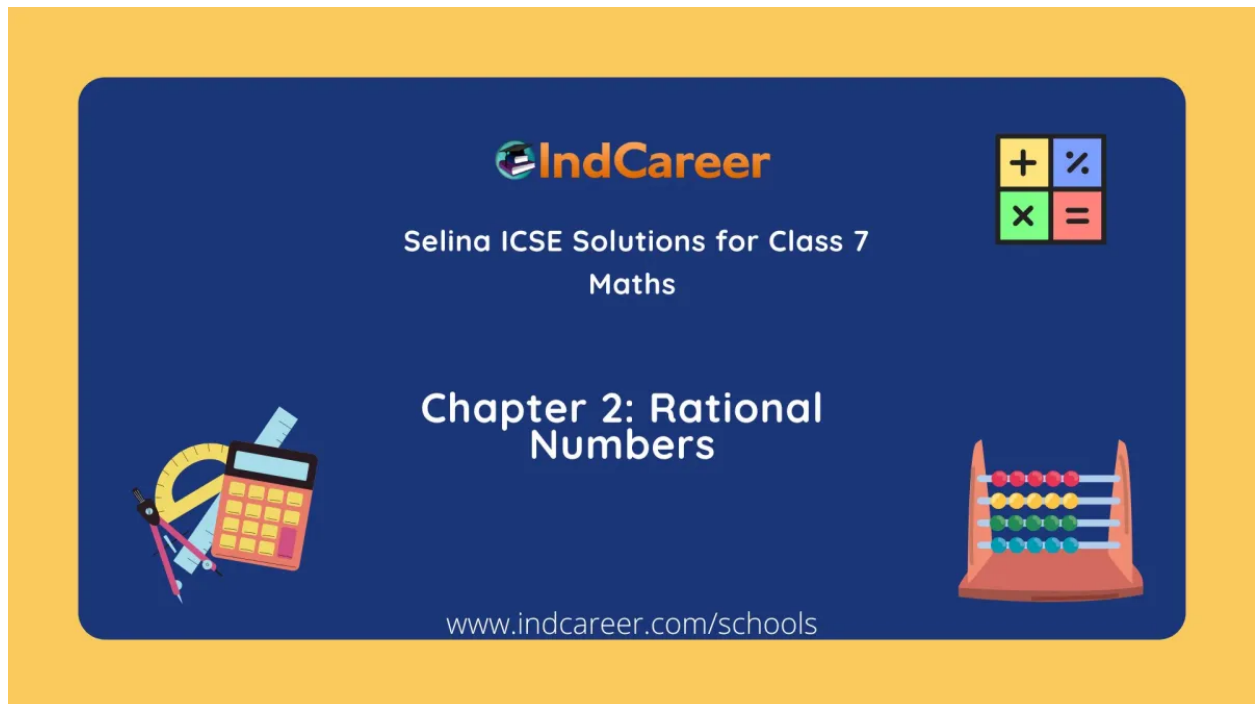


Selina Class 7 ICSE Solutions Mathematics :

Chapter 2- Rational Numbers



For any clarifications or questions you can write to info@indcareer.com

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Selina Class 7 ICSE Solutions Mathematics :

Chapter 2- Rational Numbers

Exercise 2A page: 19

1. Write down a rational number whose numerator is the largest number of two digits and denominator is the smallest number of four digits.

Solution:

We know that the largest two digit number is 99

So the smallest four digit number is 1000

Numerator = 99

Denominator = 1000

Rational number = $99/1000$

2. Write the numerator of each of the following rational numbers:

(i) $-125/127$

(ii) $37/-137$

(iii) $-85/93$

(iv) 2

(v) 0

Solution:

(i) $-125/127$

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Here the numerator = - 125

(ii) $37/ -137$

Here the numerator = 37

(iii) - 85/ 93

Here the numerator = - 85

(iv) $2 = 2/1$

Here the numerator = 2

(v) $0 = 0/1$

Here the numerator = 0

3. Write the denominator of each of the following rational numbers:

(i) $7/ -15$

(ii) - $18/29$

(iii) - $3/4$

(iv) - 7

(v) 0

Solution:

(i) $7/ -15$

Here the denominator = - 15

(ii) - $18/29$

Here the denominator = 29

(iii) - $3/4$

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Here the denominator = 4

$$(iv) -7 = -7/1$$

Here the denominator = 1

$$(v) 0 = 0/1$$

Here the denominator = 1

4. Write down a rational number with numerator $(-5) \times (-4)$ and with denominator $(28 - 27) \times (8 - 5)$.

Solution:

It is given that

$$\text{Numerator} = (-5) \times (-4) = 20$$

$$\text{Denominator} = (28 - 27) \times (8 - 5) = 1 \times 3 = 3$$

So the rational number = $20/3$

5. (i) $-15/1$ in integer form is

(ii) $23/-1$ in integer form is

(iii) If $18 = 18/a$ then $a = \dots\dots$

(iv) If $-57 = 57/a$ then $a = \dots\dots$

Solution:

(i) $-15/1$ in integer form is -15 .

(ii) $23/-1$ in integer form is -23 .

(iii) If $18 = 18/a$ then $a = 18/18 = 1$.

(iv) If $-57 = 57/a$ then $a = 57/-57 = -1$.

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6. Separate positive and negative rational numbers from the following:

$-3/5$, $3/-5$, $-3/-5$, $3/5$, 0 , $-13/-3$, $15/-8$, $-15/8$

Solution:

Here the positive rational numbers are

$-3/-5 = 3/5$ as both are negative

$-13/-3 = 13/3$ as both are negative and $3/5$

Similarly the negative rational numbers are

$-3/5$, $3/-5$, $15/-8$ and $-15/8$

0 is neither positive nor negative integer.

7. Find three rational numbers equivalent to

(i) $3/5$

(ii) $4/-7$

(iii) $-5/9$

(iv) $8/-15$

Solution:

(i) $3/5$

It can be written as

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

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

$$3/5 = (3 \times 4) / (5 \times 4) = 12/20$$

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Therefore, $6/10$, $9/15$ and $12/20$ are the rational numbers which are equivalent to the given rational number $3/5$.

(ii) $4/-7$

It can be written as

$$4/-7 = (4 \times 2) / (-7 \times 2) = 8/-14$$

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

$$4/-7 = (4 \times 4) / (-7 \times 4) = 16/-28$$

Therefore, $8/-14$, $12/-21$ and $16/-28$ are the rational numbers which are equivalent to the given rational number $4/-7$.

(iii) $-5/9$

It can be written as

$$-5/9 = (-5 \times 2) / (9 \times 2) = -10/18$$

$$-5/9 = (-5 \times 3) / (9 \times 3) = -15/27$$

$$-5/9 = (-5 \times 4) / (9 \times 4) = -20/36$$

Therefore, $-10/18$, $-15/27$ and $-20/36$ are the rational numbers which are equivalent to the given rational number $-5/9$.

(iv) $8/-15$

It can be written as

$$8/-15 = (8 \times 2) / (-15 \times 2) = 16/-30$$

$$8/-15 = (8 \times 3) / (-15 \times 3) = 24/-45$$

$$8/-15 = (8 \times 4) / (-15 \times 4) = 32/-60$$

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Therefore, $16/-30$, $24/-45$ and $32/-60$ are the rational numbers which are equivalent to the given rational number $8/-15$.

8. Which of the following are not rational numbers:

(i) -3

(ii) 0

(iii) $0/4$

(iv) $8/0$

(v) $0/0$

Solution:

(i) $-3 = -3/1$ is a rational number.

(ii) $0 = 0/1$ is a rational number.

(iii) $0/4$ is a rational number.

(iv) $8/0$ is not a rational number.

(v) $0/0$ is not a rational number as both numerator and denominator are zero.

9. Express each of the following integers as a rational number with denominator 7:

(i) 5

(ii) -8

(iii) 0

(iv) -16

(v) 7

Solution:

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(i) 5

By multiplying and dividing by 7

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

$$= 35/7$$

(ii) - 8

By multiplying and dividing by 7

$$= (-8 \times 7) / 7$$

$$= - 56/7$$

(iii) 0

By multiplying and dividing by 7

$$= (0 \times 7) / 7$$

$$= 0/7$$

(iv) - 16

By multiplying and dividing by 7

$$= (-16 \times 7) / 7$$

$$= - 112/7$$

(v) 7

By multiplying and dividing by 7

$$= (7 \times 7) / 7$$

$$= 49/7$$

10. Express $3/5$ as a rational number with denominator:

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(i) 20

(ii) - 20

(iii) 45

(iv) 25

(v) - 35

Solution:

(i) 20

It can be written as

$$3/5 = (3 \times 4) / (5 \times 4) = 12/20$$

(ii) - 20

It can be written as

$$3/5 = (3 \times -4) / (5 \times -4) = -12/-20$$

(iii) 45

It can be written as

$$3/5 = (3 \times 9) / (5 \times 9) = 27/45$$

(iv) 25

It can be written as

$$3/5 = (3 \times 5) / (5 \times 5) = 15/25$$

(v) - 35

It can be written as

$$3/5 = (3 \times -7) / (5 \times -7) = -21/-35$$

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11. Express $\frac{4}{7}$ as a rational number with numerator:

(i) 12

(ii) - 12

(iii) - 16

(iv) - 20

(v) 20

Solution:

(i) 12

It can be written as

$$\frac{4}{7} = \frac{(4 \times 3)}{(7 \times 3)} = \frac{12}{21}$$

(ii) - 12

It can be written as

$$\frac{4}{7} = \frac{(4 \times -3)}{(7 \times -3)} = \frac{-12}{-21}$$

(iii) - 16

It can be written as

$$\frac{4}{7} = \frac{(4 \times -4)}{(7 \times -4)} = \frac{-16}{-28}$$

(iv) - 20

It can be written as

$$\frac{4}{7} = \frac{(4 \times -5)}{(7 \times -5)} = \frac{-20}{-35}$$

(v) 20

It can be written as

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$$4/7 = (4 \times 5) / (7 \times 5) = 20/35$$

12. Find x, such that:

(i) $-2/3 = 6/x$

(ii) $7/-4 = x/8$

(iii) $3/7 = x/-35$

(iv) $-48/x = 6$

(v) $36/x = 3$

(vi) $-27/x = 9$

Solution:

(i) $-2/3 = 6/x$

By cross multiplication

$$-2x = 6 \times 3$$

By further calculation

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

So we get

$$x = 18 / -2 = -9$$

Hence, $-2/3 = 6/-9$.

(ii) $7/-4 = x/8$

By cross multiplication

$$7 \times 8 = -4 \times x$$

On further calculation

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$$56 = -4x$$

So we get

$$x = 56/-4 = -14$$

Hence, $7/-4 = -14/8$.

$$(iii) \frac{3}{7} = \frac{x}{-35}$$

By cross multiplication

$$7x = -35 \times 3$$

On further calculation

$$x = (-35 \times 3) / 7$$

So we get

$$x = -15$$

Hence, $\frac{3}{7} = -15/-35$.

$$(iv) \frac{-48}{x} = 6$$

By cross multiplication

$$6x = -48$$

On further calculation

$$x = -48/6 = -8$$

Hence, $-48/-8 = 6$.

$$(v) \frac{36}{x} = 3$$

By cross multiplication

$$3x = 36$$

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On further calculation

$$x = 12$$

Hence, $36/12 = 3$.

$$(vi) - 27/x = 9$$

By cross multiplication

$$9x = -27$$

On further calculation

$$x = -27/9 = -3$$

Hence, $-27/-3 = 9$.

13. Express each of the following rational numbers to the lowest terms:

(i) $12/15$

(ii) $-120/144$

(iii) $-48/-72$

(iv) $14/-56$

Solution:

(i) $12/15$

12	15	1
	12	
3	12	4
	12	
	x	

Here dividing by 3 which is the HCF of 12 and 15

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$$(12 \div 3) / (15 \div 3) = 4/5$$

$$(ii) - 120/144$$

120	144	1
	120	
24	120	5
	120	
	x	

Here dividing by 24 which is the HCF of -120 and 144

$$(-120 \div 24) / (144 \div 24) = - 5/6$$

$$(iii) - 48/ - 72$$

48	72	1
	48	
24	48	2
	48	
	x	

Here dividing by 24 which is the HCF of -48 and - 72

$$(-48 \div 24) / (-72 \div 24) = -2/-3 = 2/3$$

$$(iv) 14/-56$$

14	56	4
	56	
	x	

Here dividing by 14 which is the HCF of 14 and - 56

$$(14 \div 14) / (-56 \div 14) = 1/-4 \text{ or } - 1/4$$

14. Express each of the following rational numbers in the standard form.

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(i) $-7/-8$

(ii) $5/ - 12$

(iii) $- 7/ - 20$

(iv) $4/ -9$

Solution:

Here a rational number is in standard form if its denominator is positive in lowest term.

(i) $-7/-8 = 7/8$

(ii) $5/ - 12 = -5/12$

(iii) $- 7/ - 20 = 7/20$

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

Exercise 2B page: 25

1. Mark the following pairs of rational numbers on the separate number lines:

(i) $3/4$ and $-1/4$

(ii) $2/5$ and $-3/5$

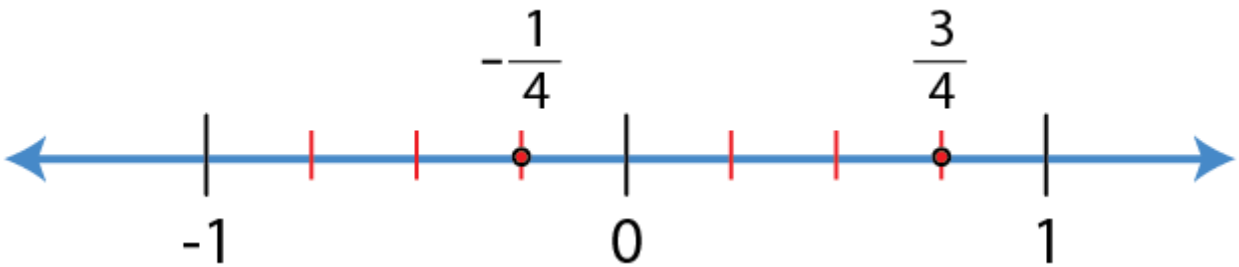
(iii) $5/6$ and $-2/3$

(iv) $2/5$ and $-4/5$

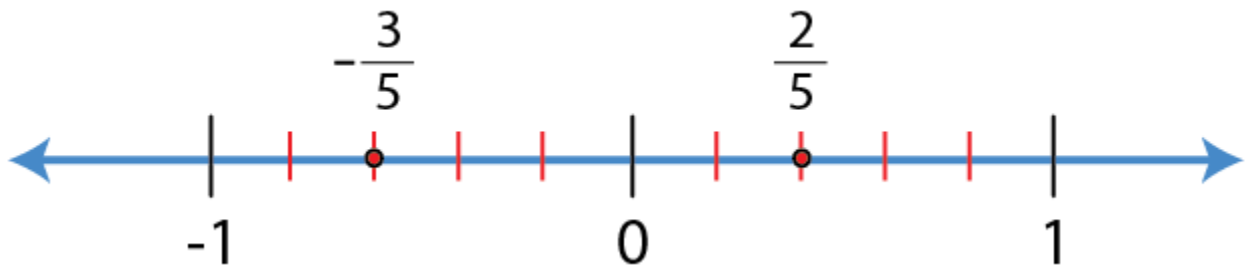
(v) $1/4$ and $-5/4$

Solution:

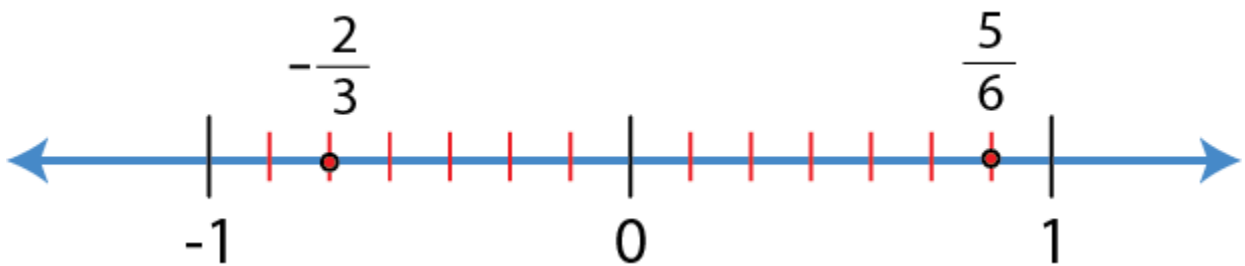
(i) $3/4$ and $-1/4$



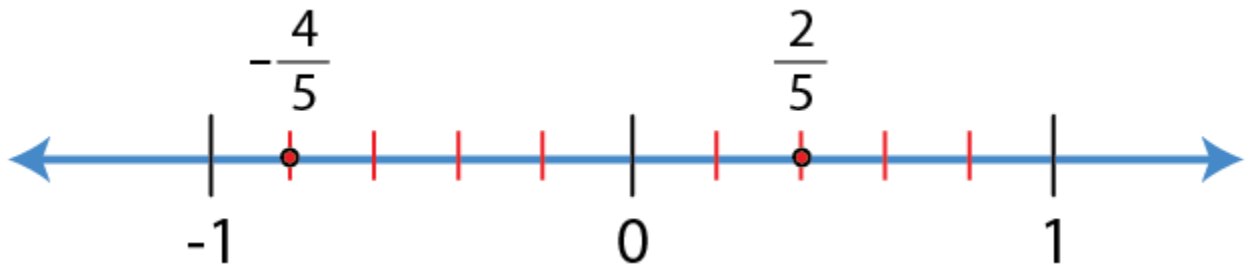
(ii) $\frac{2}{5}$ and $-\frac{3}{5}$



(iii) $\frac{5}{6}$ and $-\frac{2}{3}$

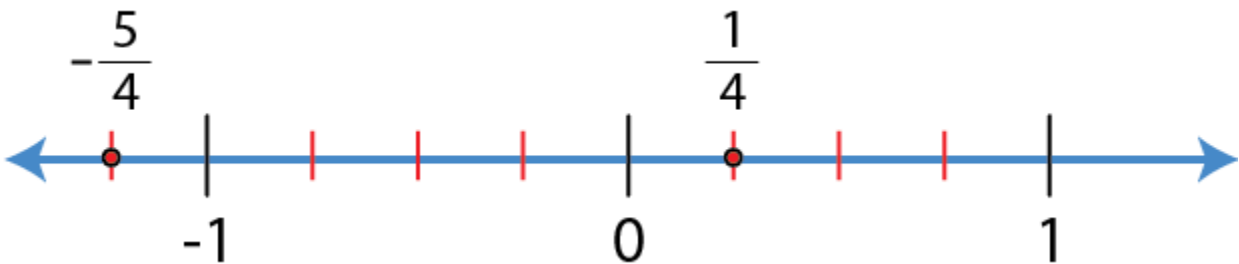


(iv) $\frac{2}{5}$ and $-\frac{4}{5}$



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(v) $\frac{1}{4}$ and $-\frac{5}{4}$



2. Compare:

(i) $\frac{3}{5}$ and $\frac{5}{7}$

(ii) $-\frac{7}{2}$ and $\frac{5}{2}$

(iii) -3 and $2\frac{3}{4}$

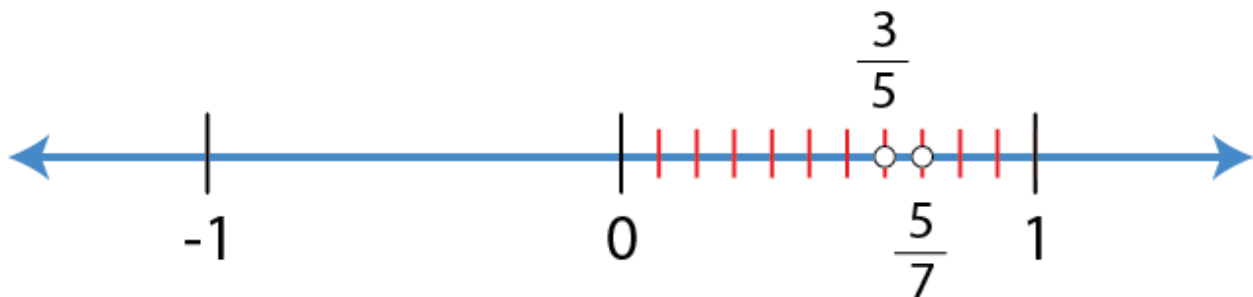
(iv) $-1\frac{1}{2}$ and 0

(v) 0 and $\frac{3}{4}$

(vi) 3 and -1

Solution:

(i) $\frac{3}{5}$ and $\frac{5}{7}$



$\frac{5}{7}$ is on the right side of the number line.

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Hence, $3/5 < 5/7$.

(ii) $-7/2$ and $5/2$



P is on the right of Q

Hence, $-7/2 < 5/2$.

(iii) -3 and $2\frac{3}{4}$



P is on the right of Q

Hence, $-3 < 11/4$ or $-3 < 2\frac{3}{4}$.

(iv) $-1\frac{1}{2}$ and 0



P is on the right of Q

Hence, $-\frac{3}{2} < 0$ or $-1\frac{1}{2} < 0$.

(v) 0 and $\frac{3}{4}$



P is on the right of Q

Hence, $0 < \frac{3}{4}$.

(vi) 3 and -1



P is on the right of Q

Hence, $3 > -1$.

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3. Compare:

(i) $-1/4$ and 0

(ii) $1/4$ and 0

(iii) $-3/8$ and $2/5$

(iv) $-5/8$ and $7/-12$

(v) $5/-9$ and $-5/-9$

(vi) $-7/8$ and $5/-6$

(vii) $2/7$ and $-3/-8$

Solution:

(i) $-1/4$ and 0

$-1/4$ is a negative rational number which is always less than 0 .

Hence, $-1/4 < 0$.

(ii) $1/4$ and 0

$1/4$ is a positive rational number which is always greater than 0 .

Hence, $1/4 > 0$.

(iii) $-3/8$ and $2/5$

We know that

a/b and $c/d = a \times d$ and $b \times c$

So we get

$a \times d < b \times c$

Substituting the values

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$$- 3 \times 5 \text{ and } 2 \times 8$$

$$- 15 < 16$$

Hence, $-3/8 < 2/5$.

(iv) $-5/8$ and $7/-12$

It can be written as

$$-5/8 \text{ and } -7/12$$

We know that

$$a/b \text{ and } c/d = a \times d \text{ and } b \times c$$

So we get

$$a \times d < b \times c$$

Substituting the values

$$- 5 \times 12 \text{ and } - 7 \times 8$$

$$-60 < - 56$$

Hence, $-5/8 < 7/-12$.

(v) $5/-9$ and $-5/-9$

We know that

$$a/b \text{ and } c/d = a \times d \text{ and } b \times c$$

So we get

$$a \times d < b \times c$$

Substituting the values

$$5 \times -9 \text{ and } -5 \times -9$$

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$$-45 < 45$$

Hence, $5/-9 < -5/-9$.

(vi) $-7/8$ and $5/-6$

It can be written as

$$-7/8 \text{ and } -5/6$$

We know that

$$a/b \text{ and } c/d = a \times d \text{ and } b \times c$$

So we get

$$a \times d < b \times c$$

Substituting the values

$$-7 \times 6 \text{ and } -5 \times 8$$

$$-42 < -40$$

Hence, $-7/8 < 5/-6$.

(vii) $2/7$ and $-3/-8$

It can be written as

$$2/7 \text{ and } 3/8$$

We know that

$$a/b \text{ and } c/d = a \times d \text{ and } b \times c$$

So we get

$$a \times d < b \times c$$

Substituting the values

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$$2 \times 8 \text{ and } 7 \times 3$$

$$16 < 21$$

Hence, $2/7 < -3/-8$.

4. Arrange the given rational numbers in ascending order:

(i) $7/10$, $-11/-30$ and $5/-15$

(ii) $4/-9$, $-5/12$ and $2/-3$

Solution:

(i) $7/10$, $-11/-30$ and $5/-15$

It is given that

$$= 7/10, -11/-30 \text{ and } -5/-5$$

LCM of 10, 30 and 15 = 30

$$= (7 \times 3)/(10 \times 3), 11/30 \text{ and } (-5 \times 2)/(15 \times 2)$$

So we get

$$= 21/30, 11/30 \text{ and } -10/30$$



Here, $-10 < 11 < 21$

We can write it as

$$-10/30 < 11/30 < 21/30$$

By further calculation

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$$5/-15 < -11/-30 < 7/10$$

(ii) $4/-9$, $-5/12$ and $2/-3$

It is given that

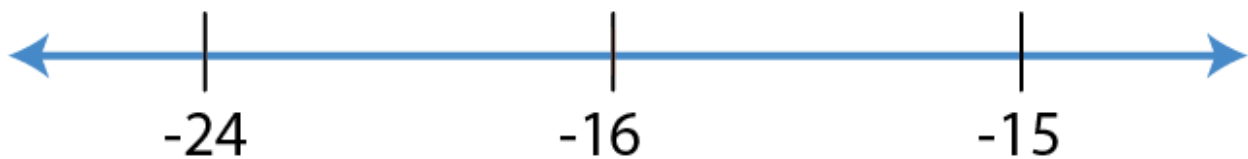
$$= -4/9, -5/12 \text{ and } -2/3$$

LCM of 9, 12 and 3 is 36

$$= (-4 \times 4)/(9 \times 4), (-5 \times 3)/(12 \times 3) \text{ and } (-2 \times 12)/(3 \times 12)$$

So we get

$$= -16/36, -15/36 \text{ and } -24/36$$



Here, $-24 < -16 < -15$

We can write it as

$$-24/36 < -16/36 < -15/36$$

By further calculation

$$2/-3 < 4/-9 < -5/12$$

5. Arrange the given rational numbers in descending order:

(i) $5/8$, $13/-16$ and $-7/12$

(ii) $3/-10$, $-13/30$ and $8/-20$

Solution:

(i) $5/8$, $13/-16$ and $-7/12$

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It can be written as

$$= \frac{5}{8}, -\frac{13}{16} \text{ and } -\frac{7}{12}$$

LCM of 8, 16 and 12 is 48

$$= \frac{(5 \times 6)}{(8 \times 6)}, \frac{(-13 \times 3)}{(16 \times 3)} \text{ and } \frac{(-7 \times 4)}{(12 \times 4)}$$

So we get

$$= \frac{30}{48}, -\frac{39}{48} \text{ and } -\frac{28}{48}$$



Here, $30 > -28 > -39$

We can write it as

$$\frac{30}{48} > -\frac{28}{48} > -\frac{39}{48}$$

By further calculation

$$\frac{5}{8} > -\frac{7}{12} > -\frac{13}{16}$$

(ii) $\frac{3}{-10}, -\frac{13}{30}$ and $\frac{8}{-20}$

It can be written as

$$= -\frac{3}{10}, -\frac{13}{30} \text{ and } -\frac{8}{20}$$

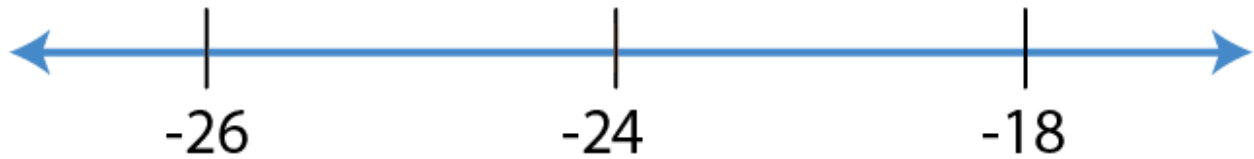
LCM of 10, 20 and 30 is 60

$$= \frac{(-3 \times 6)}{(10 \times 6)}, \frac{(-13 \times 2)}{(30 \times 2)} \text{ and } \frac{(-8 \times 3)}{(20 \times 3)}$$

So we get

$$= -\frac{18}{60}, -\frac{26}{60} \text{ and } -\frac{24}{60}$$

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Here, $-18 > -24 > -26$

We can write it as

$$-18/60 > -24/60 > -26/60$$

By further calculation

$$3/-10 > 8/-20 > -13/30$$

6. Fill in the blanks:

(i) $5/8$ and $3/10$ are on the side of zero.

(ii) $-5/8$ and $3/10$ are on the sides of zero.

(iii) $-5/8$ and $-3/10$ are on the side of zero.

(iv) $5/8$ and $-3/10$ are on the sides of zero.

Solution:

(i) $5/8$ and $3/10$ are on the same side of zero.

(ii) $-5/8$ and $3/10$ are on the opposite sides of zero.

(iii) $-5/8$ and $-3/10$ are on the same side of zero.

(iv) $5/8$ and $-3/10$ are on the opposite sides of zero.

Exercise 2C page: 30

1. Add:

(i) $7/5$ and $2/5$

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(ii) $-4/9$ and $2/9$

(iii) $5/-12$ and $1/12$

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

(v) $-7/25$ and $9/-25$

(vi) $-7/26$ and $7/-26$

Solution:

(i) $7/5$ and $2/5$

It can be written as

$$= 7/5 + 2/5$$

By further calculation

$$= (7 + 2)/ 5$$

$$= 9/5$$

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

(ii) $-4/9$ and $2/9$

It can be written as

$$= -4/9 + 2/9$$

By further calculation

$$= (-4 + 2)/ 9$$

$$= -2/9$$

(iii) $5/-12$ and $1/12$

It can be written as

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$$= -5/12 + 1/12$$

By further calculation

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

$$= -4/ 12$$

$$= -1/3$$

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

It can be written as

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

By further calculation

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

$$= 3/15$$

$$= 1/5$$

(v) $-7/25$ and $9/-25$

It can be written as

$$= -7/25 + -9/25$$

By further calculation

$$= [(-7) + (-9)]/ 25$$

$$= -16/25$$

(vi) $-7/26$ and $7/-26$

It can be written as

$$= - 7/26 + -7/26$$

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By further calculation

$$= [(-7) + (-7)] / 26$$

$$= -14/26$$

$$= -7/13$$

2. Add:

(i) $-2/5$ and $3/7$

(ii) $-5/6$ and $4/9$

(iii) -3 and $2/3$

(iv) $-5/9$ and $7/18$

(v) $-7/24$ and $-5/48$

(vi) $1/-18$ and $5/-27$

(vii) $-9/25$ and $1/-75$

(viii) $13/-16$ and $-11/24$

(ix) $-9/-16$ and $-11/8$

Solution:

(i) $-2/5$ and $3/7$

It can be written as

$$= (-2 \times 7) / (5 \times 7) + (3 \times 5) / (7 \times 5)$$

LCM of 5 and 7 is 35

$$= -14/35 + 15/35$$

By further calculation

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$$= (-14 + 15)/35$$

$$= 1/35$$

(ii) $-5/6$ and $4/9$

It can be written as

$$= -5/6 + 4/9$$

LCM of 6 and 9 is 36

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

By further calculation

$$= -30/36 + 16/36$$

So we get

$$= (-30 + 16)/36$$

$$= -14/36$$

$$= -7/18$$

(iii) -3 and $2/3$

It can be written as

$$= -3/1 + 2/3$$

LCM of 1 and 3 is 3

$$= (-3 \times 3)/(1 \times 3) + (2 \times 1)/(3 \times 1)$$

By further calculation

$$= -9/3 + 2/3$$

So we get

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

$$= -7/3$$

(iv) $-5/9$ and $7/18$

It can be written as

$$= -5/9 + 7/18$$

LCM of 9 and 18 is 18

$$= (-5 \times 2)/ (9 \times 2) + (7 \times 1)/ (18 \times 1)$$

By further calculation

$$= -10/18 + 7/18$$

So we get

$$= (-10 + 7)/ 18$$

$$= - 3/18$$

$$= -1/6$$

(v) $-7/24$ and $-5/48$

It can be written as

$$= -7/24 + -5/48$$

LCM of 24 and 48 is 48

$$= (-7 \times 2)/ (24 \times 2) + (-5 \times 1)/ (48 \times 1)$$

By further calculation

$$= -14/48 + -5/48$$

So we get

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$$= (-14 - 5)/ 48$$

$$= - 19/48$$

(vi) $1/-18$ and $5/-27$

It can be written as

$$= - 1/18 + -5/27$$

LCM of 18 and 27 is 54

$$= (-1 \times 3)/ (18 \times 3) + (-5 \times 2)/ (27 \times 2)$$

By further calculation

$$= -3/54 + -10/54$$

So we get

$$= (- 3 - 10)/ 54$$

$$= -13/54$$

(vii) $-9/25$ and $1/-75$

It can be written as

$$= -9/25 + -1/75$$

LCM of 24 and 75 is 75

$$= (-9 \times 3)/ (25 \times 3) + (-1 \times 1)/ (75 \times 1)$$

By further calculation

$$= -27/75 + -1/75$$

So we get

$$= (-27 - 1)/ 75$$

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$$= -28/75$$

(viii) $13/-16$ and $-11/24$

It can be written as

$$= -13/16 + -11/24$$

LCM of 16 and 24 is 48

$$= (-13 \times 3)/(16 \times 3) + (-11 \times 2)/(24 \times 2)$$

By further calculation

$$= -39/48 + -22/48$$

So we get

$$= (-39 - 22)/48$$

$$= -61/48$$

(ix) $-9/-16$ and $-11/8$

It can be written as

$$= 9/16 + -11/8$$

LCM of 16 and 8 is 16

$$= (9 \times 1)/(16 \times 1) + (-11 \times 2)/(8 \times 2)$$

By further calculation

$$= 9/16 + -22/16$$

So we get

$$= (9 - 22)/16$$

$$= -13/16$$

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3. Evaluate:

(i) $-2/5 + 3/5 + -1/5$

(ii) $-8/9 + 4/9 + -2/9$

(iii) $5/-24 + -1/8 + 3/16$

(iv) $-7/6 + 4/-15 + -4/-30$

(v) $-2 + 2/5 + -2/15$

(vi) $-11/12 + 5/16 + -3/8$

Solution:

(i) $-2/5 + 3/5 + -1/5$

It can be written as

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

By further calculation

$$= 0/5$$

$$= 0$$

(ii) $-8/9 + 4/9 + -2/9$

It can be written as

$$= (-8 + 4 - 2)/9$$

By further calculation

$$= (-10 + 4)/9$$

$$= -6/9$$

$$= -2/3$$

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(iii) $5/-24 + -1/8 + 3/16$

It can be written as

$$= -5/24 + -1/8 + 3/16$$

LCM of 8, 16 and 24 is 48

$$= (-5 \times 2)/(24 \times 2) + (-1 \times 6)/(8 \times 6) + (3 \times 3)/(16 \times 3)$$

By further calculation

$$= -10/48 + -6/48 + 9/48$$

So we get

$$= (-10 - 6 + 9)/48$$

$$= (-16 + 9)/48$$

$$= -7/48$$

(iv) $-7/6 + 4/-15 + -4/-30$

It can be written as

$$= -7/6 + -4/15 + 4/30$$

LCM of 6, 15 and 30 is 30

$$= (-7 \times 5)/(6 \times 5) + (-4 \times 2)/(15 \times 2) + (4 \times 1)/(30 \times 1)$$

By further calculation

$$= -35/30 + -8/30 + 4/30$$

So we get

$$= (-35 - 8 + 4)/30$$

$$= (-43 + 4)/30$$

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$$= -39/30$$

$$= -13/10$$

$$(v) -2 + 2/5 + -2/15$$

It can be written as

$$= -2/1 + 2/5 + -2/15$$

LCM of 1, 5 and 15 is 15

$$= (-2 \times 15)/(1 \times 15) + (2 \times 3)/(5 \times 3) + (-2 \times 1)/(15 \times 1)$$

By further calculation

$$= -30/15 + 6/15 + -2/15$$

So we get

$$= (-30 + 6 - 2)/15$$

$$= (-32 + 6)/15$$

$$= -26/15$$

$$(vi) -11/12 + 5/16 + -3/8$$

It can be written as

$$= -11/12 + 5/16 + -3/8$$

LCM of 12, 16 and 8 is 48

$$= (-11 \times 4)/(12 \times 4) + (5 \times 3)/(16 \times 3) + (-3 \times 6)/(8 \times 6)$$

By further calculation

$$= -44/48 + 15/48 + -18/48$$

So we get

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$$= (-44 + 15 - 18) / 48$$

$$= (-62 + 15) / 48$$

$$= -47 / 48$$

4. Evaluate:

(i) $-11/18 + -3/9 + 2/-3$

(ii) $-9/4 + 13/3 + 25/6$

(iii) $-5 + 5/-8 + -5/-12$

(iv) $-2/3 + 5/2 + 2$

(v) $5 + -3/4 + -5/8$

Solution:

(i) $-11/18 + -3/9 + 2/-3$

It can be written as

$$= -11/18 + -3/9 + -2/3$$

LCM of 3, 9 and 18 is 18

$$= (-11 \times 1) / (18 \times 1) + (-3 \times 2) / (9 \times 2) + (-2 \times 6) / (3 \times 6)$$

By further calculation

$$= -11/18 + -6/18 + -12/18$$

So we get

$$= (-11 - 6 - 12) / 18$$

$$= -29/18$$

(ii) $-9/4 + 13/3 + 25/6$

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It can be written as

$$= -9/4 + 13/3 + 25/6$$

LCM of 4, 3 and 6 is 24

$$= (-9 \times 6)/(4 \times 6) + (13 \times 8)/(3 \times 8) + (25 \times 4)/(6 \times 4)$$

By further calculation

$$= -54/24 + 104/24 + 100/24$$

So we get

$$= (-54 + 104 + 100)/24$$

$$= 150/24$$

$$= 25/4$$

$$= 6 \frac{1}{4}$$

(iii) $-5 + 5/8 + -5/12$

It can be written as

$$= -5/1 + -5/8 + 5/12$$

LCM of 1, 8 and 12 is 24

$$= (-5 \times 24)/(1 \times 24) + (-5 \times 3)/(8 \times 3) + (5 \times 2)/(12 \times 2)$$

By further calculation

$$= -120/24 + -15/24 + 10/24$$

So we get

$$= (-120 - 15 + 10)/24$$

$$= -125/24$$

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$$(iv) -\frac{2}{3} + \frac{5}{2} + 2$$

It can be written as

$$= -\frac{2}{3} + \frac{5}{2} + \frac{2}{1}$$

LCM of 3, 2 and 1 is 6

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

By further calculation

$$= -\frac{4}{6} + \frac{15}{6} + \frac{12}{6}$$

So we get

$$= \frac{(-4 + 15 + 12)}{6}$$

$$= \frac{23}{6}$$

$$= 3 \frac{5}{6}$$

$$(v) 5 + -\frac{3}{4} + -\frac{5}{8}$$

It can be written as

$$= \frac{5}{1} + -\frac{3}{4} + -\frac{5}{8}$$

LCM of 1, 4 and 8 is 8

$$= \frac{(5 \times 8)}{(1 \times 8)} + \frac{(-3 \times 2)}{(4 \times 2)} + \frac{(-5 \times 1)}{(8 \times 1)}$$

By further calculation

$$= \frac{40}{8} + -\frac{6}{8} + -\frac{5}{8}$$

So we get

$$= \frac{(40 - 6 - 5)}{8}$$

$$= \frac{(40 - 11)}{8}$$

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$$= 29/8$$

$$= 3 \frac{5}{8}$$

5. Subtract:

(i) $2/9$ from $5/9$

(ii) $-6/11$ from $-3/11$

(iii) $-2/15$ from $-8/15$

(iv) $11/18$ from $-5/18$

(v) $-4/11$ from -2

Solution:

(i) $2/9$ from $5/9$

It can be written as

$$= 5/9 - 2/9$$

By further calculation

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

$$= 3/9$$

$$= 1/3$$

(ii) $-6/11$ from $-3/11$

It can be written as

$$= 3/11 - (-6/11)$$

By further calculation

$$= 3/11 + 6/11$$

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So we get

$$= (3 + 6) / 11$$

$$= 9/11$$

(iii) $-2/15$ from $-8/15$

It can be written as

$$= -8/15 - (-2/15)$$

By further calculation

$$= -8/15 + 2/15$$

So we get

$$= (-8 + 2) / 15$$

$$= -6 / 15$$

$$= -2/5$$

(iv) $11/18$ from $-5/18$

It can be written as

$$= -5/18 - 11/18$$

By further calculation

$$= (-5 - 11) / 18$$

So we get

$$= -16/18$$

$$= -8/9$$

(v) $-4/11$ from -2

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It can be written as

$$= -2/1 - (-4/11)$$

LCM of 1 and 11 is 11

$$= (-2 \times 11)/(1 \times 11) + (4 \times 1)/(11 \times 1)$$

By further calculation

$$= -22/11 + 4/11$$

So we get

$$= (-22 + 4)/11$$

$$= -18/11$$

6. Subtract:

(i) $-3/10$ from $1/5$

(ii) $-6/25$ from $-8/5$

(iii) $-7/4$ from -2

(iv) $-16/21$ from 1

(v) $-8/15$ from 0

(vi) 0 from $-3/8$

(vii) -2 from $-3/10$

(viii) $5/8$ from $-5/16$

(ix) 4 from $-3/13$

Solution:

(i) $-3/10$ from $1/5$

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It can be written as

$$= 1/5 - (-3/10)$$

LCM of 5 and 10 is 10

$$= (1 \times 2)/ (5 \times 2) + 3/10$$

By further calculation

$$= 2/10 + 3/10$$

So we get

$$= (2 + 3)/ 10$$

$$= 5/10$$

$$= 1/2$$

(ii) $-6/25$ from $-8/5$

It can be written as

$$= -8/5 - (-6/25)$$

LCM of 5 and 25 is 25

$$= (-8 \times 5)/ (5 \times 5) + 6/25$$

By further calculation

$$= -40/25 + 6/25$$

So we get

$$= (-40 + 6)/ 25$$

$$= -34/25$$

(iii) $-7/4$ from -2

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It can be written as

$$= (-2/1) - (-7/4)$$

LCM of 1 and 4 is 4

$$= (-2 \times 4) / (1 \times 4) + 7/4$$

$$= -8/4 + 7/4$$

By further calculation

$$= (-8 + 7) / 4$$

$$= -1/4$$

(iv) $-16/21$ from 1

It can be written as

$$= 1/1 - (-16/21)$$

$$= 1/1 + 16/21$$

By further calculation

$$= (21 + 16) / 21$$

So we get

$$= (21 + 16) / 21$$

$$= 37/21$$

$$= 1 \frac{16}{21}$$

(v) $-8/15$ from 0

It can be written as

$$= 0 - (-8/15)$$

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By further calculation

$$= 0 + 8/15$$

$$= 8/15$$

(vi) 0 from $-3/8$

It can be written as

$$= -3/8 - 0$$

$$= -3/8$$

(vii) -2 from $-3/10$

It can be written as

$$= -3/10 - (-2/1)$$

By further calculation

$$= -3/10 + 2/1$$

So we get

$$= (-3 + 2 \times 10)/10$$

$$= 17/10$$

$$= 1 \frac{7}{10}$$

(viii) $5/8$ from $-5/16$

It can be written as

$$= -5/16 - 5/8$$

LCM of 8 and 16 is 16

$$= -5/16 - (5 \times 2)/(8 \times 2)$$

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By further calculation

$$= -5/16 - 10/16$$

So we get

$$= (-5 - 10)/16$$

$$= -15/16$$

(ix) 4 from $-3/13$

It can be written as

$$= 3/13 - 4/1$$

LCM of 13 and 1 is 13

$$= (-3 - 4 \times 13)/13$$

By further calculation

$$= (-3 - 52)/13$$

$$= -55/13$$

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

Solution:

It is given that

Sum of two rational numbers = $11/24$

One of the rational number = $3/8$

Other rational number = $11/24 - 3/8$

LCM of 24 and 8 is 24

$$= 11/24 - (3 \times 3)/(8 \times 3)$$

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By further calculation

$$= 11/24 - 9/24$$

So we get

$$= (11 - 9)/ 24$$

$$= 2/24$$

$$= 1/12$$

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 $-13/12$, find the other.

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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

$$= \frac{(-4 \times 12 + 13)}{12}$$

So we get

$$= \frac{(-48 + 13)}{12}$$

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

10. What should be added to $-\frac{3}{16}$ to get $\frac{11}{24}$?**Solution:**

Consider x as the required rational number

Other number = $-\frac{3}{16}$

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

From the question

$$-\frac{3}{16} + x = \frac{11}{24}$$

By further calculation

$$x = \frac{11}{24} + \frac{3}{16}$$

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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?

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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 $-6/5$. If one of them is -2 , find the other.

Solution:

It is given that

Sum of two numbers = $-6/5$

One of the numbers = -2

Other number = $-6/5 - (-2/1)$

LCM of 1 and 5 is 5

$$= -6/5 - (2 \times 5) / (1 \times 5)$$

By further calculation

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

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$$= 4/5$$

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 $9/5$

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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

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

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

Exercise 2D page: 34

1. Evaluate:

(i) $5/4 \times 3/7$

(ii) $2/3 \times -6/7$

(iii) $(-12/5) \times (10/-3)$

(iv) $-45/39 \times -13/15$

(v) $3 \frac{1}{8} \times (-2 \frac{2}{5})$

(vi) $2 \frac{14}{25} \times (-5/16)$

(vii) $(-8/9) \times (-3/16)$

(viii) $(5/-27) \times (-9/20)$

Solution:

(i) $5/4 \times 3/7$

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It can be written as

$$= (5 \times 3) / (4 \times 7)$$

$$= 15/28$$

(ii) $2/3 \times -6/7$

It can be written as

$$= (2 \times -6) / (3 \times 7)$$

By further calculation

$$= (2 \times -2) / 7$$

$$= -4/7$$

(iii) $(-12/5) \times (10/-3)$

It can be written as

$$= (-12 \times 10) / (5 \times -3)$$

By further calculation

$$= 4 \times 2$$

$$= 8$$

(iv) $-45/39 \times -13/15$

It can be written as

$$= (-45 \times -13) / (39 \times 15)$$

By further calculation

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

So we get

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$$= 3/3$$

$$= 1$$

$$(v) 3 \frac{1}{8} \times (-2 \frac{2}{5})$$

It can be written as

$$= (3 \times 8 + 1)/ 8 \times (-2 \times 5 + 2)/ 5$$

By further calculation

$$= 25/8 \times (-12/5)$$

So we get

$$= (25 \times -12)/ (8 \times 5)$$

On further simplification

$$= (5 \times -3)/ (2 \times 1)$$

$$= -15/2$$

$$(vi) 2 \frac{14}{25} \times (-5/16)$$

It can be written as

$$= (2 \times 25 + 14)/ 25 \times (-5/16)$$

By further calculation

$$= 64/25 \times (-5/16)$$

$$= (64 \times -5)/ (25 \times 16)$$

On further simplification

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

$$= -4/5$$

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(vii) $(-8/9) \times (-3/16)$

It can be written as

$$= (-8 \times -3) / (9 \times 16)$$

By further calculation

$$= (-1 \times -1) / (3 \times 2)$$

$$= 1/6$$

(viii) $(5/-27) \times (-9/20)$

It can be written as

$$= (5 \times -9) / (-27 \times 20)$$

By further calculation

$$= (1 \times 1) / (3 \times 4)$$

$$= 1/12$$

2. Multiply:

(i) $3/25$ and $4/5$

(ii) $1 \frac{1}{8}$ and $10 \frac{2}{3}$

(iii) $6 \frac{2}{3}$ and $-3/8$

(iv) $-13/15$ and $-25/26$

(v) $1 \frac{1}{6}$ and 18

(vi) $2 \frac{1}{14}$ and -7

(vii) $5 \frac{1}{8}$ and -16

(viii) 35 and $-18/25$

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(ix) $6\frac{2}{3}$ and $-\frac{3}{8}$

(x) $3\frac{3}{5}$ and -10

(xi) $\frac{27}{28}$ and -14

(xii) -24 and $\frac{5}{16}$

Solution:

(i) $\frac{3}{25}$ and $\frac{4}{5}$

It can be written as

$$= \frac{3}{25} \times \frac{4}{5}$$

By further calculation

$$= \frac{(3 \times 4)}{(25 \times 5)}$$

$$= \frac{12}{125}$$

(ii) $1\frac{1}{8}$ and $10\frac{2}{3}$

It can be written as

$$= \frac{9}{8} \times \frac{32}{2}$$

By further calculation

$$= \frac{(9 \times 32)}{(8 \times 2)}$$

$$= 3 \times 4$$

$$= 12$$

(iii) $6\frac{2}{3}$ and $-\frac{3}{8}$

It can be written as

$$= \frac{20}{3} \times -\frac{3}{8}$$

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By further calculation

$$= (20 \times -3) / (3 \times 8)$$

So we get

$$= (5 \times -1) / (1 \times 2)$$

$$= -5/2$$

(iv) $-13/15$ and $-25/26$

It can be written as

$$= (-13 \times -25) / (15 \times 26)$$

By further calculation

$$= (-1 \times -5) / (3 \times 2)$$

$$= 5/6$$

(v) $1 \frac{1}{6}$ and 18

It can be written as

$$= 7/6 \times 18$$

By further calculation

$$= 7 \times 3$$

$$= 21$$

(vi) $2 \frac{1}{14}$ and -7

It can be written as

$$= (2 \times 14 + 1) / 14 \times (-7)$$

By further calculation

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$$= 29/4 \times (-7)$$

So we get

$$= (29 \times -1)/ 2$$

$$= -29/2$$

(vii) $5 \frac{1}{8}$ and -16

It can be written as

$$= 41/8 \times -16$$

By further calculation

$$= 41 \times -2$$

$$= -82$$

(viii) 35 and $-18/25$

It can be written as

$$= 35 \times -18/25$$

By further calculation

$$= (35 \times -18)/ 25$$

So we get

$$= (7 \times -18)/ 5$$

$$= -126/5$$

(ix) $6 \frac{2}{3}$ and $-3/8$

It can be written as

$$= 20/3 \times -3/8$$

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By further calculation

$$= (20 \times -3) / (3 \times 8)$$

So we get

$$= (5 \times -1) / (1 \times 2)$$

$$= -5/2$$

(x) $3\frac{3}{5}$ and -10

It can be written as

$$= (3 \times 5 + 3) / 5 \times -10$$

By further calculation

$$= 18/5 \times -10$$

So we get

$$= 18 \times -2$$

$$= -36$$

(xi) $27/28$ and -14

It can be written as

$$= 27/28 \times -14$$

By further calculation

$$= (27 \times -1) / 2$$

$$= -27/2$$

(xii) -24 and $5/16$

It can be written as

<https://www.indcareer.com/schools/selina-class-7-icse-solutions-mathematics-chapter-2-rational-numbers/>

$$= (-24 \times 5) / 16$$

By further calculation

$$= (-3 \times 5) / 2$$

So we get

$$= -15/2$$

3. Evaluate:

(i) $(6 \times 5/18) - (-4 \frac{2}{9})$

(ii) $(7/8 \times 8/7) + (-5/9) \times (6/-25)$

(iii) $(11/-9 \times 21/44) + (-5/9) \times (63/-100)$

(iv) $(-5/9 \times 6/-25) + (24/21 \times 7/8)$

(v) $(-35/39 \times -13/7) - (7/90 \times -18/14)$

(vi) $(-4/5 \times 3/2) + (9/-5 \times 10/3) - (-3/2 \times -1/4)$

Solution:

(i) $(6 \times 5/18) - (-4 \frac{2}{9})$

It can be written as

$$= (-1 \times 5/3) - [-(4 \times 9 + 2) / 9]$$

LCM of 3 and 9 is 9

$$= -5/3 - (-38/9)$$

So we get

$$= -5/3 + 38/9$$

By further calculation

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$$= (-5 \times 3) / (3 \times 3) + (38 \times 1) / (9 \times 1)$$

$$= (-15 + 38) / 9$$

$$= 23/9$$

$$= 2 \frac{5}{9}$$

$$(ii) (7/8 \times 8/7) + (-5/9) \times (6/-25)$$

It can be written as

$$= (7/8 \times 8/7) + (-5/9 \times 6/-25)$$

By further calculation

$$= 1/1 + (1 \times 2) / (3 \times 5)$$

So we get

$$= 1/1 + 2/15$$

$$= (15 + 2) / 15$$

$$= 17/15$$

$$= 1 \frac{2}{15}$$

$$(iii) (11/-9 \times 21/44) + (-5/9) \times (63/-100)$$

It can be written as

$$= (11/-9 \times 21/44) + (5/9 \times 63/100)$$

By further calculation

$$= (-1 \times 7) / (3 \times 4) + (1 \times 7) / (1 \times 20)$$

So we get

$$= -7/12 + 7/20$$

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LCM of 12 and 20 is 60

$$= (-7 \times 5) / (12 \times 5) + (7 \times 3) / (20 \times 3)$$

Here

$$= -35/60 + 21/60$$

$$= (-35 + 21) / 60$$

$$= -14/60$$

$$= -7/30$$

$$(iv) (-5/9 \times 6/-25) + (24/21 \times 7/8)$$

It can be written as

$$= (5/9 \times 6/25) + (24/21 \times 7/8)$$

By further calculation

$$= 2 / (3 \times 5) + 1$$

$$= 2/15 + 1$$

LCM of 15 and 1 is 15

$$= (2 + 15) / 15$$

$$= 17/15$$

$$= 1 \frac{2}{15}$$

$$(v) (-35/39 \times -13/7) - (7/90 \times -18/14)$$

It can be written as

$$= (-35/39 \times -13/7) - (7/90 \times -18/14)$$

<https://www.indcareer.com/schools/selina-class-7-icse-solutions-mathematics-chapter-2-rational-numbers/>

By further calculation

$$= (-5 \times -1) / (3 \times 1) - (1 \times -1) / (5 \times 2)$$

So we get

$$= 5/3 - (-1/10)$$

LCM of 3 and 10 is 30

$$= (5 \times 10) / (3 \times 10) + 1 / (10 \times 3)$$

We get

$$= (50 + 3) / 30$$

$$= 53/30$$

$$= 1 \frac{23}{30}$$

$$(vi) (-4/5 \times 3/2) + (9/-5 \times 10/3) - (-3/2 \times -1/4)$$

It can be written as

$$= (-2 \times 3) / (5 \times 1) + (3 \times 2) / (-1 \times 1) - (-3 \times -1) / (2 \times 4)$$

By further calculation

$$= -6/5 + -6/1 - 3/8$$

LCM of 5, 1 and 8 is 40

$$= = (-6 \times 8) / (5 \times 8) - (6 \times 40) / (1 \times 40) - (3 \times 5) / (8 \times 5)$$

So we get

$$= (-48 - 240 - 15) / 40$$

$$= - 303/40$$

4. Find the cost of $3 \frac{1}{2}$ m cloth, if one metre cloth costs ₹ $325 \frac{1}{2}$.

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Solution:

It is given that cost of one metre cloth = ₹ $325 \frac{1}{2}$

We can write it as

$$= (2 \times 325 + 1) / 2$$

By further calculation

$$= (650 + 1) / 2$$

$$= ₹ 651/2$$

Cost of $3 \frac{1}{2}$ m cloth

$$(2 \times 3 + 1) / 2 = 7/2 \text{ m}$$

We get

$$= 651/2 \times 7/2$$

It can be written as

$$= (651 \times 7) / (2 \times 2)$$

$$= 4557/4$$

$$= ₹ 1139 \frac{1}{4}$$

5. A bus is moving with a speed of $65 \frac{1}{2}$ km per hour. How much distance will it cover in $1 \frac{1}{3}$ hours.

Solution:

It is given that

Speed of bus = $65 \frac{1}{2}$ km per hour

We can write it as

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$$= (2 \times 65 + 1) / 2$$

By further calculation

$$= (130 + 1) / 2$$

$$= 131 / 2 \text{ km}$$

Distance covered in $1 \frac{1}{3}$ hour = $\frac{4}{3}$ hour can be written as

$$= 131/2 \times 4/3$$

We get

$$= 131/1 \times 2/3$$

We know that distance covered = speed \times time

$$= 131/2 \times 4/3$$

$$= (131 \times 2) / (1 \times 3)$$

So we get

$$= 262/3$$

$$= 87 \frac{1}{3} \text{ km}$$

6. Divide:

(i) $15/28$ by $\frac{3}{4}$

(ii) $-20/9$ by $-5/9$

(iii) $16/-5$ by $-8/7$

(iv) -7 by $-14/5$

(v) -14 by $7/-2$

(vi) $-22/9$ by $11/18$

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(vii) 35 by $-7/9$

(viii) $21/44$ by $-11/9$

Solution:

(i) $15/28$ by $3/4$

We know that

$$= 15/28 \div 3/4$$

It can be written as

$$= 15/28 \times 4/3$$

By further calculation

$$= 5/7 \times 1/1$$

$$= 5/7$$

(ii) $-20/9$ by $-5/9$

We know that

$$= -20/9 \div -5/9$$

It can be written as

$$= -20/9 \times 9/-5$$

By further calculation

$$= -4/-1$$

$$= 4$$

(iii) $16/-5$ by $-8/7$

We know that

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$$= 16/-5 \div -8/7$$

It can be written as

$$= 16/-5 \times 7/-8$$

By further calculation

$$= 2/-5 \times 7/-1$$

$$= (2 \times 7) / (-5 \times -1)$$

So we get

$$= 14/5$$

$$= 2 \frac{4}{5}$$

(iv) -7 by $-14/5$

We know that

$$= -7 \div -14/5$$

It can be written as

$$= -7 \times 5/-14$$

By further calculation

$$= 1 \times 5/2$$

$$= (1 \times 5) / 2$$

$$= 5/2$$

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

(v) -14 by $7/-2$

We know that

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$$= -14 \div 7/-2$$

It can be written as

$$= -14 \times -2/7$$

By further calculation

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

$$= 4$$

(vi) $-22/9$ by $11/18$

We know that

$$= -22/9 \div 11/18$$

It can be written as

$$= -22/9 \times 18/11$$

By further calculation

$$= -2/1 \times 2/1$$

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

$$= -4/1$$

$$= -4$$

(vii) 35 by $-7/9$

We know that

$$= 35 \div -7/9$$

It can be written as

$$= 35 \times 9/-7$$

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By further calculation

$$= 5 \times 9/-1$$

So we get

$$= (5 \times 9)/-1$$

$$= 45/-1$$

$$= -45$$

(viii) $21/44$ by $-11/9$

We know that

$$= 21/44 \div -11/9$$

It can be written as

$$= 21/44 \times -9/11$$

By further calculation

$$= (21 \times -9)/(44 \times 11)$$

$$= -189/484$$

7. Evaluate:

(i) $3 \frac{5}{12} + 1 \frac{2}{3}$

(ii) $3 \frac{5}{12} - 1 \frac{2}{3}$

(iii) $(3 \frac{5}{12} + 1 \frac{2}{3}) \div (3 \frac{5}{12} - 1 \frac{2}{3})$

Solution:

(i) $3 \frac{5}{12} + 1 \frac{2}{3}$

It can be written as

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$$= (12 \times 3 + 5) / 12 + (3 \times 1 + 2) / 3$$

$$= 41/12 + 5/3$$

LCM of 12 and 3 is 12

$$= (41 \times 1) / (12 \times 1) + (5 \times 4) / (3 \times 4)$$

By further calculation

$$= 41/12 + 20/12$$

$$= (41 + 20) / 12$$

$$= 61/12$$

$$= 5 \frac{1}{12}$$

(ii) $3 \frac{5}{12} - 1 \frac{2}{3}$

It can be written as

$$= (12 \times 3 + 5) / 12 - (3 \times 1 + 2) / 3$$

$$= 41/12 - 5/3$$

LCM of 12 and 3 is 12

$$= (41 \times 1) / (12 \times 1) - (5 \times 4) / (3 \times 4)$$

By further calculation

$$= (41 - 20) / 12$$

$$= 21/12$$

$$= 2/4$$

$$= 1 \frac{3}{4}$$

(iii) $(3 \frac{5}{12} + 1 \frac{2}{3}) \div (3 \frac{5}{12} - 1 \frac{2}{3})$

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It can be written as

$$= [(12 \times 3 + 5)/ 12 + (3 \times 1 + 2)/ 3] \div [(12 \times 3 + 5)/ 12 - (3 \times 1 + 2)/ 3]$$

$$= (41/12 + 5/3) \div (41/12 - 5/3)$$

LCM of 12 and 3 is 12

$$= (41 + 20)/ 12 \div (41 - 20)/ 12$$

By further calculation

$$= 61/12 \div 21/12$$

We can write it as

$$= 61/12 \times 12/21$$

$$= 61/21$$

$$= 2 \frac{19}{21}$$

8. The product of two numbers is 14. If one of the numbers is $-8/7$, find the other.

Solution:

It is given that

Product of two numbers = 14

One of the number = $-8/7$

Other number = $14 \div -8/7$

We can write it as

$$= 14 \times -7/8$$

$$= -98/8$$

$$= -49/4$$

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9. The cost of 11 pens is ₹ $24\frac{3}{4}$. Find the cost of one pen.

Solution:

It is given that

Cost of 11 pens = ₹ $24\frac{3}{4}$

We can write it as

$$= (24 \times 4 + 3) / 4$$

$$= ₹ 99/4$$

So the cost of one pen = $99/4 \div 11$

It can be written as

$$= 99/4 \times 1/11$$

$$= ₹ 9/4$$

$$= ₹ 2\frac{1}{4}$$

10. If 6 identical articles can be bought for ₹ $2\frac{6}{17}$. Find the cost of each article.

Solution:

It is given that

Cost of 6 articles = ₹ $2\frac{6}{17}$

We can write it as

$$= (2 \times 17 + 6) / 17$$

$$= ₹ 40/17$$

So the cost of each article = $40/17 \div 6$

It can be written as

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$$= 40/17 \times 1/6$$

$$= ₹ 20/51$$

11. By what number should $-3/8$ be multiplied so that the product is $-9/16$?

Solution:

$$\text{Number} = -3/8 \div (-9/16)$$

We can write it as

$$= -3/8 \times 16/-9$$

By further calculation

$$= 2/3$$

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

12. By what number should $-5/7$ be divided so that the result is $-15/28$?

Solution:

Consider the number as x

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

It can be written as

$$-5/7 \times 1/x = -15/28$$

By further calculation

$$-5/7x = -15/28$$

So we get

$$x = 5/7 \times 28/15 = 4/3$$

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

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13. Evaluate: $(32/15 + 8/5) \div (32/15 - 8/5)$.

