

## #463099

Using appropriate properties, find

$$(i) -\frac{2}{3} \times \frac{3}{5} + \frac{5}{2} - \frac{3}{5} \times \frac{1}{6}$$

$$(ii) \frac{2}{5} \times \left(-\frac{3}{7}\right) - \frac{1}{6} \times \frac{3}{2} + \frac{1}{14} \times \frac{2}{5}$$

**Solution**

Use commutative theorem, we will get

(i)

$$= -\frac{2}{3} \times \frac{3}{5} - \frac{3}{5} \times \frac{1}{6} + \frac{5}{2} = \left(-\frac{3}{5}\right) \left(\frac{2}{3} + \frac{1}{6}\right) + \frac{5}{2}$$

$$= -\frac{3}{5} + \frac{5}{2} = \frac{-3+5 \times 3}{6} = \frac{12}{6} = 2$$

(ii)

$$\frac{2}{5} \times \left(-\frac{3}{7}\right) - \frac{1}{6} \times \frac{3}{2} + \frac{1}{14} \times \frac{2}{5}$$

$$= \frac{2}{5} \times \left(-\frac{3}{7}\right) + \frac{1}{14} \times \frac{2}{5} - \frac{1}{6} \times \frac{3}{2} \text{ (commutative)}$$

$$= \frac{2}{5} \times \left(-\frac{3}{7} + \frac{1}{14}\right) - \frac{1}{4} \text{ (Distributive)}$$

$$= \frac{2}{5} \times \left(-\frac{5}{14}\right) - \frac{1}{4}$$

$$= -\frac{1}{7} - \frac{1}{4} = \frac{-11}{28}$$

## #463102

Write the additive inverse of each of the following.

$$(i) \frac{2}{8} \quad (ii) \frac{-5}{9} \quad (iii) \frac{-6}{-5} \quad (iv) \frac{2}{-9} \quad (v) \frac{19}{-6}$$

**Solution**

Additive inverse of  $\frac{a}{b}$  is  $-\frac{a}{b}$ , since  $\frac{a}{b} + \left(-\frac{a}{b}\right) = 0$

In the same manner:

(i)

$$\text{Additive inverse of } \frac{2}{8} \text{ is } -\frac{2}{8}$$

(ii)

$$\text{Additive inverse of } \frac{-5}{9} \text{ is } \frac{5}{9}$$

(iii)

$$\text{Additive inverse of } \frac{-6}{-5} \text{ is } \frac{-6}{5}$$

(iv)

$$\text{Additive inverse of } \frac{2}{-9} \text{ is } \frac{2}{9}$$

(v)

$$\text{Additive inverse of } \frac{19}{-6} \text{ is } \frac{19}{6}$$

## #463103

Find the multiplicative inverse of the following.

(i)  $-13$

(ii)  $\frac{1}{5}$

(iii)  $\frac{-5}{8} \times \frac{-3}{7}$

(iv)  $-1 \times \frac{-2}{5}$

(v)  $-1$

#### Solution

Multiplicative inverse of a number  $P$  is  $\frac{1}{P}$  as  $P \times \frac{1}{P} = 1$

i) Multiplicative inverse of  $-13$  is  $-\frac{1}{13}$

ii) Multiplicative inverse of  $\frac{1}{5}$  is  $5$

iii)  $\frac{-5}{8} \times \frac{-3}{7} = \frac{15}{56}$   
 Multiplicative inverse =  $\frac{56}{15}$

iv)  $\frac{-2}{5} \times -1 = \frac{2}{5}$   
 Multiplicative inverse =  $\frac{5}{2}$

v) Multiplicative inverse of  $-1$  is  $-1$ .

#### #463106

Name the property under multiplication used in each of the following.

(i)  $\frac{-4}{5} \times 1 = 1 \times \frac{-4}{5} = -\frac{4}{5}$

(ii)  $-\frac{13}{17} \times \frac{-2}{7} = \frac{-2}{7} \times \frac{-13}{17}$

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

#### Solution

i) Commutative property

As it follows:

$$A \times B = B \times A$$

ii) Commutative property

As it follows:

$$A \times B = B \times A$$

iii) Multiplicative inverse

As it follows:

$$A \times \frac{1}{A} = 1$$

#### #463107

Multiply  $\frac{6}{13}$  by the reciprocal of  $\frac{-7}{16}$ .

