

Access the answers to Maths RD Sharma Solutions For Class 7 Chapter 5 – Operations On Rational Numbers

Exercise 5.1 Page No: 5.4

1. Add the following rational numbers:

(i)  $(-5/7)$  and  $(3/7)$

(ii)  $(-15/4)$  and  $(7/4)$

(iii)  $(-8/11)$  and  $(-4/11)$

(iv)  $(6/13)$  and  $(-9/13)$

**Solution:**

(i) Given  $(-5/7)$  and  $(3/7)$

$$= (-5/7) + (3/7)$$

Here denominators are same so add the numerator

$$= ((-5+3)/7)$$

$$= (-2/7)$$

(ii) Given  $(-15/4)$  and  $(7/4)$

$$= (-15/4) + (7/4)$$

Here denominators are same so add the numerator

$$= ((-15 + 7)/4)$$

$$= (-8/4)$$

On simplifying

$$= -2$$

(iii) Given  $(-8/11)$  and  $(-4/11)$

$$= (-8/11) + (-4/11)$$

Here denominators are same so add the numerator

$$= (-8 + (-4))/11$$

$$= (-12/11)$$

(iv) Given  $(6/13)$  and  $(-9/13)$

$$= (6/13) + (-9/13)$$

Here denominators are same so add the numerator

$$= (6 + (-9))/13$$

$$= (-3/13)$$

2. Add the following rational numbers:

(i)  $(3/4)$  and  $(-3/5)$

(ii)  $-3$  and  $(3/5)$

(iii)  $(-7/27)$  and  $(11/18)$

**(iv)  $(31/-4)$  and  $(-5/8)$**

**Solution:**

(i) Given  $(3/4)$  and  $(-3/5)$

If  $p/q$  and  $r/s$  are two rational numbers such that  $q$  and  $s$  do not have a common factor other than one, then

$$(p/q) + (r/s) = (p \times s + r \times q) / (q \times s)$$

$$(3/4) + (-3/5) = (3 \times 5 + (-3) \times 4) / (4 \times 5)$$

$$= (15 - 12) / 20$$

$$= (3/20)$$

(ii) Given  $-3$  and  $(3/5)$

If  $p/q$  and  $r/s$  are two rational numbers such that  $q$  and  $s$  do not have a common factor other than one, then