Solution:

It is given that

$$(32/15 + 8/5) \div (32/15 - 8/5)$$

LCM of 15 and 5 is 15

$$= [(32 \times 1)/(15 \times 1) + (8 \times 3)/(5 \times 3)] \div [(32 \times 1)/(15 \times 1) - (8 \times 1)/(5 \times 1)]$$

By further calculation

$$= (32 + 24)/15 \div (32 - 24)/15$$

So we get

$$= 56/15 \div 8/15$$

$$= 56/15 \times 15/8$$

$$= 7$$

14. Seven equal pieces are made out of a rope of $21 \frac{5}{7}$ m. Find the length of each piece.

Solution:

It is given that

Length of 7 pieces of rope = $21 \frac{5}{7}$ m

It can be written as

$$= (21 \times 7 + 5)/7$$

$$= 152/7$$

So the length of each piece = $152/7 \div 7$

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We can write it as

$$= 152/7 \times 1/7$$

So we get

$$= 152/49$$

$$= 3 \frac{5}{49} \text{ m}$$

Exercise 2E page: 36

1. Evaluate:

(i) $-2/3 + 3/4$

(ii) $7/-27 + 11/18$

(iii) $-3/8 + -5/12$

(iv) $9/-16 + -5/-12$

(v) $-5/9 + -7/12 + 11/18$

(vi) $7/-26 + 16/39$

(vii) $-2/3 - (-5/7)$

(viii) $-5/7 - (-3/8)$

(ix) $7/26 + 2 + -11/13$

(x) $-1 + 2/-3 + 5/6$

Solution:

(i) $-2/3 + 3/4$

3	3,4
4	1,4
	1,1

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Here the LCM of 3 and 4 is 12

So we get

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

By further calculation

$$= (-8 + 9) / 12$$

$$= 1/12$$

(ii) $7/-27 + 11/18$

2	27,18
3	27,9
3	9,3
3	3,1
	1,1

Here the LCM of 27 and 18 is 54

So we get

$$= (7 \times 2) / (-27 \times 2) + (11 \times 3) / (18 \times 3)$$

By further calculation

$$= (-14 + 33) / 54$$

$$= 19/54$$

(iii) $-3/8 + -5/12$

2	8,12
2	4,6
2	2,3
3	1,3
	1,1

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Here LCM of 8 and 12 is 24

So we get

$$= (-3 \times 3) / (8 \times 3) + (-5 \times 2) / (12 \times 2)$$

By further calculation

$$= (-9 - 10) / 24$$

$$= -19/24$$

(iv) $9/-16 + -5/-12$

It can be written as

$$= 9/-16 + 5/12$$

2	16,12
2	8,6
2	4,3
2	2,3
3	1,3
	1,1

Here LCM of 16 and 12 is 48

So we get

$$= (9 \times 3) / (-16 \times 3) + (5 \times 4) / (12 \times 4)$$

By further calculation

$$= (-27 + 20) / 48$$

$$= -7/48$$

(v) $-5/9 + -7/12 + 11/18$

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2	9,12,18
2	9,6,9
3	9,3,9
3	3,1,3
	1,1,1

Here LCM of 9, 12 and 18 is 36

So we get

$$= (-5 \times 4) / (9 \times 4) - (7 \times 3) / (12 \times 3) + (11 \times 2) / (18 \times 2)$$

By further calculation

$$= (-20 - 21 + 22) / 36$$

So we get

$$= (-41 + 22) / 36$$

$$= -19/36$$

(vi) $7/-26 + 16/39$

2	26,39
3	13,39
13	13,13
	1,1

Here LCM of 26 and 39 is 78

So we get

$$= (-7 \times 3) / (26 \times 3) + (16 \times 2) / (39 \times 2)$$

By further calculation

$$= (-21 + 32) / 78$$

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$$= 11/78$$

$$(vii) -2/3 - (-5/7)$$

It can be written as

$$= -2/3 + 5/7$$

3	3,7
7	1,7
	1,1

Here LCM of 3 and 7 is 21

So we get

$$= (-2 \times 7) / (3 \times 7) + (5 \times 3) / (7 \times 3)$$

By further calculation

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

$$= 1/21$$

$$(viii) -5/7 - (-3/8)$$

It can be written as

$$= -5/7 + 3/8$$

2	7,8
2	7,4
2	7,2
7	7,1
	1,1

Here LCM of 7 and 8 is 56

So we get

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$$= (-5 \times 8) / (7 \times 8) + (3 \times 7) / (8 \times 7)$$

By further calculation

$$= (-40 + 21) / 56$$

$$= -19/56$$

(ix) $7/26 + 2 + -11/13$

It can be written as

$$= 7/26 + 2/1 + -11/13$$

2	26,13
13	13,13
	1,1

Here LCM of 26 and 13 is 26

So we get

$$= (7 \times 1) / (26 \times 1) + (2 \times 26) / (1 \times 26) - (11 \times 2) / (13 \times 2)$$

By further calculation

$$= (7 + 52 - 22) / 26$$

So we get

$$= (59 - 22) / 26$$

$$= 37/26$$

$$= 1 \frac{11}{26}$$

(x) $-1 + 2/-3 + 5/6$

2	3,6
3	3,3
	1,1

Here LCM of 3 and 6 is 6

So we get

$$= (-1 \times 6) / (1 \times 6) - (2 \times 2) / (3 \times 2) + (5 \times 1) / (6 \times 1)$$

By further calculation

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

We get

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

$$= -5/6$$

2. The sum of two rational numbers is $-3/8$. If one of them is $3/16$, find the other.

Solution:

It is given that

Sum of two rational numbers = $-3/8$

One rational number = $3/16$

Other rational number = $-3/8 - 3/16$

2	8,16
2	4,8
2	2,4
2	1,2
	1,1

Here LCM of 8 and 16 is 16

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So we get

$$= (-3 \times 2) / (8 \times 2) - (3 \times 1) / (16 \times 1)$$

By further calculation

$$= (-6 - 3) / 16$$

$$= -9/16$$

3. The sum of two rational numbers is -5. If one of them is -52/25, find the other.

Solution:

It is given that

$$\text{Sum of two rational numbers} = -5$$

$$\text{One rational number} = -52/25$$

$$\text{Other rational number} = -5 - (-52/25)$$

Here LCM is 25

$$= (-5 \times 25) / (1 \times 25) + (52 \times 1) / (25 \times 1)$$

By further calculation

$$= (-125 + 52) / 25$$

$$= -73/25$$

4. What rational number should be added to -3/16 to get 11/24?

Solution:

It is given that

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

$$\text{One rational number} = -3/16$$

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$$\text{Other number} = 11/24 - (-3/16)$$

It can be written as

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

2	24,16
2	12,8
2	6,4
2	3,2
3	3,1
	1,1

Here LCM of 16 and 24 is 48

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

By further calculation

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

$$= 31/48$$

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

Solution:

$$\text{So the required rational number} = 2 - (-3/5)$$

It can be written as

$$= 2 + 3/5$$

LCM of 1 and 5 is 5

$$= (2 \times 5) / (1 \times 5) + (3 \times 1) / (5 \times 1)$$

By further calculation

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

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So we get

$$= 13/5$$

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

6. What rational number should be subtracted from $-5/12$ to get $5/24$?

Solution:

Required rational number = $-5/12 - 5/24$

2	12, 24
2	6, 12
2	3, 6
3	3, 3
	1, 1

Here the LCM of 12 and 24 is 72

$$= (-5 \times 6) / (12 \times 6) - (5 \times 3) / (24 \times 3)$$

By further calculation

$$= (-30 - 15) / 72$$

So we get

$$= -45/72$$

$$= -5/8$$

7. What rational number should be subtracted from $5/8$ to get $8/5$?

Solution:

Required rational number = $5/8 - 8/5$

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2	8,5
2	4,5
2	2,5
5	1,5
	1,1

Here LCM of 8 and 5 is 40

$$= (5 \times 5) / (8 \times 5) - (8 \times 8) / (5 \times 8)$$

By further calculation

$$= (25 - 64) / 40$$

$$= -39/40$$

8. Evaluate:

(i) $(7/8 \times 24/21) + (-5/9 \times 6/-25)$

(ii) $(8/15 \times -25/16) + (-18/35 \times 5/6)$

(iii) $(18/33 \times -22/27) - (13/25 \times -75/26)$

(iv) $(-13/7 \times -35/39) - (-7/45 \times 9/14)$

Solution:

(i) $(7/8 \times 24/21) + (-5/9 \times 6/-25)$

It can be written as

$$= (7 \times 24) / (8 \times 21) + (-5 \times 6) / (9 \times -25)$$

By further simplification

$$= (1 \times 3) / (1 \times 3) + (1 \times 2) / (3 \times 5)$$

So we get

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$$= 3/3 + 2/15$$

3	3,15
5	1,5
	1,1

Here LCM of 3 and 15 is 15

$$= (3 \times 5) / (3 \times 5) + (2 \times 1) / (15 \times 1)$$

By further calculation

$$= (15 + 2) / 15$$

$$= 17/15$$

$$= 1 \frac{2}{15}$$

$$(ii) (8/15 \times -25/16) + (-18/35 \times 5/6)$$

It can be written as

$$= (8 \times -25) / (15 \times 16) + (-18 \times 5) / (35 \times 6)$$

By further calculation

$$= (1 \times -5) / (3 \times 2) + (-3 \times 1) / (7 \times 1)$$

So we get

$$= -5/6 - 3/7$$

2	6,7
3	3,7
7	1,7
	1,1

Here LCM of 6 and 7 is 42

$$= (-5 \times 7) / (6 \times 7) - (3 \times 6) / (7 \times 6)$$

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By further calculation

$$= (-35 - 18)/42$$

$$= -53/42$$

$$(iii) (18/33 \times -22/27) - (13/25 \times -75/26)$$

It can be written as

$$= (18 \times -22)/(33 \times 27) - (13 \times -75)/(25 \times 26)$$

By further calculation

$$= (2 \times -2)/(3 \times 3) - (1 \times -3)/(1 \times 2)$$

So we get

$$= -4/9 - (-3/2)$$

$$= -4/9 + 3/2$$

2	9,2
3	9,1
3	3,1
	1,1

Here LCM of 9 and 2 is 18

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

By further calculation

$$= (-8 + 27)/18$$

$$= 19/18$$

$$= 1 \frac{1}{18}$$

$$(iv) (-13/7 \times -35/39) - (-7/45 \times 9/14)$$

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It can be written as

$$= (-13 \times -35) / (7 \times 39) + (7 \times 9) / (45 \times 14)$$

By further calculation

$$= (-1 \times -5) / (1 \times 3) + (1 \times 1) / (5 \times 2)$$

So we get

$$= 5/3 + 1/10$$

2	3,10
3	3,5
5	1,5
	1,1

Here the LCM of 3 and 10 is 30

$$= (5 \times 10) / (3 \times 10) + (1 \times 3) / (10 \times 3)$$

By further calculation

$$= (50 + 3) / 30$$

$$= 53/30$$

$$= 1 \frac{23}{30}$$

9. The product of two rational numbers is 24. If one of them is $-36/11$, find the other.

Solution:

It is given that

Product of two rational numbers = 24

One rational number = $-36/11$

Other rational number = $24 \div (-36/11)$

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It can be written as

$$= 24 \times (-11/36)$$

By further calculation

$$= 2 \times (-11/3)$$

$$= -22/3$$

10. By what rational number should we multiply $20/-9$, so that the product may be $-5/9$?

Solution:

Here the required rational number = $-5/9 \div (20/-9)$

By further calculation

$$= -5/9 \times (-9/20)$$

$$= 1/4$$

Exercise 2B

1. Mark the following pairs of rational numbers on the separate number lines:

(i) $3/4$ and $-1/4$

(ii) $2/5$ and $-3/5$

(iii) $5/6$ and $-2/3$

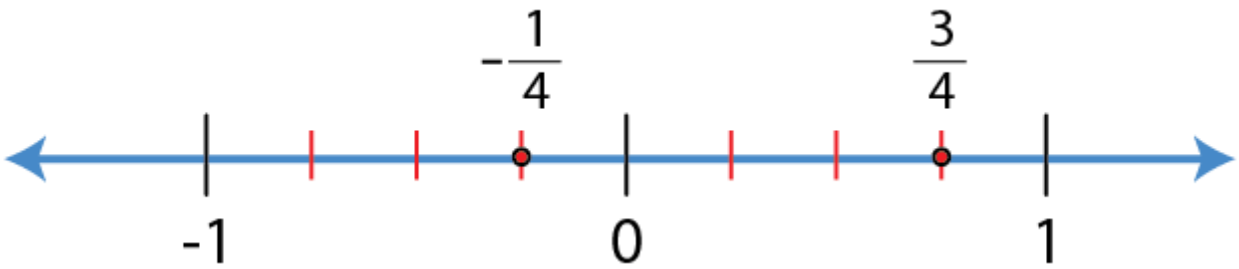
(iv) $2/5$ and $-4/5$

(v) $1/4$ and $-5/4$

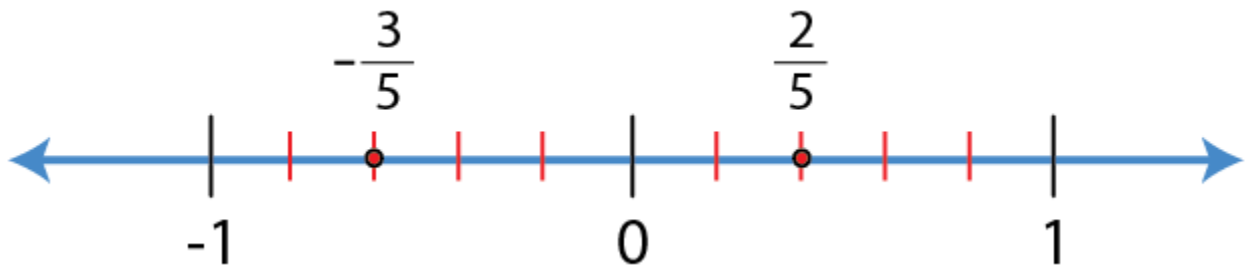
Solution:

(i) $3/4$ and $-1/4$

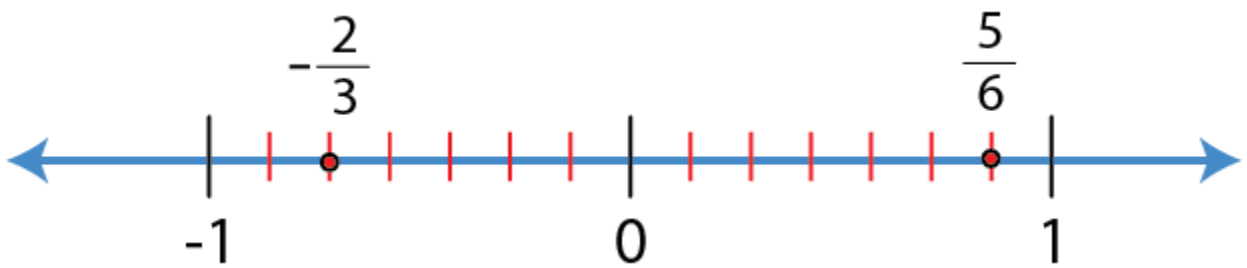
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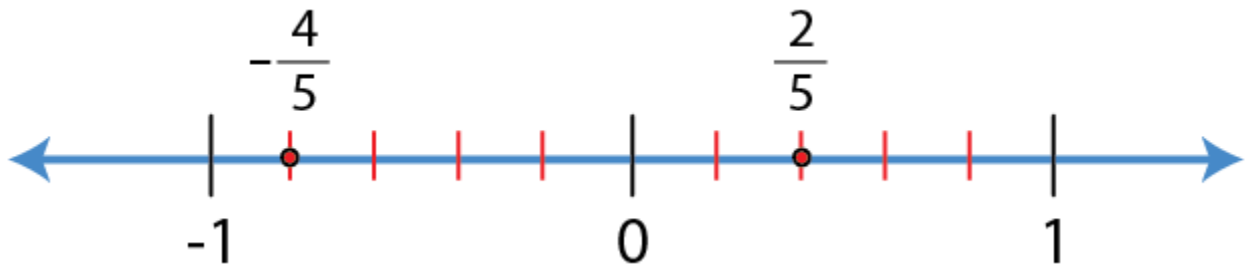
(ii) $\frac{2}{5}$ and $-\frac{3}{5}$



(iii) $\frac{5}{6}$ and $-\frac{2}{3}$

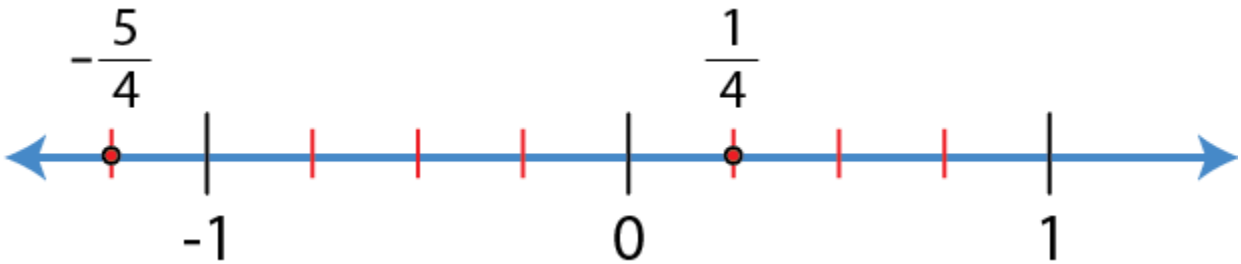


(iv) $\frac{2}{5}$ and $-\frac{4}{5}$



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(v) $\frac{1}{4}$ and $-\frac{5}{4}$



2. Compare:

(i) $\frac{3}{5}$ and $\frac{5}{7}$

(ii) $-\frac{7}{2}$ and $\frac{5}{2}$

(iii) -3 and $2\frac{3}{4}$

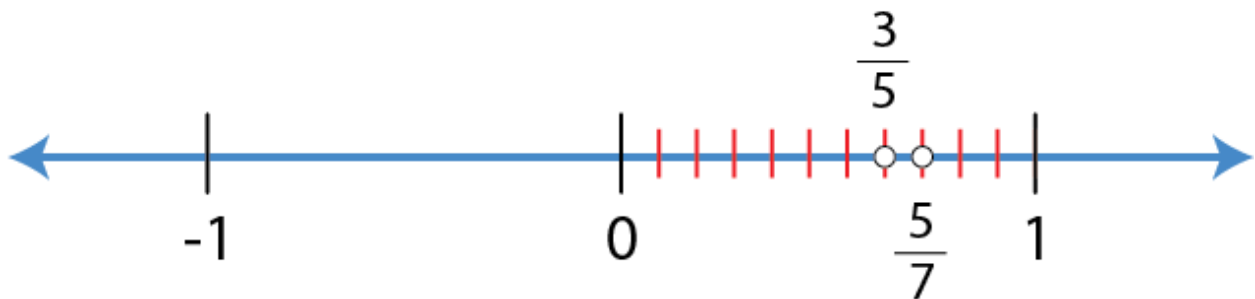
(iv) $-1\frac{1}{2}$ and 0

(v) 0 and $\frac{3}{4}$

(vi) 3 and -1

Solution:

(i) $\frac{3}{5}$ and $\frac{5}{7}$



$\frac{5}{7}$ is on the right side of the number line.