#### Solution

Reciprocal of  $\frac{-7}{16}$  is  $\frac{16}{-7}$

Now,

$$\frac{6}{13} \times \frac{16}{-7} = \frac{-96}{91}$$

#### #463109

Tell what property allows you to compute  $\frac{1}{3} \times \left(6 \times \frac{4}{3}\right)$  as  $\left(\frac{1}{3} \times 6\right) \times \frac{4}{3}$

#### Solution

Associative property.

The placement of the terms can change but the end product remains the same.

#### #463111

Is  $\frac{8}{9}$  the multiplicative inverse of  $-1\frac{1}{8}$ ? Why or why not?

#### Solution

If it is a multiplicative inverse, then the product = 1

$$\frac{8}{9} \times \left(-1\frac{1}{8}\right) = \frac{8}{9} \times \frac{-9}{8} = -1$$

Product = -1

∴ It is not a multiplicative inverse.

#### #463112

Is 0.3 the multiplicative inverse of  $3\frac{1}{3}$ ? Why or why not?

#### Solution

$$3\frac{1}{3} = \frac{10}{3}$$

If it is a multiplicative inverse of  $3\frac{1}{3}$  then the product should be 1

$$0.3 \times \frac{10}{3} = \frac{3}{10} \times \frac{10}{3} = 1$$

Product = 1

∴ 0.3 is a Multiplicative Inverse of  $3\frac{1}{3}$ .

#### #463113

Write.

- (i) The rational number that does not have a reciprocal.
- (ii) The rational numbers that are equal to their reciprocals.
- (iii) The rational number that is equal to its negative.

#### Solution

- (i) The rational number that does not have reciprocal is zero.
- (ii) 1, and -1 (Both are equal to their reciprocals)
- (iii) The rational number that is equal to its negative = 0

#### #463114

Fill in the blanks.

- (i) Zero has \_\_\_\_\_ reciprocal.
- (ii) The numbers \_\_\_\_\_ and \_\_\_\_\_ are their own reciprocals.
- (iii) The reciprocal of  $-5$  is \_\_\_\_\_.
- (iv) Reciprocal of  $\frac{1}{x}$ , where  $x \neq 0$  is \_\_\_\_\_.
- (v) The product of two rational numbers is always a \_\_\_\_\_.
- (vi) The reciprocal of a positive rational number is \_\_\_\_\_.

#### Solution

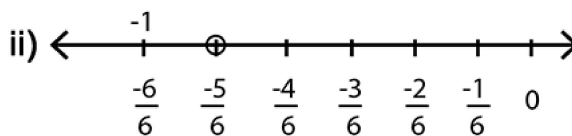
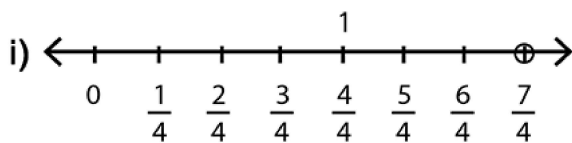
- i) Zero has No reciprocal.
- (ii) The numbers 1 and -1 are their own reciprocals.
- (iii) The reciprocal of  $-5$  is  $-\frac{1}{5}$ .
- (iv) Reciprocal of  $\frac{1}{x}$ , where  $x \neq 0$  is  $x$ .
- (v) The product of two rational numbers is always a Rational Number.
- (vi) The reciprocal of a positive rational number is Positive Rational Number.

#### #463115

Represent these numbers on the number line.

- (i)  $\frac{7}{4}$  (ii)  $\frac{-5}{6}$

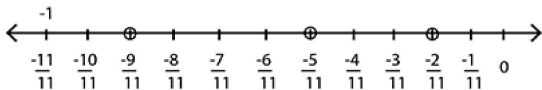
#### Solution



#### #463116

Represent  $\frac{-2}{11}$ ,  $\frac{-5}{11}$ ,  $\frac{-9}{11}$  on the number line.

#### Solution



#### #463118

Find ten rational numbers between  $\frac{-2}{5}$  and  $\frac{1}{2}$ .