$$(p/q) + (r/s) = (p \times s + r \times q) / (q \times s)$$

$$(-3/1) + (3/5) = (-3 \times 5 + 3 \times 1) / (1 \times 5)$$

$$= (-15 + 3) / 5$$

$$= (-12/5)$$

(iii) Given  $(-7/27)$  and  $(11/18)$

LCM of 27 and 18 is 54

$$(-7/27) = (-7/27) \times (2/2) = (-14/54)$$

$$(11/18) = (11/18) \times (3/3) = (33/54)$$

$$(-7/27) + (11/18) = (-14 + 33) / 54$$

$$= (19/54)$$

(iv) Given  $(31/-4)$  and  $(-5/8)$

LCM of  $-4$  and  $8$  is  $8$

$$(31/-4) = (31/-4) \times (2/2) = (62/-8)$$

$$(31/-4) + (-5/8) = (-62 - 5) / 8$$

$$= (-67/8)$$

**3. Simplify:**

**(i)  $(8/9) + (-11/6)$**

**(ii)  $(-5/16) + (7/24)$**

**(iii)  $(1/-12) + (2/-15)$**

**(iv)  $(-8/19) + (-4/57)$**

**Solution:**

(i) Given  $(8/9) + (-11/6)$

The LCM of  $9$  and  $6$  is  $18$

$$(8/9) = (8/9) \times (2/2) = (16/18)$$

$$(11/6) = (11/6) \times (3/3) = (33/18)$$

$$= (16 - 33) / 18$$

$$= (-17/18)$$

(ii) Given  $(-5/16) + (7/24)$

The LCM of 16 and 24 is 48

$$\text{Now } (-5/16) = (-5/16) \times (3/3) = (-15/48)$$

$$\text{Consider } (7/24) = (7/24) \times (2/2) = (14/48)$$

$$(-5/16) + (7/24) = (-15/48) + (14/48)$$

$$= (14 - 15) / 48$$

$$= (-1/48)$$

(iii) Given  $(1/-12) + (2/-15)$

The LCM of 12 and 15 is 60

$$\text{Consider } (-1/12) = (-1/12) \times (5/5) = (-5/60)$$

$$\text{Now } (2/-15) = (-2/15) \times (4/4) = (-8/60)$$

$$(1/-12) + (2/-15) = (-5/60) + (-8/60)$$

$$= (-5 - 8) / 60$$

$$= (-13/60)$$

(iv) Given  $(-8/19) + (-4/57)$

The LCM of 19 and 57 is 57

$$\text{Consider } (-8/57) = (-8/57) \times (3/3) = (-24/57)$$

$$(-8/19) + (-4/57) = (-24/57) + (-4/57)$$

$$= (-24 - 4) / 57$$

$$= (-28/57)$$

**4. Add and express the sum as mixed fraction:**

**(i)  $(-12/5) + (43/10)$**

**(ii)  $(24/7) + (-11/4)$**

**(iii)  $(-31/6) + (-27/8)$**

**Solution:**

(i) Given  $(-12/5) + (43/10)$

The LCM of 5 and 10 is 10

$$\text{Consider } (-12/5) = (-12/5) \times (2/2) = (-24/10)$$

$$(-12/5) + (43/10) = (-24/10) + (43/10)$$

$$= (-24 + 43) / 10$$

$$= (19/10)$$

Now converting it into mixed fraction

$$= 1 \frac{9}{10}$$

(ii) Given  $(24/7) + (-11/4)$

The LCM of 7 and 4 is 28

$$\text{Consider } (24/7) = (24/7) \times (4/4) = (96/28)$$

$$\text{Again } (-11/4) = (-11/4) \times (7/7) = (-77/28)$$

$$(24/7) + (-11/4) = (96/28) + (-77/28)$$

$$= (96 - 77)/28$$

$$= (19/28)$$

$$\text{(iii) Given } (-31/6) + (-27/8)$$

The LCM of 6 and 8 is 24

$$\text{Consider } (-31/6) = (-31/6) \times (4/4) = (-124/24)$$

$$\text{Again } (-27/8) = (-27/8) \times (3/3) = (-81/24)$$

$$(-31/6) + (-27/8) = (-124/24) + (-81/24)$$

$$= (-124 - 81)/24$$

$$= (-205/24)$$

Now converting it into mixed fraction

$$= -8 \frac{13}{24}$$

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## Exercise 5.2 Page No: 5.7