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Hence, $3/5 < 5/7$.

(ii) $-7/2$ and $5/2$



P is on the right of Q

Hence, $-7/2 < 5/2$.

(iii) -3 and $2\frac{3}{4}$



P is on the right of Q

Hence, $-3 < 11/4$ or $-3 < 2\frac{3}{4}$.

(iv) $-1\frac{1}{2}$ and 0



P is on the right of Q

Hence, $-\frac{3}{2} < 0$ or $-1\frac{1}{2} < 0$.

(v) 0 and $\frac{3}{4}$



P is on the right of Q

Hence, $0 < \frac{3}{4}$.

(vi) 3 and -1



P is on the right of Q

Hence, $3 > -1$.

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3. Compare:

(i) $-1/4$ and 0

(ii) $1/4$ and 0

(iii) $-3/8$ and $2/5$

(iv) $-5/8$ and $7/-12$

(v) $5/-9$ and $-5/-9$

(vi) $-7/8$ and $5/-6$

(vii) $2/7$ and $-3/-8$

Solution:

(i) $-1/4$ and 0

$-1/4$ is a negative rational number which is always less than 0 .

Hence, $-1/4 < 0$.

(ii) $1/4$ and 0

$1/4$ is a positive rational number which is always greater than 0 .

Hence, $1/4 > 0$.

(iii) $-3/8$ and $2/5$

We know that

a/b and $c/d = a \times d$ and $b \times c$

So we get

$a \times d < b \times c$

Substituting the values

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$$- 3 \times 5 \text{ and } 2 \times 8$$

$$- 15 < 16$$

Hence, $-3/8 < 2/5$.

(iv) $-5/8$ and $7/-12$

It can be written as

$$-5/8 \text{ and } -7/12$$

We know that

$$a/b \text{ and } c/d = a \times d \text{ and } b \times c$$

So we get

$$a \times d < b \times c$$

Substituting the values

$$- 5 \times 12 \text{ and } - 7 \times 8$$

$$-60 < - 56$$

Hence, $-5/8 < 7/-12$.

(v) $5/-9$ and $-5/-9$

We know that

$$a/b \text{ and } c/d = a \times d \text{ and } b \times c$$

So we get

$$a \times d < b \times c$$

Substituting the values

$$5 \times -9 \text{ and } -5 \times -9$$

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$$-45 < 45$$

Hence, $5/-9 < -5/-9$.

(vi) $-7/8$ and $5/-6$

It can be written as

$$-7/8 \text{ and } -5/6$$

We know that

$$a/b \text{ and } c/d = a \times d \text{ and } b \times c$$

So we get

$$a \times d < b \times c$$

Substituting the values

$$-7 \times 6 \text{ and } -5 \times 8$$

$$-42 < -40$$

Hence, $-7/8 < 5/-6$.

(vii) $2/7$ and $-3/-8$

It can be written as

$$2/7 \text{ and } 3/8$$

We know that

$$a/b \text{ and } c/d = a \times d \text{ and } b \times c$$

So we get

$$a \times d < b \times c$$

Substituting the values

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$$2 \times 8 \text{ and } 7 \times 3$$

$$16 < 21$$

Hence, $2/7 < -3/-8$.

4. Arrange the given rational numbers in ascending order:

(i) $7/10$, $-11/-30$ and $5/-15$

(ii) $4/-9$, $-5/12$ and $2/-3$

Solution:

(i) $7/10$, $-11/-30$ and $5/-15$

It is given that

$$= 7/10, -11/-30 \text{ and } -5/-5$$

LCM of 10, 30 and 15 = 30

$$= (7 \times 3)/(10 \times 3), 11/30 \text{ and } (-5 \times 2)/(15 \times 2)$$

So we get

$$= 21/30, 11/30 \text{ and } -10/30$$



Here, $-10 < 11 < 21$

We can write it as

$$-10/30 < 11/30 < 21/30$$

By further calculation

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$$5/-15 < -11/-30 < 7/10$$

(ii) $4/-9$, $-5/12$ and $2/-3$

It is given that

$$= -4/9, -5/12 \text{ and } -2/3$$

LCM of 9, 12 and 3 is 36

$$= (-4 \times 4)/(9 \times 4), (-5 \times 3)/(12 \times 3) \text{ and } (-2 \times 12)/(3 \times 12)$$

So we get

$$= -16/36, -15/36 \text{ and } -24/36$$



Here, $-24 < -16 < -15$

We can write it as

$$-24/36 < -16/36 < -15/36$$

By further calculation

$$2/-3 < 4/-9 < -5/12$$

5. Arrange the given rational numbers in descending order:

(i) $5/8$, $13/-16$ and $-7/12$

(ii) $3/-10$, $-13/30$ and $8/-20$

Solution:

(i) $5/8$, $13/-16$ and $-7/12$

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It can be written as

$$= \frac{5}{8}, -\frac{13}{16} \text{ and } -\frac{7}{12}$$

LCM of 8, 16 and 12 is 48

$$= \frac{(5 \times 6)}{(8 \times 6)}, \frac{(-13 \times 3)}{(16 \times 3)} \text{ and } \frac{(-7 \times 4)}{(12 \times 4)}$$

So we get

$$= \frac{30}{48}, -\frac{39}{48} \text{ and } -\frac{28}{48}$$



Here, $30 > -28 > -39$

We can write it as

$$\frac{30}{48} > -\frac{28}{48} > -\frac{39}{48}$$

By further calculation

$$\frac{5}{8} > -\frac{7}{12} > -\frac{13}{16}$$

(ii) $\frac{3}{-10}, -\frac{13}{30}$ and $\frac{8}{-20}$

It can be written as

$$= -\frac{3}{10}, -\frac{13}{30} \text{ and } -\frac{8}{20}$$

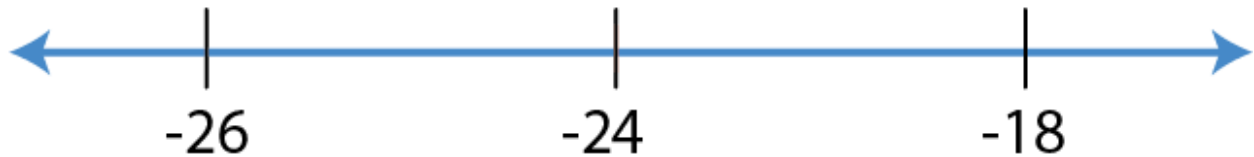
LCM of 10, 20 and 30 is 60

$$= \frac{(-3 \times 6)}{(10 \times 6)}, \frac{(-13 \times 2)}{(30 \times 2)} \text{ and } \frac{(-8 \times 3)}{(20 \times 3)}$$

So we get

$$= -\frac{18}{60}, -\frac{26}{60} \text{ and } -\frac{24}{60}$$

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Here, $-18 > -24 > -26$

We can write it as

$$-18/60 > -24/60 > -26/60$$

By further calculation

$$3/-10 > 8/-20 > -13/30$$

6. Fill in the blanks:

(i) $5/8$ and $3/10$ are on the side of zero.

(ii) $-5/8$ and $3/10$ are on the sides of zero.

(iii) $-5/8$ and $-3/10$ are on the side of zero.

(iv) $5/8$ and $-3/10$ are on the sides of zero.

Solution:

(i) $5/8$ and $3/10$ are on the same side of zero.

(ii) $-5/8$ and $3/10$ are on the opposite sides of zero.

(iii) $-5/8$ and $-3/10$ are on the same side of zero.

(iv) $5/8$ and $-3/10$ are on the opposite sides of zero.

Exercise 2C

1. Add:

(i) $7/5$ and $2/5$

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(ii) $-4/9$ and $2/9$

(iii) $5/-12$ and $1/12$

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

(v) $-7/25$ and $9/-25$

(vi) $-7/26$ and $7/-26$

Solution:

(i) $7/5$ and $2/5$

It can be written as

$$= 7/5 + 2/5$$

By further calculation

$$= (7 + 2)/ 5$$

$$= 9/5$$

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

(ii) $-4/9$ and $2/9$

It can be written as

$$= -4/9 + 2/9$$

By further calculation

$$= (-4 + 2)/ 9$$

$$= -2/9$$

(iii) $5/-12$ and $1/12$

It can be written as

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$$= -5/12 + 1/12$$

By further calculation

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

$$= -4/ 12$$

$$= -1/3$$

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

It can be written as

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

By further calculation

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

$$= 3/15$$

$$= 1/5$$

(v) $-7/25$ and $9/-25$

It can be written as

$$= -7/25 + -9/25$$

By further calculation

$$= [(-7) + (-9)]/ 25$$

$$= -16/25$$

(vi) $-7/26$ and $7/-26$

It can be written as

$$= - 7/26 + -7/26$$

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By further calculation

$$= [(-7) + (-7)] / 26$$

$$= -14/26$$

$$= -7/13$$

2. Add:

(i) $-2/5$ and $3/7$

(ii) $-5/6$ and $4/9$

(iii) -3 and $2/3$

(iv) $-5/9$ and $7/18$

(v) $-7/24$ and $-5/48$

(vi) $1/-18$ and $5/-27$

(vii) $-9/25$ and $1/-75$

(viii) $13/-16$ and $-11/24$

(ix) $-9/-16$ and $-11/8$

Solution:

(i) $-2/5$ and $3/7$

It can be written as

$$= (-2 \times 7) / (5 \times 7) + (3 \times 5) / (7 \times 5)$$

LCM of 5 and 7 is 35

$$= -14/35 + 15/35$$

By further calculation

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$$= (-14 + 15)/35$$

$$= 1/35$$

(ii) $-5/6$ and $4/9$

It can be written as

$$= -5/6 + 4/9$$

LCM of 6 and 9 is 36

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

By further calculation

$$= -30/36 + 16/36$$

So we get

$$= (-30 + 16)/36$$

$$= -14/36$$

$$= -7/18$$

(iii) -3 and $2/3$

It can be written as

$$= -3/1 + 2/3$$

LCM of 1 and 3 is 3

$$= (-3 \times 3)/(1 \times 3) + (2 \times 1)/(3 \times 1)$$

By further calculation

$$= -9/3 + 2/3$$

So we get

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

$$= -7/3$$

(iv) $-5/9$ and $7/18$

It can be written as

$$= -5/9 + 7/18$$

LCM of 9 and 18 is 18

$$= (-5 \times 2)/ (9 \times 2) + (7 \times 1)/ (18 \times 1)$$

By further calculation

$$= -10/18 + 7/18$$

So we get

$$= (-10 + 7)/ 18$$

$$= - 3/18$$

$$= -1/6$$

(v) $-7/24$ and $-5/48$

It can be written as

$$= -7/24 + -5/48$$

LCM of 24 and 48 is 48

$$= (-7 \times 2)/ (24 \times 2) + (-5 \times 1)/ (48 \times 1)$$

By further calculation

$$= -14/48 + -5/48$$

So we get

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$$= (-14 - 5)/ 48$$

$$= - 19/48$$

(vi) $1/-18$ and $5/-27$

It can be written as

$$= - 1/18 + -5/27$$

LCM of 18 and 27 is 54

$$= (-1 \times 3)/ (18 \times 3) + (-5 \times 2)/ (27 \times 2)$$

By further calculation

$$= -3/54 + -10/54$$

So we get

$$= (- 3 - 10)/ 54$$

$$= -13/54$$

(vii) $-9/25$ and $1/-75$

It can be written as

$$= -9/25 + -1/75$$

LCM of 24 and 75 is 75

$$= (-9 \times 3)/ (25 \times 3) + (-1 \times 1)/ (75 \times 1)$$

By further calculation

$$= -27/75 + -1/75$$

So we get

$$= (-27 - 1)/ 75$$

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$$= -28/75$$

(viii) $13/-16$ and $-11/24$

It can be written as

$$= -13/16 + -11/24$$

LCM of 16 and 24 is 48

$$= (-13 \times 3)/(16 \times 3) + (-11 \times 2)/(24 \times 2)$$

By further calculation

$$= -39/48 + -22/48$$

So we get

$$= (-39 - 22)/48$$

$$= -61/48$$

(ix) $-9/-16$ and $-11/8$

It can be written as

$$= 9/16 + -11/8$$

LCM of 16 and 8 is 16

$$= (9 \times 1)/(16 \times 1) + (-11 \times 2)/(8 \times 2)$$

By further calculation

$$= 9/16 + -22/16$$

So we get

$$= (9 - 22)/16$$

$$= -13/16$$

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3. Evaluate:

(i) $-2/5 + 3/5 + -1/5$

(ii) $-8/9 + 4/9 + -2/9$

(iii) $5/-24 + -1/8 + 3/16$

(iv) $-7/6 + 4/-15 + -4/-30$

(v) $-2 + 2/5 + -2/15$

(vi) $-11/12 + 5/16 + -3/8$

Solution:

(i) $-2/5 + 3/5 + -1/5$

It can be written as

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

By further calculation

$$= 0/5$$

$$= 0$$

(ii) $-8/9 + 4/9 + -2/9$

It can be written as

$$= (-8 + 4 - 2)/ 9$$

By further calculation

$$= (-10 + 4)/ 9$$

$$= -6/9$$

$$= -2/3$$

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(iii) $5/-24 + -1/8 + 3/16$

It can be written as

$$= -5/24 + -1/8 + 3/16$$

LCM of 8, 16 and 24 is 48

$$= (-5 \times 2)/(24 \times 2) + (-1 \times 6)/(8 \times 6) + (3 \times 3)/(16 \times 3)$$

By further calculation

$$= -10/48 + -6/48 + 9/48$$

So we get

$$= (-10 - 6 + 9)/48$$

$$= (-16 + 9)/48$$

$$= -7/48$$

(iv) $-7/6 + 4/-15 + -4/-30$

It can be written as

$$= -7/6 + -4/15 + 4/30$$

LCM of 6, 15 and 30 is 30

$$= (-7 \times 5)/(6 \times 5) + (-4 \times 2)/(15 \times 2) + (4 \times 1)/(30 \times 1)$$

By further calculation

$$= -35/30 + -8/30 + 4/30$$

So we get

$$= (-35 - 8 + 4)/30$$

$$= (-43 + 4)/30$$

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$$= -39/30$$

$$= -13/10$$

$$(v) -2 + 2/5 + -2/15$$

It can be written as

$$= -2/1 + 2/5 + -2/15$$

LCM of 1, 5 and 15 is 15

$$= (-2 \times 15)/(1 \times 15) + (2 \times 3)/(5 \times 3) + (-2 \times 1)/(15 \times 1)$$

By further calculation

$$= -30/15 + 6/15 + -2/15$$

So we get

$$= (-30 + 6 - 2)/15$$

$$= (-32 + 6)/15$$

$$= -26/15$$

$$(vi) -11/12 + 5/16 + -3/8$$

It can be written as

$$= -11/12 + 5/16 + -3/8$$

LCM of 12, 16 and 8 is 48

$$= (-11 \times 4)/(12 \times 4) + (5 \times 3)/(16 \times 3) + (-3 \times 6)/(8 \times 6)$$

