow \frac{-5 \times 3}{7 \times 3} \square \frac{2 \times 7}{3 \times 7}$$

$$\Rightarrow \frac{-15}{21} \square \frac{14}{21}$$

$$\text{Hence, } \frac{-5}{7} \square \frac{2}{3}$$

$$(ii) \frac{-4}{5} \square \frac{-5}{7} \Rightarrow \frac{-4 \times 7}{5 \times 7} \square \frac{-5 \times 5}{7 \times 5}$$

$$\Rightarrow \frac{-28}{35} \square \frac{-25}{35}$$

$$\text{Hence, } \frac{-4}{5} \square \frac{-5}{7}$$

$$(iii) \frac{-7}{8} \square \frac{14}{-16}$$

$$\Rightarrow \frac{-7 \times -16}{8 \times -16} \square \frac{14 \times 8}{-16 \times 8}$$

$$\Rightarrow \frac{112}{-128} \square \frac{112}{-128}$$

$$\text{Hence, } \frac{-7}{8} \square \frac{14}{-16}$$

$$(iv) \frac{-8}{5} \square \frac{-7}{4} \Rightarrow \frac{-8 \times 4}{5 \times 4} \square \frac{-7 \times 5}{4 \times 5}$$

$$\Rightarrow \frac{-32}{20} \square \frac{-35}{20}$$

$$\text{Hence, } \frac{-8}{5} \square \frac{-7}{4}$$

Que.9. Which is greater in each of the following:

$$(i) \frac{2}{3}, \frac{5}{2} \quad (ii) \frac{-5}{6}, \frac{-4}{3}$$

$$(iii) \frac{-3}{4}, \frac{2}{-3} \quad (iv) \frac{-1}{4}, \frac{1}{4}$$

$$(v) -3\frac{2}{7}, -3\frac{4}{5}$$

Solution:

$$(i) \frac{2}{3}, \frac{5}{2} \Rightarrow \frac{2 \times 2}{3 \times 2}, \frac{5 \times 3}{2 \times 3} \Rightarrow \frac{4}{6}, \frac{15}{6}$$

$$\text{Since, } \frac{15}{6} > \frac{4}{6}, \text{ So } \frac{5}{2} > \frac{2}{3}.$$

$$(ii) \frac{-5}{6}, \frac{-4}{3} \Rightarrow \frac{-5 \times 3}{6 \times 3}, \frac{-4 \times 6}{3 \times 6}$$

$$\Rightarrow \frac{-15}{18}, \frac{-24}{18}$$

$$\text{Since, } \frac{-15}{18} > \frac{-24}{18}, \text{ so, } \frac{-5}{6} > \frac{-4}{3}$$

$$(iii) \frac{-3}{4}, \frac{2}{-3} \Rightarrow \frac{-3 \times -3}{4 \times -3}, \frac{2 \times 4}{-3 \times 4}$$

$$\Rightarrow \frac{9}{-12}, \frac{8}{-12}$$

$$\text{Since } \frac{9}{-12} < \frac{8}{-12}$$

$$\text{So, } \frac{2}{-3} > \frac{-3}{4}$$

$$(iv) \frac{-1}{4}, \frac{1}{4}$$

$$\Rightarrow \frac{1}{4} > \frac{-1}{4} \quad [\because \text{ Each positive number is greater than its negative}]$$

Q ue.10. Write the following rational numbers in ascending order:

$$(i) \frac{-3}{5}, \frac{-2}{5}, \frac{-1}{5} \quad (ii) \frac{1}{3}, \frac{-2}{9}, \frac{-4}{3}$$

$$(iii) \frac{-3}{7}, \frac{-3}{2}, \frac{-3}{4}$$

$$(i) \frac{-3}{5}, \frac{-2}{5}, \frac{-1}{5}$$

Here, denominators are same.

$$\therefore -3 < -2 < -1$$

Hence, the required ascending order is

$$\frac{-3}{5} < \frac{-2}{5} < \frac{-1}{5}$$

$$(ii) \frac{1}{3}, \frac{-2}{9}, \frac{-4}{3}$$

LCM of 3, 9 and 3 = 9

$$\frac{1 \times 3}{3 \times 3}, \frac{-2 \times 1}{9 \times 1}, \frac{-4 \times 3}{3 \times 3}$$

$$\Rightarrow \frac{3}{9}, \frac{-2}{9}, \frac{-12}{9}$$

$$\text{Since } \frac{-12}{9} < \frac{-2}{9} < \frac{3}{9}$$

Hence, the required ascending order is

$$\frac{-4}{3} < \frac{-2}{9} < \frac{1}{3}$$

Assignment :- Remaining parts of all questions of Exe- 9.1

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