1. Subtract the first rational number from the second in each of the following:

(i)  $(3/8)$ ,  $(5/8)$

(ii)  $(-7/9)$ ,  $(4/9)$

(iii)  $(-2/11)$ ,  $(-9/11)$

(iv)  $(11/13)$ ,  $(-4/13)$

**Solution:**

(i) Given  $(3/8)$ ,  $(5/8)$

$$(5/8) - (3/8) = (5 - 3)/8$$

$$= (2/8)$$

$$= (1/4)$$

(ii) Given  $(-7/9)$ ,  $(4/9)$

$$(4/9) - (-7/9) = (4/9) + (7/9)$$

$$= (4 + 7)/9$$

$$= (11/9)$$

(iii) Given  $(-2/11)$ ,  $(-9/11)$

$$(-9/11) - (-2/11) = (-9/11) + (2/11)$$

$$= (-9 + 2)/11$$

$$= (-7/11)$$

(iv) Given  $(11/13)$ ,  $(-4/13)$

$$(-4/13) - (11/13) = (-4 - 11)/13$$

$$= (-15/13)$$

**2. Evaluate each of the following:**

**(i)  $(2/3) - (3/5)$**

**(ii)  $(-4/7) - (2/-3)$**

**(iii)  $(4/7) - (-5/-7)$**

**(iv)  $-2 - (5/9)$**

**Solution:**

(i) Given  $(2/3) - (3/5)$

The LCM of 3 and 5 is 15

Consider  $(2/3) = (2/3) \times (5/5) = (10/15)$

Now again  $(3/5) = (3/5) \times (3/3) = (9/15)$

$$(2/3) - (3/5) = (10/15) - (9/15)$$

$$= (1/15)$$

(ii) Given  $(-4/7) - (2/-3)$

The LCM of 7 and 3 is 21

Consider  $(-4/7) = (-4/7) \times (3/3) = (-12/21)$

Again  $(2/-3) = (-2/3) \times (7/7) = (-14/21)$

$$(-4/7) - (2/-3) = (-12/21) - (-14/21)$$

$$= (-12 + 14)/21$$

$$= (2/21)$$

(iii) Given  $(4/7) - (-5/-7)$

$$(4/7) - (5/7) = (4 - 5)/7$$

$$= (-1/7)$$

(iv) Given  $-2 - (5/9)$

Consider  $(-2/1) = (-2/1) \times (9/9) = (-18/9)$

$$-2 - (5/9) = (-18/9) - (5/9)$$

$$= (-18 - 5)/9$$

$$= (-23/9)$$

**3. The sum of the two numbers is  $(5/9)$ . If one of the numbers is  $(1/3)$ , find the other.**

**Solution:**

Given sum of two numbers is  $(5/9)$

And one them is  $(1/3)$

Let the unknown number be x

$$x + (1/3) = (5/9)$$

$$x = (5/9) - (1/3)$$

LCM of 3 and 9 is 9

Consider  $(1/3) = (1/3) \times (3/3) = (3/9)$

On substituting we get

$$x = (5/9) - (3/9)$$

$$x = (5 - 3)/9$$

$$x = (2/9)$$

**4. The sum of two numbers is  $(-1/3)$ . If one of the numbers is  $(-12/3)$ , find the other.**

**Solution:**

Given sum of two numbers =  $(-1/3)$

One of them is  $(-12/3)$

Let the required number be x

$$x + (-12/3) = (-1/3)$$

$$x = (-1/3) - (-12/3)$$

$$x = (-1/3) + (12/3)$$

$$x = (-1 + 12)/3$$

$$x = (11/3)$$

**5. The sum of two numbers is  $(-4/3)$ . If one of the numbers is -5, find the other.**

**Solution:**

Given sum of two numbers =  $(-4/3)$

One of them is -5

Let the required number be x

$$x + (-5) = (-4/3)$$

LCM of 1 and 3 is 3

$$(-5/1) = (-5/1) \times (3/3) = (-15/3)$$

On substituting

$$x + (-15/3) = (-4/3)$$

$$x = (-4/3) - (-15/3)$$

$$x = (-4/3) + (15/3)$$

$$x = (-4 + 15)/3$$

$$x = (11/3)$$

**6. The sum of two rational numbers is -8. If one of the numbers is  $(-15/7)$ , find the other.**

**Solution:**

Given sum of two numbers is -8

One of them is  $(-15/7)$

Let the required number be x

$$x + (-15/7) = -8$$

The LCM of 7 and 1 is 7

$$\text{Consider } (-8/1) = (-8/1) \times (7/7) = (-56/7)$$

On substituting

$$x + (-15/7) = (-56/7)$$

$$x = (-56/7) - (-15/7)$$

$$x = (-56/7) + (15/7)$$

$$x = (-56 + 15)/7$$

$$x = (-41/7)$$

**7. What should be added to  $(-7/8)$  so as to get  $(5/9)$ ?**

**Solution:**

Given  $(-7/8)$

Let the required number be  $x$

$$x + (-7/8) = (5/9)$$

The LCM of 8 and 9 is 72

$$x = (5/9) - (-7/8)$$

$$x = (5/9) + (7/8)$$

$$\text{Consider } (5/9) = (5/9) \times (8/8) = (40/72)$$

$$\text{Again } (7/8) = (7/8) \times (9/9) = (63/72)$$

On substituting

$$x = (40/72) + (63/72)$$

$$x = (40 + 63)/72$$

$$x = (103/72)$$

**8. What number should be added to  $(-5/11)$  so as to get  $(26/33)$ ?**

**Solution:**

Given  $(-5/11)$

Let the required number be  $x$

$$x + (-5/11) = (26/33)$$

$$x = (26/33) - (-5/11)$$

$$x = (26/33) + (5/11)$$