By further calculation

$$= -44/48 + 15/48 + -18/48$$

So we get

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$$= (-44 + 15 - 18) / 48$$

$$= (-62 + 15) / 48$$

$$= -47 / 48$$

4. Evaluate:

(i) $-11/18 + -3/9 + 2/-3$

(ii) $-9/4 + 13/3 + 25/6$

(iii) $-5 + 5/-8 + -5/-12$

(iv) $-2/3 + 5/2 + 2$

(v) $5 + -3/4 + -5/8$

Solution:

(i) $-11/18 + -3/9 + 2/-3$

It can be written as

$$= -11/18 + -3/9 + -2/3$$

LCM of 3, 9 and 18 is 18

$$= (-11 \times 1) / (18 \times 1) + (-3 \times 2) / (9 \times 2) + (-2 \times 6) / (3 \times 6)$$

By further calculation

$$= -11/18 + -6/18 + -12/18$$

So we get

$$= (-11 - 6 - 12) / 18$$

$$= -29/18$$

(ii) $-9/4 + 13/3 + 25/6$

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It can be written as

$$= -9/4 + 13/3 + 25/6$$

LCM of 4, 3 and 6 is 24

$$= (-9 \times 6)/(4 \times 6) + (13 \times 8)/(3 \times 8) + (25 \times 4)/(6 \times 4)$$

By further calculation

$$= -54/24 + 104/24 + 100/24$$

So we get

$$= (-54 + 104 + 100)/24$$

$$= 150/24$$

$$= 25/4$$

$$= 6 \frac{1}{4}$$

(iii) $-5 + 5/8 + -5/12$

It can be written as

$$= -5/1 + -5/8 + 5/12$$

LCM of 1, 8 and 12 is 24

$$= (-5 \times 24)/(1 \times 24) + (-5 \times 3)/(8 \times 3) + (5 \times 2)/(12 \times 2)$$

By further calculation

$$= -120/24 + -15/24 + 10/24$$

So we get

$$= (-120 - 15 + 10)/24$$

$$= -125/24$$

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$$(iv) -\frac{2}{3} + \frac{5}{2} + 2$$

It can be written as

$$= -\frac{2}{3} + \frac{5}{2} + \frac{2}{1}$$

LCM of 3, 2 and 1 is 6

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

By further calculation

$$= -\frac{4}{6} + \frac{15}{6} + \frac{12}{6}$$

So we get

$$= \frac{(-4 + 15 + 12)}{6}$$

$$= \frac{23}{6}$$

$$= 3 \frac{5}{6}$$

$$(v) 5 + -\frac{3}{4} + -\frac{5}{8}$$

It can be written as

$$= \frac{5}{1} + -\frac{3}{4} + -\frac{5}{8}$$

LCM of 1, 4 and 8 is 8

$$= \frac{(5 \times 8)}{(1 \times 8)} + \frac{(-3 \times 2)}{(4 \times 2)} + \frac{(-5 \times 1)}{(8 \times 1)}$$

By further calculation

$$= \frac{40}{8} + -\frac{6}{8} + -\frac{5}{8}$$

So we get

$$= \frac{(40 - 6 - 5)}{8}$$

$$= \frac{(40 - 11)}{8}$$

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$$= 29/8$$

$$= 3 \frac{5}{8}$$

5. Subtract:

(i) $2/9$ from $5/9$

(ii) $-6/11$ from $-3/11$

(iii) $-2/15$ from $-8/15$

(iv) $11/18$ from $-5/18$

(v) $-4/11$ from -2

Solution:

(i) $2/9$ from $5/9$

It can be written as

$$= 5/9 - 2/9$$

By further calculation

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

$$= 3/9$$

$$= 1/3$$

(ii) $-6/11$ from $-3/11$

It can be written as

$$= 3/11 - (-6/11)$$

By further calculation

$$= 3/11 + 6/11$$

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So we get

$$= (3 + 6) / 11$$

$$= 9/11$$

(iii) $-2/15$ from $-8/15$

It can be written as

$$= -8/15 - (-2/15)$$

By further calculation

$$= -8/15 + 2/15$$

So we get

$$= (-8 + 2) / 15$$

$$= -6 / 15$$

$$= -2/5$$

(iv) $11/18$ from $-5/18$

It can be written as

$$= -5/18 - 11/18$$

By further calculation

$$= (-5 - 11) / 18$$

So we get

$$= -16/18$$

$$= -8/9$$

(v) $-4/11$ from -2

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It can be written as

$$= -2/1 - (-4/11)$$

LCM of 1 and 11 is 11

$$= (-2 \times 11)/(1 \times 11) + (4 \times 1)/(11 \times 1)$$

By further calculation

$$= -22/11 + 4/11$$

So we get

$$= (-22 + 4)/11$$

$$= -18/11$$

6. Subtract:

(i) $-3/10$ from $1/5$

(ii) $-6/25$ from $-8/5$

(iii) $-7/4$ from -2

(iv) $-16/21$ from 1

(v) $-8/15$ from 0

(vi) 0 from $-3/8$

(vii) -2 from $-3/10$

(viii) $5/8$ from $-5/16$

(ix) 4 from $-3/13$

Solution:

(i) $-3/10$ from $1/5$

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It can be written as

$$= 1/5 - (-3/10)$$

LCM of 5 and 10 is 10

$$= (1 \times 2)/ (5 \times 2) + 3/10$$

By further calculation

$$= 2/10 + 3/10$$

So we get

$$= (2 + 3)/ 10$$

$$= 5/10$$

$$= 1/2$$

(ii) $-6/25$ from $-8/5$

It can be written as

$$= -8/5 - (-6/25)$$

LCM of 5 and 25 is 25

$$= (-8 \times 5)/ (5 \times 5) + 6/25$$

By further calculation

$$= -40/25 + 6/25$$

So we get

$$= (-40 + 6)/ 25$$

$$= -34/25$$

(iii) $-7/4$ from -2

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It can be written as

$$= (-2/1) - (-7/4)$$

LCM of 1 and 4 is 4

$$= (-2 \times 4) / (1 \times 4) + 7/4$$

$$= -8/4 + 7/4$$

By further calculation

$$= (-8 + 7) / 4$$

$$= -1/4$$

(iv) $-16/21$ from 1

It can be written as

$$= 1/1 - (-16/21)$$

$$= 1/1 + 16/21$$

By further calculation

$$= (21 + 16) / 21$$

So we get

$$= (21 + 16) / 21$$

$$= 37/21$$

$$= 1 \frac{16}{21}$$

(v) $-8/15$ from 0

It can be written as

$$= 0 - (-8/15)$$

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By further calculation

$$= 0 + 8/15$$

$$= 8/15$$

(vi) 0 from $-3/8$

It can be written as

$$= -3/8 - 0$$

$$= -3/8$$

(vii) -2 from $-3/10$

It can be written as

$$= -3/10 - (-2/1)$$

By further calculation

$$= -3/10 + 2/1$$

So we get

$$= (-3 + 2 \times 10)/10$$

$$= 17/10$$

$$= 1 \frac{7}{10}$$

(viii) $5/8$ from $-5/16$

It can be written as

$$= -5/16 - 5/8$$

LCM of 8 and 16 is 16

$$= -5/16 - (5 \times 2)/(8 \times 2)$$

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By further calculation

$$= -5/16 - 10/16$$

So we get

$$= (-5 - 10)/16$$

$$= -15/16$$

(ix) 4 from $-3/13$

It can be written as

$$= 3/13 - 4/1$$

LCM of 13 and 1 is 13

$$= (-3 - 4 \times 13)/13$$

By further calculation

$$= (-3 - 52)/13$$

$$= -55/13$$

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

Solution:

It is given that

Sum of two rational numbers = $11/24$

One of the rational number = $3/8$

Other rational number = $11/24 - 3/8$

LCM of 24 and 8 is 24

$$= 11/24 - (3 \times 3)/(8 \times 3)$$

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By further calculation

$$= 11/24 - 9/24$$

So we get

$$= (11 - 9)/ 24$$

$$= 2/24$$

$$= 1/12$$

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 $-13/12$, find the other.

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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

$$= \frac{(-4 \times 12 + 13)}{12}$$

So we get

$$= \frac{(-48 + 13)}{12}$$

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

10. What should be added to $-\frac{3}{16}$ to get $\frac{11}{24}$?**Solution:**

Consider x as the required rational number

Other number = $-\frac{3}{16}$

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

From the question

$$-\frac{3}{16} + x = \frac{11}{24}$$

By further calculation

$$x = \frac{11}{24} + \frac{3}{16}$$

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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?

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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 $-6/5$. If one of them is -2 , find the other.

Solution:

It is given that

Sum of two numbers = $-6/5$

One of the numbers = -2

Other number = $-6/5 - (-2/1)$

LCM of 1 and 5 is 5

$$= -6/5 - (2 \times 5) / (1 \times 5)$$

By further calculation

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

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$$= 4/5$$

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 $9/5$

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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

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

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

Exercise 2D

1. Evaluate:

(i) $5/4 \times 3/7$

(ii) $2/3 \times -6/7$

(iii) $(-12/5) \times (10/-3)$

(iv) $-45/39 \times -13/15$

(v) $3 \frac{1}{8} \times (-2 \frac{2}{5})$

(vi) $2 \frac{14}{25} \times (-5/16)$

(vii) $(-8/9) \times (-3/16)$

(viii) $(5/-27) \times (-9/20)$

Solution:

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(i) $5/4 \times 3/7$

It can be written as

$$= (5 \times 3) / (4 \times 7)$$

$$= 15/28$$

(ii) $2/3 \times -6/7$

It can be written as

$$= (2 \times -6) / (3 \times 7)$$

By further calculation

$$= (2 \times -2) / 7$$

$$= -4/7$$

(iii) $(-12/5) \times (10/-3)$

It can be written as

$$= (-12 \times 10) / (5 \times -3)$$

By further calculation

$$= 4 \times 2$$

$$= 8$$

(iv) $-45/39 \times -13/15$

It can be written as

$$= (-45 \times -13) / (39 \times 15)$$

By further calculation

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

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So we get

$$= 3/3$$

$$= 1$$

$$(v) 3 \frac{1}{8} \times (-2 \frac{2}{5})$$

It can be written as

$$= (3 \times 8 + 1)/ 8 \times (-2 \times 5 + 2)/ 5$$

By further calculation

$$= 25/8 \times (-12/5)$$

So we get

$$= (25 \times -12)/ (8 \times 5)$$

On further simplification

$$= (5 \times -3)/ (2 \times 1)$$

$$= -15/2$$

$$(vi) 2 \frac{14}{25} \times (-5/16)$$

It can be written as

$$= (2 \times 25 + 14)/ 25 \times (-5/16)$$

By further calculation

$$= 64/25 \times (-5/16)$$

$$= (64 \times -5)/ (25 \times 16)$$

On further simplification

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

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$$= -4/5$$

$$(vii) (-8/9) \times (-3/16)$$

It can be written as

$$= (-8 \times -3) / (9 \times 16)$$

By further calculation

$$= (-1 \times -1) / (3 \times 2)$$

$$= 1/6$$

$$(viii) (5/-27) \times (-9/20)$$

It can be written as

$$= (5 \times -9) / (-27 \times 20)$$

By further calculation

$$= (1 \times 1) / (3 \times 4)$$

$$= 1/12$$

2. Multiply:

(i) $3/25$ and $4/5$

(ii) $1 \frac{1}{8}$ and $10 \frac{2}{3}$

(iii) $6 \frac{2}{3}$ and $-3/8$

(iv) $-13/15$ and $-25/26$

(v) $1 \frac{1}{6}$ and 18

(vi) $2 \frac{1}{14}$ and -7

(vii) $5 \frac{1}{8}$ and -16

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(viii) 35 and $-18/25$

(ix) $6\frac{2}{3}$ and $-3/8$

(x) $3\frac{3}{5}$ and -10

(xi) $27/28$ and -14

(xii) -24 and $5/16$

Solution:

(i) $3/25$ and $4/5$

It can be written as

$$= 3/25 \times 4/5$$

By further calculation

$$= (3 \times 4) / (25 \times 5)$$

$$= 12/125$$

(ii) $1\frac{1}{8}$ and $10\frac{2}{3}$

It can be written as

$$= 9/8 \times 32/2$$

By further calculation

$$= (9 \times 32) / (8 \times 3)$$

$$= 3 \times 4$$

$$= 12$$

(iii) $6\frac{2}{3}$ and $-3/8$

It can be written as

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$$= 20/3 \times -3/8$$

By further calculation

$$= (20 \times -3) / (3 \times 8)$$

So we get

$$= (5 \times -1) / (1 \times 2)$$

$$= -5/2$$

(iv) $-13/15$ and $-25/26$

It can be written as

$$= (-13 \times -25) / (15 \times 26)$$

By further calculation

$$= (-1 \times -5) / (3 \times 2)$$

$$= 5/6$$

(v) $1 \frac{1}{6}$ and 18

It can be written as

$$= 7/6 \times 18$$

By further calculation

$$= 7 \times 3$$

$$= 21$$

(vi) $2 \frac{1}{14}$ and -7

It can be written as

$$= (2 \times 14 + 1) / 14 \times (-7)$$

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By further calculation

$$= 29/4 \times (-7)$$

So we get

$$= (29 \times -1)/ 2$$

$$= -29/2$$

(vii) $5 \frac{1}{8}$ and -16

It can be written as

$$= 41/8 \times -16$$

By further calculation

$$= 41 \times -2$$

$$= -82$$

(viii) 35 and $-18/25$

It can be written as

$$= 35 \times -18/25$$

By further calculation

$$= (35 \times -18)/ 25$$

So we get

$$= (7 \times -18)/ 5$$

$$= -126/5$$

(ix) $6 \frac{2}{3}$ and $-3/8$

It can be written as

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$$= 20/3 \times -3/8$$

By further calculation

$$= (20 \times -3) / (3 \times 8)$$

So we get

$$= (5 \times -1) / (1 \times 2)$$

$$= -5/2$$

(x) $3\frac{3}{5}$ and -10

It can be written as

$$= (3 \times 5 + 3) / 5 \times -10$$

By further calculation

$$= 18/5 \times -10$$

So we get

$$= 18 \times -2$$

$$= -36$$

(xi) $27/28$ and -14

It can be written as

$$= 27/28 \times -14$$

By further calculation

$$= (27 \times -1) / 2$$

$$= -27/2$$

(xii) -24 and $5/16$

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It can be written as

$$= (-24 \times 5) / 16$$

By further calculation

$$= (-3 \times 5) / 2$$

So we get

$$= -15/2$$

3. Evaluate:

(i) $(6 \times 5/18) - (-4 \frac{2}{9})$

(ii) $(7/8 \times 8/7) + (-5/9) \times (6/-25)$

(iii) $(11/-9 \times 21/44) + (-5/9) \times (63/-100)$

(iv) $(-5/9 \times 6/-25) + (24/21 \times 7/8)$

(v) $(-35/39 \times -13/7) - (7/90 \times -18/14)$

(vi) $(-4/5 \times 3/2) + (9/-5 \times 10/3) - (-3/2 \times -1/4)$

Solution:

(i) $(6 \times 5/18) - (-4 \frac{2}{9})$

It can be written as

$$= (-1 \times 5/3) - [-(4 \times 9 + 2) / 9]$$

LCM of 3 and 9 is 9

$$= -5/3 - (-38/9)$$

So we get

$$= -5/3 + 38/9$$

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By further calculation

$$= (-5 \times 3) / (3 \times 3) + (38 \times 1) / (9 \times 1)$$

$$= (-15 + 38) / 9$$

$$= 23/9$$

$$= 2 \frac{5}{9}$$

(ii) $(7/8 \times 8/7) + (-5/9) \times (6/-25)$

It can be written as

$$= (7/8 \times 8/7) + (-5/9 \times 6/-25)$$

By further calculation

$$= 1/1 + (1 \times 2) / (3 \times 5)$$

So we get

$$= 1/1 + 2/15$$

$$= (15 + 2) / 15$$

$$= 17/15$$

$$= 1 \frac{2}{15}$$

(iii) $(11/-9 \times 21/44) + (-5/9) \times (63/-100)$

It can be written as

$$= (11/-9 \times 21/44) + (5/9 \times 63/100)$$

By further calculation

$$= (-1 \times 7) / (3 \times 4) + (1 \times 7) / (1 \times 20)$$

So we get

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$$= -7/12 + 7/20$$

LCM of 12 and 20 is 60

$$= (-7 \times 5)/(12 \times 5) + (7 \times 3)/(20 \times 3)$$

Here

$$= -35/60 + 21/60$$

$$= (-35 + 21)/60$$

$$= -14/60$$

$$= -7/30$$

$$(iv) (-5/9 \times 6/-25) + (24/21 \times 7/8)$$

It can be written as

$$= (5/9 \times 6/25) + (24/21 \times 7/8)$$

By further calculation

$$= 2/(3 \times 5) + 1$$

$$= 2/15 + 1$$

LCM of 15 and 1 is 15

$$= (2 + 15)/15$$

$$= 17/15$$

$$= 1 \frac{2}{15}$$

$$(v) (-35/39 \times -13/7) - (7/90 \times -18/14)$$

It can be written as

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$$= (-35/39 \times -13/7) - (7/90 \times -18/14)$$

By further calculation

$$= (-5 \times -1) / (3 \times 1) - (1 \times -1) / (5 \times 2)$$

So we get

$$= 5/3 - (-1/10)$$

LCM of 3 and 10 is 30

$$= (5 \times 10) / (3 \times 10) + 1 / (10 \times 3)$$

We get

$$= (50 + 3) / 30$$

$$= 53/30$$

$$= 1 \frac{23}{30}$$

$$(vi) (-4/5 \times 3/2) + (9/-5 \times 10/3) - (-3/2 \times -1/4)$$

It can be written as

$$= (-2 \times 3) / (5 \times 1) + (3 \times 2) / (-1 \times 1) - (-3 \times -1) / (2 \times 4)$$

By further calculation

$$= -6/5 + -6/1 - 3/8$$

LCM of 5, 1 and 8 is 40

$$= (-6 \times 8) / (5 \times 8) - (6 \times 40) / (1 \times 40) - (3 \times 5) / (8 \times 5)$$

So we get

$$= (-48 - 240 - 15) / 40$$

$$= -303/40$$

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4. Find the cost of $3\frac{1}{2}$ m cloth, if one metre cloth costs ₹ $325\frac{1}{2}$.

