

Problem solving based on the above concept
(Addition and Subtraction of Rational numbers)

SUBJECT : MATHEMATICS

CHAPTER NUMBER: 02

CHAPTER NAME : RATIONAL NUMBERS

CHANGING YOUR TOMORROW

Learning outcomes

Students will be able to add and subtract rational numbers



Video on Addition and Subtraction of Rational numbers (4:03 seconds)

<https://www.youtube.com/watch?v=vnPXR9a4Prw>

7. The sum of two rational numbers is $\frac{11}{24}$. If one of them is $\frac{3}{8}$, find the other.

Solution:

It is given that

Sum of two rational numbers = $\frac{11}{24}$

One of the rational number = $\frac{3}{8}$

Other rational number = $\frac{11}{24} - \frac{3}{8}$

LCM of 24 and 8 is 24

= $\frac{11}{24} - \frac{(3 \times 3)}{(8 \times 3)}$

By further calculation

= $\frac{11}{24} - \frac{9}{24}$

So we get

= $\frac{(11 - 9)}{24}$

= $\frac{2}{24}$

= $\frac{1}{12}$

8. The sum of two rational numbers is $-7/12$. If one of them is $13/24$, find the other.

Solution:

It is given that

Sum of two rational numbers = $-7/12$

One of the rational number = $13/24$

Other rational number = $-7/12 - 13/24$

LCM of 12 and 24 is 24

= $(-7 \times 2) / (12 \times 2) - 13/24$

By further calculation

= $-14/24 - 13/24$

So we get

= $(-14 - 13) / 24$

= $-27/24$

= $-9/8$

9. The sum of two rational numbers is -4. If one of them is $-\frac{13}{12}$, find the other.

Solution:

It is given that

Sum of two rational numbers = -4

One of the rational number = $-\frac{13}{12}$

Other rational number = $-4 - (-\frac{13}{12})$

LCM of 1 and 12 is 12

= $-4 + \frac{13}{12}$

By further calculation

= $(-4 \times 12 + 13)/12$

So we get

= $(-48 + 13)/12$

= $-\frac{35}{12}$

10. What should be added to $-3/16$ to get $11/24$?

Solution:

Consider x as the required rational number

Other number = $-3/16$

Sum of two numbers = $11/24$

From the question

$$-3/16 + x = 11/24$$

By further calculation

$$x = 11/24 + 3/16$$

LCM of 16 and 24 is 48

$$x = (11 \times 2) / (24 \times 2) + (3 \times 3) / (16 \times 3)$$

So we get

$$x = 22/48 + 9/48$$

$$x = (22 + 9) / 48 = 31/48$$

11. What should be added to $-3/5$ to get 2?

Solution:

Consider x as the required rational number

Other number = $-3/5$

Here the sum of two numbers is 2

From the question

$$-3/5 + x = 2$$

By further calculation

$$x = 2 + 3/5$$

LCM of 1 and 5 is 5

$$x = (2 \times 5 + 3)/5$$

So we get

$$= (10 + 3)/5$$

$$= 13/5$$

$$= 2 \frac{3}{5}$$

12. What should be subtracted from $-4/5$ to get 1?

Solution:

Consider x as the required rational number

Other number = $-4/5$

Here the difference between two numbers is 1

From the question

$$-4/5 - x = 1$$

By further calculation

$$-4/5 - 1 = x$$

So we get

$$x = (-4 - 1 \times 5) / 5$$

$$x = (-4 - 5) / 5 = -9/5$$

13. The sum of two numbers is $-\frac{6}{5}$. If one of them is -2 , find the other.

Solution:

It is given that

Sum of two numbers = $-\frac{6}{5}$

One of the numbers = -2

Other number = $-\frac{6}{5} - (-\frac{2}{1})$

LCM of 1 and 5 is 5

= $-\frac{6}{5} - \frac{(2 \times 5)}{(1 \times 5)}$

By further calculation

= $(-6 + 10)/5$

= $\frac{4}{5}$

14. What should be added to $-7/12$ to get $3/8$?

Solution:

Consider x as the required rational number

Other rational number = $-7/12$

Sum of two numbers = $3/8$

Using the question

$$-7/12 + x = 3/8$$

So we get

$$x = 3/8 - (-7/12)$$

LCM of 8 and 12 is 24

$$x = (3 \times 3) / (8 \times 3) + (7 \times 2) / (12 \times 2)$$

By further calculation

$$= 9/24 + 14/24$$

So we get

$$= (9 + 14) / 24 = 23/24$$

15. What should be subtracted from $5/9$ to get $9/5$?

Solution:

Consider x as the first number

Other number is $5/9$

Here the difference between two numbers is $9/5$

Using the question

$$5/9 - x = 9/5$$

So we get

$$x = 5/9 - 9/5$$

LCM of 9 and 5 is 45

$$x = (5 \times 5) / (9 \times 5) - (9 \times 9) / (5 \times 9)$$

By further calculation

$$x = 25/45 - 81/45$$

$$x = (25 - 81) / 45 = -56/45$$

HW

Exercise 2C Q.No. 6

AHA

- If 22 dresses of equal size can be stitched from $71 \frac{1}{2}$ m of cloth , then what is the length of cloth required for each dress ?
- Find $(x+y) \times (xy)$, if $x = -\frac{2}{5}$ and $y = \frac{3}{4}$

THANKING YOU
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