$$\text{Consider } (5/11) = (5/11) \times (3/3) = (15/33)$$

On substituting

$$x = (26/33) + (15/33)$$

$$x = (41/33)$$

**9. What number should be added to  $(-5/7)$  to get  $(-2/3)$ ?**

**Solution:**

Given  $(-5/7)$

Let the required number be  $x$

$$x + (-5/7) = (-2/3)$$

$$x = (-2/3) - (-5/7)$$

$$x = (-2/3) + (5/7)$$

LCM of 3 and 7 is 21

Consider  $(-2/3) = (-2/3) \times (7/7) = (-14/21)$

Again  $(5/7) = (5/7) \times (3/3) = (15/21)$

On substituting

$$x = (-14/21) + (15/21)$$

$$x = (-14 + 15)/21$$

$$x = (1/21)$$

**10. What number should be subtracted from  $(-5/3)$  to get  $(5/6)$ ?**

**Solution:**

Given  $(-5/3)$

Let the required number be x

$$(-5/3) - x = (5/6)$$

$$-x = (5/6) - (-5/3)$$

$$-x = (5/6) + (5/3)$$

Consider  $(5/3) = (5/3) \times (2/2) = (10/6)$

On substituting

$$-x = (5/6) + (10/6)$$

$$-x = (15/6)$$

$$x = (-15/6)$$

**11. What number should be subtracted from  $(3/7)$  to get  $(5/4)$ ?**

**Solution:**

Given  $(3/7)$

Let the required number be x

$$(3/7) - x = (5/4)$$

$$-x = (5/4) - (3/7)$$

The LCM of 4 and 7 is 28

Consider  $(5/4) = (5/4) \times (7/7) = (35/28)$

Again  $(3/7) = (3/7) \times (4/4) = (12/28)$

On substituting

$$-x = (35/28) - (12/28)$$

$$-x = (35 - 12)/28$$

$$-x = (23/28)$$

$$x = (-23/28)$$

**12. What should be added to  $((2/3) + (3/5))$  to get  $(-2/15)$ ?**

**Solution:**

Given  $((2/3) + (3/5))$

Let the required number be x



$$((2/3) + (3/5)) + x = (-2/15)$$

$$\text{Consider } (2/3) = (2/3) \times (5/5) = (10/15)$$

$$\text{Again } (3/5) = (3/5) \times (3/3) = (9/15)$$

On substituting

$$((10/15) + (9/15)) + x = (-2/15)$$

$$x = (-2/15) - ((10/15) + (9/15))$$

$$x = (-2/15) - (19/15)$$

$$x = (-2 - 19)/15$$

$$x = (-21/15)$$

$$x = (-7/5)$$

**13. What should be added to  $((1/2) + (1/3) + (1/5))$  to get 3?**

**Solution:**

$$\text{Given } ((1/2) + (1/3) + (1/5))$$

Let the required number be x

$$((1/2) + (1/3) + (1/5)) + x = 3$$

$$x = 3 - ((1/2) + (1/3) + (1/5))$$

LCM of 2, 3 and 5 is 30

$$\text{Consider } (1/2) = (1/2) \times (15/15) = (15/30)$$

$$(1/3) = (1/3) \times (10/10) = (10/30)$$

$$(1/5) = (1/5) \times (6/6) = (6/30)$$

On substituting

$$x = 3 - ((15/30) + (10/30) + (6/30))$$

$$x = 3 - (31/30)$$

$$(3/1) = (3/1) \times (30/30) = (90/30)$$

$$x = (90/30) - (31/30)$$

$$x = (90 - 31)/30$$

$$x = (59/30)$$

**14. What should be subtracted from  $((3/4) - (2/3))$  to get  $(-1/6)$ ?**

**Solution:**

$$\text{Given } ((3/4) - (2/3))$$

Let the required number be x

$$((3/4) - (2/3)) - x = (-1/6)$$

$$-x = (-1/6) - ((3/4) - (2/3))$$

$$\text{Consider } (3/4) = (3/4) \times (3/3) = (9/12)$$

$$(2/3) = (2/3) \times (4/4) = (8/12)$$

On substituting

$$-x = (-1/6) - ((9/12) - (8/12))$$

$$-x = (-1/6) - (1/12)$$

$$(1/6) = (1/6) \times (2/2) = (2/12)$$

$$-x = (-2/12) - (1/12)$$

$$-x = (-2 - 1)/12$$

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

$$x = (3/12)$$

$$x = (1/4)$$

**15. Simplify:**

**(i)  $(-3/2) + (5/4) - (7/4)$**

**(ii)  $(5/3) - (7/6) + (-2/3)$**

**(iii)  $(5/4) - (7/6) - (-2/3)$**

**(iv)  $(-2/5) - (-3/10) - (-4/7)$**

**Solution:**

(i) Given  $(-3/2) + (5/4) - (7/4)$

Consider  $(-3/2) = (-3/2) \times (2/2) = (-6/4)$

On substituting

$$(-3/2) + (5/4) - (7/4) = (-6/4) + (5/4) - (7/4)$$

$$= (-6 + 5 - 7)/4$$

$$= (-13 + 5)/4$$

$$= (-8/4)$$

$$= -2$$

(ii) Given  $(5/3) - (7/6) + (-2/3)$

Consider  $(5/3) = (5/3) \times (2/2) = (10/6)$

$$(-2/3) = (-2/3) \times (2/2) = (-4/6)$$

$$(5/3) - (7/6) + (-2/3) = (10/6) - (7/6) - (4/6)$$

$$= (10 - 7 - 4)/6$$

$$= (10 - 11)/6$$

$$= (-1/6)$$

(iii) Given  $(5/4) - (7/6) - (-2/3)$

The LCM of 4, 6 and 3 is 12

