Exercise 1A

Q5

We know:

(i) Every positive rational number is greater than 0.

(ii) Every negative rational number is less than 0.

Thus, we have:

(i) $\frac{3}{8}$ is a positive rational number.

$\therefore \frac{3}{8} > 0$

(ii) $\frac{-2}{9}$ is a negative rational number.

$\therefore \frac{-2}{9} < 0$

(iii) $\frac{-3}{4}$ is a negative rational number.

$\therefore \frac{-3}{4} < 0$

Also,

$\frac{1}{4}$ is a positive rational number.

$\therefore \frac{1}{4} > 0$

Combining the two inequalities, we get:

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

(iv) Both $\frac{-5}{7}$ and $\frac{-4}{7}$ have the same denominator, that is, 7.

So, we can directly compare the numerators.

$\therefore \frac{-5}{7} < \frac{-4}{7}$

(v) The two rational numbers are $\frac{2}{3}$ and $\frac{3}{4}$.

The LCM of the denominators 3 and 4 is 12.

Now,

$\frac{2}{3} = \frac{2\times4}{3\times4} = \frac{8}{12}$

Also,

$\frac{3}{4} = \frac{3\times3}{4\times3} = \frac{9}{12}$

Further

$\frac{8}{12} < \frac{9}{12}$

$\therefore \frac{2}{3} < \frac{3}{4}$

(vi)The two rational numbers are $\frac{-1}{2}$ and -1.

We can write $-1 = \frac{-1}{1}$.

The LCM of the denominators 2 and 1 is 2.

Now,

$$\frac{-1}{2} = \frac{-1 \times 1}{2 \times 1} = \frac{-1}{2}$$

Also,

$$\frac{-1}{1} = \frac{-1 \times 2}{1 \times 2} = \frac{-2}{2}$$

$$\because \frac{-2}{1} < \frac{-1}{1}$$

$$\therefore -1 < \frac{-1}{2}$$

Q6

Answer :

1. The two rational numbers are $\frac{-4}{3}$ **and** $\frac{-8}{7}$.

The LCM of the denominators 3 and 7 is 21.

Now,

$$\frac{-4}{3} = \frac{-4\times7}{3\times7} = \frac{-28}{21}$$

Also,

$$\frac{-8}{7} = \frac{-8\times3}{7\times3} = \frac{-24}{21}$$

Further,

$$\frac{-28}{21} < \frac{-24}{21}$$

$$\therefore \frac{-4}{3} < \frac{-8}{7}$$

2. The two rational numbers are $\frac{7}{-9}$ **and** $\frac{-5}{8}$.

The first fraction can be expressed as $\frac{7}{-9} = \frac{7\times-1}{-9\times-1} = \frac{-7}{9}$.

The LCM of the denominators 9 and 8 is 72.

Now,

$$\frac{-7}{9} = \frac{-7\times8}{9\times8} = \frac{-56}{72}$$

Also,

$$\frac{-5}{8} = \frac{-5\times9}{8\times9} = \frac{-45}{72}$$

Further,

$$\frac{-56}{72} < \frac{-45}{72}$$

$$\therefore \frac{7}{-9} < \frac{-5}{8}$$

3. The two rational numbers are $\frac{-1}{3}$ **and** $\frac{4}{-5}$.

$$\frac{4}{-5} = \frac{4\times-1}{-5\times-1} = \frac{-4}{5}$$

The LCM of the denominators 3 and 5 is 15.

Now,

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

Also,

$$\frac{-4}{5} = \frac{-4\times3}{5\times3} = \frac{-12}{15}$$

Further,

$$\frac{-12}{15} < \frac{-5}{15}$$

$$\therefore \frac{4}{-5} < \frac{-1}{3}$$

4. The two rational numbers are $\frac{9}{-13}$ **and** $\frac{7}{-12}$.

Now, $\frac{9}{-13} = \frac{9\times-1}{-13\times-1} = \frac{-9}{13}$ **and** $\frac{7}{-12} = \frac{7\times-1}{-12\times-1} = \frac{-7}{12}$

The LCM of the denominators 13 and 12 is 156.

Now,

$$\frac{-9}{13} = \frac{-9\times12}{13\times12} = \frac{-108}{156}$$

Also,

$$\frac{-7}{12} = \frac{-7\times13}{12\times13} = \frac{-91}{156}$$

Further,

$$\frac{-108}{156} < \frac{-91}{156}$$

$$\therefore \frac{9}{-13} < \frac{7}{-12}$$

5. The two rational numbers are $\frac{4}{-5}$ and $\frac{-7}{10}$.

$\therefore \frac{4}{-5} = \frac{4\times-1}{-5\times-1} = \frac{-4}{5}$

The LCM of the denominators 5 and 10 is 10.

Now,

$\frac{-4}{5} = \frac{-4\times2}{5\times2} = \frac{-8}{10}$

Also,

$\frac{-7}{10} = \frac{-7\times1}{10\times1} = \frac{-7}{10}$

Further,

$\frac{-8}{10} < \frac{-7}{10}$

$\therefore \frac{-4}{5} < \frac{-7}{10}$, or, $\frac{4}{-5} < \frac{-7}{10}$

6. The two rational numbers are $\frac{-12}{5}$ and -3.
-3 can be written as $\frac{-3}{1}$.

The LCM of the denominators is 5.

Now,

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

Because $\frac{-15}{5} < \frac{-12}{5}$, we can conclude that $-3 < \frac{-12}{5}$.

*********** END **********