



FLORENCE INTERNATIONAL SCHOOL
CLASS- VIII
WORKSHEET NO: 13
MATHS

NAME:

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PLEASE FOLLOW THE GIVEN LINK: <https://www.youtube.com/watch?v=fqvul3hjZVg>
<https://www.youtube.com/watch?v=CbrfJPv2qP8>

CONCEPT:

Inserting rational number:

We can insert infinitely many rational numbers between any two rational numbers. This property of rational numbers is known as the dense property.

How to find out some rational numbers lying between two given rational numbers, say between $-\frac{4}{7}$ and $\frac{2}{7}$. The four rational numbers $-\frac{3}{7}$, $-\frac{2}{7}$, $-\frac{1}{7}$, $0/7$ and $\frac{1}{7}$ lies between $-\frac{4}{7}$ and $\frac{2}{7}$.

We can apply the same procedure to insert more rational numbers between $-\frac{4}{7}$ and $\frac{2}{7}$.

The rational numbers $-\frac{4}{7}$ and $\frac{2}{7}$ can also be written as $-\frac{40}{70}$ and $\frac{20}{70}$ respectively.

Clearly, $-\frac{39}{70}$, $-\frac{38}{70}$, $-\frac{37}{70}$, $-\frac{36}{70}$, $-\frac{35}{70}$,, $0/70$, $\frac{1}{70}$, $\frac{2}{70}$, $\frac{3}{70}$, $\frac{4}{70}$,, $\frac{18}{70}$, $\frac{19}{70}$ are rational numbers between $-\frac{4}{7}$ and $\frac{2}{7}$.

The total number of these rational numbers is same as the number of integers between -40 and 70 , i.e., $70 - (-40) - 1 = 70 + 40 - 1 = 110 - 1 = 109$.

Similarly, by re-writing $-\frac{4}{7}$ and $\frac{2}{7}$ as $-\frac{400}{700}$ and $\frac{200}{700}$, we can insert $700 - (-400) - 1 = 700 + 400 - 1 = 1100 - 1 = 1099$ rational numbers between $-\frac{4}{7}$ and $\frac{2}{7}$.

Therefore, we can apply the same procedure to insert as many rational numbers between $-\frac{4}{7}$ and $\frac{2}{7}$.

1. Find out a rational number lying halfway between $\frac{2}{7}$ and $\frac{3}{4}$.

Solution:

Required number = $\frac{1}{2} (\frac{2}{7} + \frac{3}{4})$

$$= \frac{1}{2} ((8 + 21)/28)$$

$$= \{ \frac{1}{2} \times \frac{29}{28} \}$$

$$= \frac{29}{56}$$

Hence, $\frac{29}{56}$ is a rational number lying halfway between $\frac{2}{7}$ and $\frac{3}{4}$.

How to compare the two rational numbers?

In order to compare any two rational numbers, we can use the following steps:

Step I: Obtain the given rational numbers.

Step II: Write the given rational numbers so that their denominators are positive.

Step III: Find the LCM of the positive denominators of the rational numbers obtained in step II.

Step IV: Express each rational number (obtained in step II) with the LCM (obtained in step III) as common denominator.

Step V: Compare the numerators of rational numbers obtained in step having greater numerator is the greater rational number.

EXERCISE

Q1. Solve the given questions in notebook.

- a) Find out a rational numbers lying between $\frac{1}{4}$ and $\frac{1}{3}$.
- b) Find out a rational number lying between 2 and 3.
- c) Find out a rational number lying between $-\frac{1}{3}$ and $\frac{1}{2}$.
- d) Find out two rational numbers lying between -3 and -2.
- e) Find out six rational numbers lying between $-\frac{4}{8}$ and $\frac{3}{8}$.
- f) Find out ten rational numbers lying between $\frac{7}{13}$ and $-\frac{4}{13}$.
- g) Find out three rational numbers lying between 4 and 5.
- h) Find out three rational numbers lying between $\frac{2}{3}$ and $\frac{3}{4}$.

Q2. Fill in the blanks with the correct symbol out of $>$, $=$ and $<$:

- | | |
|--------------------------------|-------------------------------|
| (i) $(-6)/7$ ____ $7/13$ | (vi) -2 ____ $(-13)/5$ |
| (ii) $(-3)/7$ ____ $6/(-13)$ | (vii) 0 ____ $(-2)/5$ |
| (iii) $(-3)/5$ ____ $(-5)/6$ | (viii) $(-2)/3$ ____ $5/(-8)$ |
| (iv) $5/(-13)$ ____ $(-35)/91$ | (ix) 0 ____ $(-3)/(-5)$ |
| (v) $(-2)/3$ ____ $5/(-8)$ | (x) $(-8)/9$ ____ $(-9)/10$ |

Q3. Arrange the following rational number ascending order:

- (i) $\frac{2}{3}$, $\frac{5}{7}$, $(-4)/(-9)$, $\frac{1}{4}$
- (ii) $\frac{4}{(-9)}$, $(-5)/12$, $7/(-18)$, $(-2)/3$
- (iii) $\frac{3}{5}$, $(-17)/(-30)$, $8/(-15)$, $(-7)/10$
- (iv) $(-3)/4$, $5/(-12)$, $(-7)/16$, $9/(-24)$
- (v) $(-4)/9$, $5/(-12)$, $7/(-18)$, $2/(-3)$
- (vi) $3/(-5)$, $(-7)/10$, $(-11)/15$, $(-13)/20$
- (vii) $\frac{2}{3}$, $(-4)/7$, $(-8)/3$, $6/(-9)$
- (viii) $(-4)/7$, $(-9)/14$, $13/(-28)$, $(-23)/42$