Consider  $(5/4) = (5/4) \times (3/3) = (15/12)$

$$(7/6) = (7/6) \times (2/2) = (14/12)$$

$$(-2/3) = (-2/3) \times (4/4) = (-8/12)$$

$$(5/4) - (7/6) - (-2/3) = (15/12) - (14/12) + (8/12)$$

$$= (15 - 14 + 8)/12$$

$$= (9/12)$$

$$= (3/4)$$

(iv) Given  $(-2/5) - (-3/10) - (-4/7)$

The LCM of 5, 10 and 7 is 70

Consider  $(-2/5) = (-2/5) \times (14/14) = (-28/70)$

$(-3/10) = (-3/10) \times (7/7) = (-21/70)$

$(-4/7) = (-4/7) \times (10/10) = (-40/70)$

On substituting

$(-2/5) - (-3/10) - (-4/7) = (-28/70) + (21/70) + (40/70)$

$= (-28 + 21 + 40)/70$

$= (33/70)$

**16. Fill in the blanks:**

**(i)  $(-4/13) - (-3/26) = \dots$**

**(ii)  $(-9/14) + \dots = -1$**

**(iii)  $(-7/9) + \dots = 3$**

**(iv)  $\dots + (15/23) = 4$**

**Solution:**

(i)  $(-5/26)$

**Explanation:**

Consider  $(-4/13) - (-3/26)$

$(-4/13) = (-4/13) \times (2/2) = (-8/26)$

$(-4/13) - (-3/26) = (-8/26) - (-3/26)$

$= (-5/26)$

(ii)  $(-5/14)$

**Explanation:**

Given  $(-9/14) + \dots = -1$

$(-9/14) + 1 = \dots$

$(-9/14) + (14/14) = (5/14)$

$(-9/14) + (-5/14) = -1$

(iii)  $(34/9)$

**Explanation:**

Given  $(-7/9) + \dots = 3$

$(-7/9) + x = 3$

$x = 3 + (7/9)$

$(3/1) = (3/1) \times (9/9) = (27/9)$

$x = (27/9) + (7/9) = (34/9)$

(iv)  $(77/23)$

**Explanation:**

Given  $\dots + (15/23) = 4$

$$x + (15/23) = 4$$

$$x = 4 - (15/23)$$

$$(4/1) = (4/1) \times (23/23) = (92/23)$$

$$x = (92/23) - (15/23)$$

$$= (77/23)$$

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## Exercise 5.3 Page No: 5.10

### 1. Multiply:

(i)  $(7/11)$  by  $(5/4)$

(ii)  $(5/7)$  by  $(-3/4)$

(iii)  $(-2/9)$  by  $(5/11)$

(iv)  $(-3/13)$  by  $(-5/-4)$

**Solution:**

(i) Given  $(7/11)$  by  $(5/4)$

$$(7/11) \times (5/4) = (35/44)$$

(ii) Given  $(5/7)$  by  $(-3/4)$

$$(5/7) \times (-3/4) = (-15/28)$$

(iii) Given  $(-2/9)$  by  $(5/11)$

$$(-2/9) \times (5/11) = (-10/99)$$

(iv) Given  $(-3/13)$  by  $(-5/-4)$

$$(-3/13) \times (-5/-4) = (-15/68)$$

### 2. Multiply:

(i)  $(-5/17)$  by  $(51/-60)$

(ii)  $(-6/11)$  by  $(-55/36)$

(iii)  $(-8/25)$  by  $(-5/16)$

(iv)  $(6/7)$  by  $(-49/36)$

**Solution:**

(i) Given  $(-5/17)$  by  $(51/-60)$

$$(-5/17) \times (51/-60) = (-225/-1020)$$

$$= (225/1020)$$

$$= (1/4)$$

(ii) Given  $(-6/11)$  by  $(-55/36)$

$$(-6/11) \times (-55/36) = (330/396)$$

$$= (5/6)$$

(iii) Given  $(-8/25)$  by  $(-5/16)$

$$(-8/25) \times (-5/16) = (40/400)$$

$$= (1/10)$$

$$(iv) \text{ Given } (6/7) \text{ by } (-49/36)$$

$$(6/7) \times (-49/36) = (-294/252)$$

$$= (-7/6)$$

**3. Simplify each of the following and express the result as a rational number in standard form:**

$$(i) (-16/21) \times (14/5)$$

$$(ii) (7/6) \times (-3/28)$$

$$(iii) (-19/36) \times 16$$

$$(iv) (-13/9) \times (27/-26)$$

**Solution:**

$$(i) \text{ Given } (-16/21) \times (14/5)$$

$$(-16/21) \times (14/5) = (224/105)$$

$$= (-32/15)$$

$$(ii) \text{ Given } (7/6) \times (-3/28)$$

$$(7/6) \times (-3/28) = (-21/168)$$

$$= (-1/8)$$

$$(iii) \text{ Given } (-19/36) \times 16$$

$$(-19/36) \times 16 = (-304/36)$$

$$= (-76/9)$$

$$(iv) \text{ Given } (-13/9) \times (27/-26)$$

$$(-13/9) \times (27/-26) = (-351/234)$$

$$= (3/2)$$

**4. Simplify:**

$$(i) (-5 \times (2/15)) - (-6 \times (2/9))$$

$$(ii) ((-9/4) \times (5/3)) + ((13/2) \times (5/6))$$

**Solution:**

$$(i) \text{ Given } (-5 \times (2/15)) - (-6 \times (2/9))$$

$$(-5 \times (2/15)) - (-6 \times (2/9)) = (-10/15) - (-12/9)$$

$$= (-2/3) + (12/9)$$

$$= (-6/9) + (12/9)$$

$$= (6/9)$$

$$= (2/3)$$

$$(ii) \text{ Given } ((-9/4) \times (5/3)) + ((13/2) \times (5/6))$$

$$((-9/4) \times (5/3)) + ((13/2) \times (5/6)) = ((-3/4) \times 5) + ((13/2) \times (5/6))$$