#### Solution

$$\frac{-2}{5} \text{ and } \frac{1}{2} \rightarrow \frac{-2}{5} = \frac{-8}{20} \text{ and } \frac{1}{2} = \frac{10}{20}$$

$\therefore$  Ten rational numbers are

$$\frac{-7}{20}, \frac{-6}{20}, \frac{-5}{20}, \frac{-4}{20}, \frac{-3}{20}, \frac{-2}{20}, \frac{-1}{20}, 0, \frac{1}{20}, \frac{2}{20}$$

This question can have different multiple solutions too.

**#463119**

Find five rational numbers between.

(i)  $\frac{2}{3}$  and  $\frac{4}{5}$

(ii)  $\frac{-3}{2}$  and  $\frac{5}{3}$

(iii)  $\frac{1}{4}$  and  $\frac{1}{2}$

**Solution**

(i) We can represent  $\frac{2}{3}$  as  $\frac{30}{45}$  and  $\frac{4}{5}$  as  $\frac{36}{45}$  respectively.

Therefore;

$$5 \text{ rational numbers} = \frac{31}{45}, \frac{32}{45}, \frac{33}{45}, \frac{34}{45}, \frac{35}{45}$$

(ii) We can represent  $\frac{-3}{2}$  as  $\frac{-9}{6}$  and  $\frac{5}{3}$  as  $\frac{10}{6}$

Therefore,

$$5 \text{ rational numbers are } \frac{-8}{6}, \frac{-7}{6}, -1, \frac{-5}{6}, \frac{-4}{6}$$

(iii) We can represent  $\frac{1}{4}$  as  $\frac{8}{32}$  and  $\frac{1}{2}$  as  $\frac{16}{32}$  respectively.

Therefore,

$$5 \text{ rational numbers are } \frac{9}{32}, \frac{10}{32}, \frac{11}{32}, \frac{12}{32}, \frac{13}{32}$$

This question can have multiple solutions.

**#463120**

Write five rational numbers greater than  $-2$ .

**Solution**

We can represent  $-2$  as  $\frac{-14}{7}$ .

Five rational numbers are

$$\frac{-13}{7}, \frac{-12}{7}, \frac{-11}{7}, \frac{-10}{7}, \frac{-9}{7}$$

**#463146**

I purchased a hair-dryer for Rs. 5,400 including 8% VAT. Find the price before VAT was added.

**Solution**

Let the price of the hairdryer before VAT be Rs  $x$ .

$$\text{So, } 1.08 \times x = 5400$$

$$x = \frac{5400}{1.08} = \text{Rs } 5000$$

So, the cost of the hair dryer before VAT is Rs 5000

**#463523**

Find five rational numbers between 3 and 4.

**Solution**

Rational number is any number that can express in the form of  $\frac{p}{q}$  of two integers, where 'q' cannot be zero.

i) First rational number between 3 and 4 can be calculated by finding average between them, which is

$$\frac{3+4}{2} = \frac{7}{2}$$

Now, we have three numbers i.e. 3,  $\frac{7}{2}$  and 4, so other remaining rational numbers can be calculated by taking average between 3 and  $\frac{7}{2}$ , and between  $\frac{7}{2}$  and 4.

ii) Second rational number between 3 and  $\frac{7}{2}$  can be calculated by finding average between them.

$$\frac{\frac{7}{2} + 3}{2} = \frac{\frac{7+6}{2}}{2} = \frac{13}{4}$$

iii) The third rational number between 4 and  $\frac{7}{2}$  can be calculated by finding the average between them.

$$\frac{\frac{7}{2} + 4}{2} = \frac{\frac{7+8}{2}}{2} = \frac{15}{4}$$

iv) Similarly fourth rational number between 3 and  $\frac{13}{4}$  can be calculated by finding the average between them.

$$\frac{\frac{13}{4} + 3}{2} = \frac{\frac{13+12}{4}}{2} = \frac{25}{8}$$

v) Similarly, fifth rational number between 4 and  $\frac{13}{4}$  can be calculated by finding average between them.

$$\frac{\frac{13}{4} + 4}{2} = \frac{\frac{13+16}{4}}{2} = \frac{29}{8}$$

Then the rational numbers between 3 and 4 are

$$\frac{7}{2}, \frac{13}{4}, \frac{15}{4}, \frac{25}{8}, \frac{29}{8}$$

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#### #463526

Find five rational numbers between  $\frac{3}{5}$  and  $\frac{4}{5}$ .