$$= (-15/4) + (65/12)$$

$$= (-15/4) \times (3/3) + (65/12)$$

$$= (-45/12) + (65/12)$$

$$= (65 - 45)/12$$

$$= (20/12)$$

$$= (5/3)$$

**5. Simplify:**

**(i)  $((13/9) \times (-15/2)) + ((7/3) \times (8/5)) + ((3/5) \times (1/2))$**

**(ii)  $((3/11) \times (5/6)) - ((9/12) \times ((4/3)) + ((5/13) \times (6/15))$**

**Solution:**

(i) Given  $((13/9) \times (-15/2)) + ((7/3) \times (8/5)) + ((3/5) \times (1/2))$

$$((13/9) \times (-15/2)) + ((7/3) \times (8/5)) + ((3/5) \times (1/2)) = (-195/18) + (56/15) + (3/10)$$

$$= (-65/6) + (56/15) + (3/10)$$

$$= (-65/6) \times (5/5) + (56/15) \times (2/2) + (3/10) \times (3/3).$$

$$= (-325/30) + (112/30) + (9/30)$$

$$= (-325 + 112 + 9)/30$$

$$= (-204/30)$$

$$= (-34/5)$$

(ii) Given  $((3/11) \times (5/6)) - ((9/12) \times ((4/3)) + ((5/13) \times (6/15))$

$$((3/11) \times (5/6)) - ((9/12) \times ((4/3)) + ((5/13) \times (6/15)) = (15/66) - (36/36) + (30/195)$$

$$= (5/22) - (12/12) + (1/11)$$

$$= (5/22) - 1 + (2/13)$$

$$= (5/22) \times (13/13) + (1/1) \times (286/286) + (2/13) \times (22/22)$$

$$= (65/286) - (286/286) + (44/286)$$

$$= (-177/286)$$

## Exercise 5.4 Page No: 5.13

**1. Divide:**

**(i) 1 by  $(1/2)$**

**(ii) 5 by  $(-5/7)$**

**(iii)  $(-3/4)$  by  $(9/-16)$**

**(iv)  $(-7/8)$  by  $(-21/16)$**

**(v)  $(7/-4)$  by  $(63/64)$**

**(vi) 0 by  $(-7/5)$**

**(vii)  $(-3/4)$  by -6**

**(viii)  $(2/3)$  by  $(-7/12)$**

**Solution:**

(i) Given 1 by  $(1/2)$

$$1 \div (1/2) = 1 \times 2 = 2$$

(ii) Given 5 by  $(-5/7)$

$$5 \div (-5/7) = 5 \times (-7/5)$$

$$= -7$$

(iii) Given  $(-3/4)$  by  $(9/-16)$

$$(-3/4) \div (9/-16) = (-3/4) \times (-16/9)$$

$$= (-4/-3)$$

$$= (4/3)$$

(iv) Given  $(-7/8)$  by  $(-21/16)$

$$(-7/8) \div (-21/16) = (-7/8) \times (16/-21)$$

$$= (-2/-3)$$

$$= (2/3)$$

(v) Given  $(7/-4)$  by  $(63/64)$

$$(7/-4) \div (63/64) = (7/-4) \times (64/63)$$

$$= (-16/9)$$

(vi) Given 0 by  $(-7/5)$

$$0 \div (-7/5) = 0 \times (5/7)$$

$$= 0$$

(vii) Given  $(-3/4)$  by -6

$$(-3/4) \div -6 = (-3/4) \times (1/-6)$$

$$= (-1/-8)$$

$$= (1/8)$$

(viii) Given  $(2/3)$  by  $(-7/12)$

$$(2/3) \div (-7/12) = (2/3) \times (12/-7)$$

$$= (8/-7)$$

**2. Find the value and express as a rational number in standard form:**

**(i)  $(2/5) \div (26/15)$**

**(ii)  $(10/3) \div (-35/12)$**

**(iii)  $-6 \div (-8/17)$**

**(iv)  $(40/98) \div (-20)$**

**Solution:**

(i) Given  $(2/5) \div (26/15)$

$$(2/5) \div (26/15) = (2/5) \times (15/26)$$

$$= (3/13)$$

(ii) Given  $(10/3) \div (-35/12)$

$$(10/3) \div (-35/12) = (10/3) \times (12/-35)$$

$$= (-40/35)$$

$$= (-8/7)$$

(iii) Given  $-6 \div (-8/17)$

$$-6 \div (-8/17) = -6 \times (17/-8)$$

$$= (102/8)$$

$$= (51/4)$$

(iv) Given  $(40/98) \div -20$

$$(40/98) \div -20 = (40/98) \times (1/-20)$$

$$= (-2/98)$$

$$= (-1/49)$$

**3. The product of two rational numbers is 15. If one of the numbers is -10, find the other.**

**Solution:**

Let required number be x

$$x \times -10 = 15$$

$$x = (15/-10)$$

$$x = (3/-2)$$

$$x = (-3/2)$$

Hence the number is  $(-3/2)$

**4. The product of two rational numbers is  $(-8/9)$ . If one of the numbers is  $(-4/15)$ , find the other.**

**Solution:**

Given product of two numbers =  $(-8/9)$

One of them is  $(-4/15)$

Let the required number be x

$$x \times (-4/15) = (-8/9)$$

$$x = (-8/9) \div (-4/15)$$

$$x = (-8/9) \times (15/-4)$$

$$x = (-120/-36)$$

$$x = (10/3)$$

**5. By what number should we multiply  $(-1/6)$  so that the product may be  $(-23/9)$ ?**

**Solution:**

Given product =  $(-23/9)$

One number is  $(-1/6)$

Let the required number be x

$$x \times (-1/6) = (-23/9)$$

$$x = (-23/9) \div (-1/6)$$

$$x = (-23/9) \times (-6/1)$$

$$x = (-138/9)$$



$$x = (46/3)$$

**6. By what number should we multiply  $(-15/28)$  so that the product may be  $(-5/7)$ ?**

**Solution:**

Given product =  $(-5/7)$

One number is  $(-15/28)$

Let the required number be  $x$

$$x \times (-15/28) = (-5/7)$$

$$x = (-5/7) \div (-15/28)$$

$$x = (-5/7) \times (28/-15)$$

$$x = (-4/-3)$$

$$x = (4/3)$$

**7. By what number should we multiply  $(-8/13)$  so that the product may be 24?**

**Solution:**

Given product = 24

One of the number is =  $(-8/13)$

Let the required number be  $x$

$$x \times (-8/13) = 24$$

$$x = 24 \div (-8/13)$$

$$x = 24 \times (13/-8)$$

$$x = -39$$

**8. By what number should  $(-3/4)$  be multiplied in order to produce  $(-2/3)$ ?**

**Solution:**

Given product =  $(-2/3)$

One of the number is =  $(-3/4)$

Let the required number be  $x$

$$x \times (-3/4) = (-2/3)$$

$$x = (-2/3) \div (-3/4)$$

$$x = (-2/3) \times (4/-3)$$

$$x = (-8/-9)$$

$$x = (8/9)$$

**9. Find  $(x + y) \div (x - y)$ , if**

**(i)  $x = (2/3)$ ,  $y = (3/2)$**

**(ii)  $x = (2/5)$ ,  $y = (1/2)$**

**(iii)  $x = (5/4)$ ,  $y = (-1/3)$**

**Solution:**

(i) Given  $x = (2/3)$ ,  $y = (3/2)$

$$(x + y) \div (x - y) = ((2/3) + (3/2)) \div ((2/3) - (3/2))$$

$$= (4 + 9)/6 \div (4 - 9)/6$$

$$= (4 + 9)/6 \times (6/ (4 - 9))$$

$$= (4 + 9)/ (4 -9)$$

$$= (13/-5)$$

$$(ii) \text{ Given } x = (2/5), y = (1/2)$$

$$(x + y) \div (x - y) = ((2/5) + (1/2)) \div ((2/5) - (1/2))$$

$$= (4 + 5)/10 \div (4 -5)/10$$

$$= (4 + 5)/10 \times (10/ (4 - 5))$$

$$= (4 + 5)/ (4 -5)$$

$$= (9/-1)$$

$$(iii) \text{ Given } x = (5/4), y = (-1/3)$$

$$(x + y) \div (x - y) = ((5/4) + (-1/3)) \div ((5/4) - (-1/3))$$

$$= (15 - 4)/12 \div (15 + 4)/12$$

$$= (15 - 4)/12 \times (12/ (15 + 4))$$

$$= (15 - 4)/ (15 + 4)$$

$$= (11/19)$$

**10. The cost of 7 (2/3) meters of rope is Rs. 12 (3/4). Find its cost per meter.**

**Solution:**

$$\text{Given cost of } 7 (2/3) = (23/3) \text{ meters of rope is Rs. } 12 (3/4) = (51/4)$$