**Solution**

Rational number is any number that can express in the form of  $\frac{p}{q}$  of two integers, where 'q' cannot be zero, so

(i) The rational number between  $\frac{3}{5}$  and  $\frac{4}{5}$  is average of  $\frac{3}{5}$  and  $\frac{4}{5}$

$$\frac{1}{2} \left( \frac{3}{5} + \frac{4}{5} \right) = \frac{1}{2} \left( \frac{3+4}{5} \right) = \frac{7}{10}$$

(ii) The second rational number between  $\frac{3}{5}$  and  $\frac{4}{5}$  can be calculated by calculating the average of  $\frac{3}{5}$  and  $\frac{7}{10}$

$$\frac{1}{2} \left( \frac{3}{5} + \frac{7}{10} \right) = \frac{1}{2} \left( \frac{6+7}{10} \right) = \frac{13}{20}$$

(iii) The third rational number between  $\frac{3}{5}$  and  $\frac{4}{5}$  can be calculated by calculating the average of  $\frac{7}{10}$  and  $\frac{4}{5}$

$$\frac{1}{2} \left( \frac{7}{10} + \frac{4}{5} \right) = \frac{1}{2} \left( \frac{7+8}{10} \right) = \frac{15}{20}$$

(iv) The fourth rational number between  $\frac{3}{5}$  and  $\frac{4}{5}$  can be calculated by calculating the average of  $\frac{3}{5}$  and  $\frac{13}{20}$

$$\frac{1}{2} \left( \frac{3}{5} + \frac{13}{20} \right) = \frac{1}{2} \left( \frac{12+13}{20} \right) = \frac{25}{40}$$

(v) The fifth rational number between  $\frac{3}{5}$  and  $\frac{4}{5}$  can be calculated by calculating the average of  $\frac{13}{20}$  and  $\frac{4}{5}$

$$\frac{1}{2} \left( \frac{13}{20} + \frac{4}{5} \right) = \frac{1}{2} \left( \frac{13+16}{20} \right) = \frac{29}{40}$$

Then five rational are  $\frac{7}{10}, \frac{13}{20}, \frac{15}{20}, \frac{27}{40}$  and  $\frac{29}{40}$

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#463556

Visualise 3.765 on the number line, using successive magnification.

**Solution**

We know that 3.765 lies between 3 and 4.

So, divide the gap between 3 and 4 into ten parts.

So, we get 3, 3.1, 3.2, 3.3, 3.4, 3.5, 3.6, 3.7, 3.8, 3.9, 4

Now, if we see closely, we can observe that 3.765 lies between 3.6 and 3.7.

So, we divide the gap between 3.7 and 3.8 into ten parts.

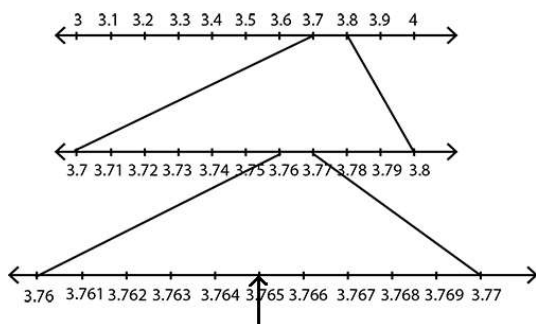
We get 3.7, 3.71, 3.72, 3.73, 3.74, 3.75, 3.76, 3.77, 3.78, 3.79, 3.8

now if we observe more closely 3.675 lies between 3.67 and 3.68.

Divide the gap between 3.76 and 3.77 into two parts.

So, we get 3.76, 3.765, 3.77.

Therefore, 3.765 is visualized on number line.




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#465887

Find ten rational numbers between  $\frac{3}{5}$  and  $\frac{3}{4}$ .

**Solution**

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We can represent  $\frac{3}{5}$  as  $\frac{36}{60}$  and  $\frac{3}{4}$  as  $\frac{45}{60}$  respectively.

Therefore;

10 rational numbers are

$\frac{37}{60}$ ,  $\frac{38}{60}$ ,  $\frac{39}{60}$ ,  $\frac{40}{60}$ ,  $\frac{41}{60}$ ,  $\frac{42}{60}$ ,  $\frac{43}{60}$ ,  $\frac{44}{60}$ ,  $\frac{45}{60}$ ,  $\frac{46}{60}$

This question might have a different answer. Answer showed here is one of the several possibility.