$$\text{Cost per meter} = (51/4) \div (23/3)$$

$$= (51/4) \times (3/23)$$

$$= (153/92)$$

$$= \text{Rs } 1 (61/92)$$

**11. The cost of 2 (1/3) meters of cloth is Rs.75 (1/4). Find the cost of cloth per meter.**

**Solution:**

$$\text{Given cost of } 2(1/3) \text{ metres of rope} = \text{Rs. } 75 (1/4)$$

$$\text{Cost of cloth per meter} = 75 (1/4) \div 2 (1/3)$$

$$= (301/4) \div (7/3)$$

$$= (301/4) \times (3/7)$$

$$= (129/4)$$

$$= \text{Rs } 32 (1/4)$$

**12. By what number should (-33/16) be divided to get (-11/4)?**

**Solution:**

Let the required number be x

$$(-33/16) \div x = (-11/4)$$

$$x = (-33/16) \div (-11/4)$$

$$x = (-33/16) \times (4/-11)$$

$$x = (3/4)$$

**13. Divide the sum of  $(-13/5)$  and  $(12/7)$  by the product of  $(-31/7)$  and  $(-1/2)$**

**Solution:**

Given

$$\begin{aligned} & ((-13/5) + (12/7)) \div (-31/7) \times (-1/2) \\ & = ((-13/5) \times (7/7) + (12/7) \times (5/5)) \div (31/14) \\ & = ((-91/35) + (60/35)) \div (31/14) \\ & = (-31/35) \div (31/14) \\ & = (-31/35) \times (14/31) \\ & = (-14/35) \\ & = (-2/5) \end{aligned}$$

**14. Divide the sum of  $(65/12)$  and  $(8/3)$  by their difference.**

**Solution:**

$$\begin{aligned} & ((65/12) + (8/3)) \div ((65/12) - (8/3)) \\ & = ((65/12) + (32/12)) \div ((65/12) - (32/12)) \\ & = (65 + 32)/12 \div (65 - 32)/12 \\ & = (65 + 32)/12 \times (12 / (65 - 32)) \\ & = (65 + 32) / (65 - 32) \\ & = (97/33) \end{aligned}$$

**15. If 24 trousers of equal size can be prepared in 54 metres of cloth, what length of cloth is required for each trouser?**

**Solution:**

Given material required for 24 trousers = 54m

Cloth required for 1 trouser =  $(54/24)$

=  $(9/4)$  meters

## Exercise 5.5 Page No: 5.16

**1. Find six rational numbers between  $(-4/8)$  and  $(3/8)$**

**Solution:**

We know that between -4 and -8, below mentioned numbers will lie

-3, -2, -1, 0, 1, 2.

According to definition of rational numbers are in the form of  $(p/q)$  where  $q$  not equal to zero.

Therefore six rational numbers between  $(-4/8)$  and  $(3/8)$  are

$(-3/8)$ ,  $(-2/8)$ ,  $(-1/8)$ ,  $(0/8)$ ,  $(1/8)$ ,  $(2/8)$ ,  $(3/8)$

**2. Find 10 rational numbers between  $(7/13)$  and  $(-4/13)$**

**Solution:**

We know that between 7 and -4, below mentioned numbers will lie

-3, -2, -1, 0, 1, 2, 3, 4, 5, 6.

According to definition of rational numbers are in the form of  $(p/q)$  where  $q$  not equal to zero.

Therefore six rational numbers between  $(7/13)$  and  $(-4/13)$  are

$(-3/13)$ ,  $(-2/13)$ ,  $(-1/13)$ ,  $(0/13)$ ,  $(1/13)$ ,  $(2/13)$ ,  $(3/13)$ ,  $(4/13)$ ,  $(5/13)$ ,  $(6/13)$

**3. State true or false:**

(i) Between any two distinct integers there is always an integer.

(ii) Between any two distinct rational numbers there is always a rational number.

(iii) Between any two distinct rational numbers there are infinitely many rational numbers.

**Solution:**

(i) False

**Explanation:**

Between any two distinct integers not necessary to be one integer.

(ii) True

**Explanation:**

According to the properties of rational numbers between any two distinct rational numbers there is always a rational number.

(iii) True

**Explanation:**

According to the properties of rational numbers between any two distinct rational numbers there are infinitely many rational numbers.

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## RD Sharma Solutions For Class 7 Maths Chapter 5 – Operations On Decimal Numbers

Chapter 5, Operations On Rational Numbers contains five exercises. **RD Sharma Solutions** are given here which include the answers to all the questions present in these exercises. Let us have a look at some of the concepts that are being discussed in this chapter.

- Addition of rational numbers
- Rational numbers with same denominators
- Rational numbers with distinct denominators
- Subtraction of rational numbers
- Multiplication of rational numbers
- Reciprocal of a non-zero rational number
- Division of rational number
- Insertion of rational numbers between two given rational numbers

## Chapter brief of RD Sharma Solutions for Class 7 Maths Chapter 5 – Operations On Rational Numbers

Chapter Operations on Rational Numbers deals with operations of addition, subtraction, multiplication and division on rational numbers. Students will also learn about the properties of these **operations on rational numbers**. Rational numbers can be two types with the same denominator and numbers with different denominator. Here students will study the stepwise solutions for these two types of rational numbers.