Solution:

It is given that cost of one metre cloth = ₹ $325\frac{1}{2}$

We can write it as

$$= (2 \times 325 + 1) / 2$$

By further calculation

$$= (650 + 1) / 2$$

$$= ₹ 651/2$$

Cost of $3\frac{1}{2}$ m cloth

$$(2 \times 3 + 1) / 2 = 7/2 \text{ m}$$

We get

$$= 651/2 \times 7/2$$

It can be written as

$$= (651 \times 7) / (2 \times 2)$$

$$= 4557/4$$

$$= ₹ 1139\frac{1}{4}$$

5. A bus is moving with a speed of $65\frac{1}{2}$ km per hour. How much distance will it cover in $1\frac{1}{3}$ hours.

Solution:

It is given that

Speed of bus = $65\frac{1}{2}$ km per hour

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We can write it as

$$= (2 \times 65 + 1) / 2$$

By further calculation

$$= (130 + 1) / 2$$

$$= 131 / 2 \text{ km}$$

Distance covered in $1 \frac{1}{3}$ hour = $\frac{4}{3}$ hour can be written as

$$= 131/2 \times 4/3$$

We get

$$= 131/1 \times 2/3$$

We know that distance covered = speed \times time

$$= 131/2 \times 4/3$$

$$= (131 \times 2) / (1 \times 3)$$

So we get

$$= 262/3$$

$$= 87 \frac{1}{3} \text{ km}$$

6. Divide:

(i) $15/28$ by $\frac{3}{4}$

(ii) $-20/9$ by $-5/9$

(iii) $16/-5$ by $-8/7$

(iv) -7 by $-14/5$

(v) -14 by $7/-2$

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(vi) $-22/9$ by $11/18$

(vii) 35 by $-7/9$

(viii) $21/44$ by $-11/9$

Solution:

(i) $15/28$ by $\frac{3}{4}$

We know that

$$= 15/28 \div 3/4$$

It can be written as

$$= 15/28 \times 4/3$$

By further calculation

$$= 5/7 \times 1/1$$

$$= 5/7$$

(ii) $-20/9$ by $-5/9$

We know that

$$= -20/9 \div -5/9$$

It can be written as

$$= -20/9 \times 9/-5$$

By further calculation

$$= -4/-1$$

$$= 4$$

(iii) $16/-5$ by $-8/7$

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We know that

$$= 16/-5 \div -8/7$$

It can be written as

$$= 16/-5 \times 7/-8$$

By further calculation

$$= 2/-5 \times 7/-1$$

$$= (2 \times 7) / (-5 \times -1)$$

So we get

$$= 14/5$$

$$= 2 \frac{4}{5}$$

(iv) -7 by $-14/5$

We know that

$$= -7 \div -14/5$$

It can be written as

$$= -7 \times 5/-14$$

By further calculation

$$= 1 \times 5/2$$

$$= (1 \times 5) / 2$$

$$= 5/2$$

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

(v) -14 by $7/-2$

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We know that

$$= -14 \div 7/-2$$

It can be written as

$$= -14 \times -2/7$$

By further calculation

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

$$= 4$$

(vi) $-22/9$ by $11/18$

We know that

$$= -22/9 \div 11/18$$

It can be written as

$$= -22/9 \times 18/11$$

By further calculation

$$= -2/1 \times 2/1$$

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

$$= -4/1$$

$$= -4$$

(vii) 35 by $-7/9$

We know that

$$= 35 \div -7/9$$

It can be written as

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$$= 35 \times 9/-7$$

By further calculation

$$= 5 \times 9/-1$$

So we get

$$= (5 \times 9)/-1$$

$$= 45/-1$$

$$= -45$$

(viii) $21/44$ by $-11/9$

We know that

$$= 21/44 \div -11/9$$

It can be written as

$$= 21/44 \times -9/11$$

By further calculation

$$= (21 \times -9)/(44 \times 11)$$

$$= -189/484$$

7. Evaluate:

(i) $3 \frac{5}{12} + 1 \frac{2}{3}$

(ii) $3 \frac{5}{12} - 1 \frac{2}{3}$

(iii) $(3 \frac{5}{12} + 1 \frac{2}{3}) \div (3 \frac{5}{12} - 1 \frac{2}{3})$

Solution:

(i) $3 \frac{5}{12} + 1 \frac{2}{3}$

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It can be written as

$$= (12 \times 3 + 5) / 12 + (3 \times 1 + 2) / 3$$

$$= 41/12 + 5/3$$

LCM of 12 and 3 is 12

$$= (41 \times 1) / (12 \times 1) + (5 \times 4) / (3 \times 4)$$

By further calculation

$$= 41/12 + 20/12$$

$$= (41 + 20) / 12$$

$$= 61/12$$

$$= 5 \frac{1}{12}$$

(ii) $3 \frac{5}{12} - 1 \frac{2}{3}$

It can be written as

$$= (12 \times 3 + 5) / 12 - (3 \times 1 + 2) / 3$$

$$= 41/12 - 5/3$$

LCM of 12 and 3 is 12

$$= (41 \times 1) / (12 \times 1) - (5 \times 4) / (3 \times 4)$$

By further calculation

$$= (41 - 20) / 12$$

$$= 21/12$$

$$= 2/4$$

$$= 1 \frac{3}{4}$$

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$$(iii) (3 \frac{5}{12} + 1 \frac{2}{3}) \div (3 \frac{5}{12} - 1 \frac{2}{3})$$

It can be written as

$$= [(12 \times 3 + 5)/ 12 + (3 \times 1 + 2)/ 3] \div [(12 \times 3 + 5)/ 12 - (3 \times 1 + 2)/ 3]$$
$$= (41/12 + 5/3) \div (41/12 - 5/3)$$

LCM of 12 and 3 is 12

$$= (41 + 20)/ 12 \div (41 - 20)/ 12$$

By further calculation

$$= 61/12 \div 21/12$$

We can write it as

$$= 61/12 \times 12/21$$

$$= 61/21$$

$$= 2 \frac{19}{21}$$

8. The product of two numbers is 14. If one of the numbers is $-8/7$, find the other.

Solution:

It is given that

Product of two numbers = 14

One of the number = $-8/7$

Other number = $14 \div -8/7$

We can write it as

$$= 14 \times -7/8$$

$$= -98/8$$

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$$= - 49/4$$

9. The cost of 11 pens is ₹ 24 $\frac{3}{4}$. Find the cost of one pen.

Solution:

It is given that

$$\text{Cost of 11 pens} = ₹ 24 \frac{3}{4}$$

We can write it as

$$= (24 \times 4 + 3) / 4$$

$$= ₹ 99/4$$

$$\text{So the cost of one pen} = 99/4 \div 11$$

It can be written as

$$= 99/4 \times 1/11$$

$$= ₹ 9/4$$

$$= ₹ 2 \frac{1}{4}$$

10. If 6 identical articles can be bought for ₹ 2 $\frac{6}{17}$. Find the cost of each article.

Solution:

It is given that

$$\text{Cost of 6 articles} = ₹ 2 \frac{6}{17}$$

We can write it as

$$= (2 \times 17 + 6) / 17$$

$$= ₹ 40/17$$

$$\text{So the cost of each article} = 40/17 \div 6$$

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It can be written as

$$= 40/17 \times 1/6$$

$$= ₹ 20/51$$

11. By what number should $-3/8$ be multiplied so that the product is $-9/16$?

Solution:

$$\text{Number} = -3/8 \div (-9/16)$$

We can write it as

$$= -3/8 \times 16/-9$$

By further calculation

$$= 2/3$$

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

12. By what number should $-5/7$ be divided so that the result is $-15/28$?

Solution:

Consider the number as x

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

It can be written as

$$-5/7 \times 1/x = -15/28$$

By further calculation

$$-5/7x = -15/28$$

So we get

$$x = 5/7 \times 28/15 = 4/3$$

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

13. Evaluate: $(\frac{32}{15} + \frac{8}{5}) \div (\frac{32}{15} - \frac{8}{5})$.

Solution:

It is given that

$$(\frac{32}{15} + \frac{8}{5}) \div (\frac{32}{15} - \frac{8}{5})$$

LCM of 15 and 5 is 15

$$= [(\frac{32 \times 1}{15 \times 1} + \frac{8 \times 3}{5 \times 3}) \div [(\frac{32 \times 1}{15 \times 1} - \frac{8 \times 1}{5 \times 1})]$$

By further calculation

$$= \frac{(32 + 24)}{15} \div \frac{(32 - 24)}{15}$$

So we get

$$= \frac{56}{15} \div \frac{8}{15}$$

$$= \frac{56}{15} \times \frac{15}{8}$$

$$= 7$$

14. Seven equal pieces are made out of a rope of $21 \frac{5}{7}$ m. Find the length of each piece.

Solution:

It is given that

Length of 7 pieces of rope = $21 \frac{5}{7}$ m

It can be written as

$$= \frac{(21 \times 7 + 5)}{7}$$

$$= \frac{152}{7}$$

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So the length of each piece = $152/7 \div 7$

We can write it as

$$= 152/7 \times 1/7$$

So we get

$$= 152/49$$

$$= 3 \frac{5}{49} \text{ m}$$

Exercise 2E

1. Evaluate:

(i) $-2/3 + 3/4$

(ii) $7/-27 + 11/18$

(iii) $-3/8 + -5/12$

(iv) $9/-16 + -5/-12$

(v) $-5/9 + -7/12 + 11/18$

(vi) $7/-26 + 16/39$

(vii) $-2/3 - (-5/7)$

(viii) $-5/7 - (-3/8)$

(ix) $7/26 + 2 + -11/13$

(x) $-1 + 2/-3 + 5/6$

Solution:

(i) $-2/3 + 3/4$

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3	3,4
4	1,4
	1,1

Here the LCM of 3 and 4 is 12

So we get

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

By further calculation

$$= (-8 + 9) / 12$$

$$= 1/12$$

(ii) $7/-27 + 11/18$

2	27,18
3	27,9
3	9,3
3	3,1
	1,1

Here the LCM of 27 and 18 is 54

So we get

$$= (7 \times 2) / (-27 \times 2) + (11 \times 3) / (18 \times 3)$$

By further calculation

$$= (-14 + 33) / 54$$

$$= 19/54$$

(iii) $-3/8 + -5/12$

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2	8,12
2	4,6
2	2,3
3	1,3
	1,1

Here LCM of 8 and 12 is 24

So we get

$$= (-3 \times 3) / (8 \times 3) + (-5 \times 2) / (12 \times 2)$$

By further calculation

$$= (-9 - 10) / 24$$

$$= -19/24$$

(iv) $9/-16 + -5/-12$

It can be written as

$$= 9/-16 + 5/12$$

2	16,12
2	8,6
2	4,3
2	2,3
3	1,3
	1,1

Here LCM of 16 and 12 is 48

So we get

$$= (9 \times 3) / (-16 \times 3) + (5 \times 4) / (12 \times 4)$$

By further calculation

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$$= (-27 + 20)/48$$

$$= -7/48$$

$$(v) -5/9 + -7/12 + 11/18$$

2	9,12,18
2	9,6,9
3	9,3,9
3	3,1,3
	1,1,1

Here LCM of 9, 12 and 18 is 36

So we get

$$= (-5 \times 4)/(9 \times 4) - (7 \times 3)/(12 \times 3) + (11 \times 2)/(18 \times 2)$$

By further calculation

$$= (-20 - 21 + 22)/36$$

So we get

$$= (-41 + 22)/36$$

$$= -19/36$$

$$(vi) 7/-26 + 16/39$$

2	26,39
3	13,39
13	13,13
	1,1

Here LCM of 26 and 39 is 78

So we get

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$$= (-7 \times 3) / (26 \times 3) + (16 \times 2) / (39 \times 2)$$

By further calculation

$$= (-21 + 32) / 78$$

$$= 11/78$$

(vii) $-2/3 - (-5/7)$

It can be written as

$$= -2/3 + 5/7$$

3	3,7
7	1,7
	1,1

Here LCM of 3 and 7 is 21

So we get

$$= (-2 \times 7) / (3 \times 7) + (5 \times 3) / (7 \times 3)$$

By further calculation

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

$$= 1/21$$

(viii) $-5/7 - (-3/8)$

It can be written as

$$= -5/7 + 3/8$$

2	7,8
2	7,4
2	7,2
7	7,1
	1,1

Here LCM of 7 and 8 is 56

So we get

$$= (-5 \times 8) / (7 \times 8) + (3 \times 7) / (8 \times 7)$$

By further calculation

$$= (-40 + 21) / 56$$

$$= -19/56$$

(ix) $7/26 + 2 + -11/13$

It can be written as

$$= 7/26 + 2/1 + -11/13$$

2	26,13
13	13,13
	1,1

Here LCM of 26 and 13 is 26

So we get

$$= (7 \times 1) / (26 \times 1) + (2 \times 26) / (1 \times 26) - (11 \times 2) / (13 \times 2)$$

By further calculation

$$= (7 + 52 - 22) / 26$$

So we get

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$$= (59 - 22) / 26$$

$$= 37/26$$

$$= 1 \frac{11}{26}$$

$$(x) -1 + 2/-3 + 5/6$$

2	3,6
3	3,3
	1,1

Here LCM of 3 and 6 is 6

So we get

$$= (-1 \times 6) / (1 \times 6) - (2 \times 2) / (3 \times 2) + (5 \times 1) / (6 \times 1)$$

By further calculation

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

We get

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

$$= -5/6$$

2. The sum of two rational numbers is $-3/8$. If one of them is $3/16$, find the other.

Solution:

It is given that

Sum of two rational numbers = $-3/8$

One rational number = $3/16$

Other rational number = $-3/8 - 3/16$

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2	8,16
2	4,8
2	2,4
2	1,2
	1,1

Here LCM of 8 and 16 is 16

So we get

$$= (-3 \times 2) / (8 \times 2) - (3 \times 1) / (16 \times 1)$$

By further calculation

$$= (-6 - 3) / 16$$

$$= -9/16$$

3. The sum of two rational numbers is -5. If one of them is $-52/25$, find the other.

Solution:

It is given that

Sum of two rational numbers = -5

One rational number = $-52/25$

Other rational number = $-5 - (-52/25)$

Here LCM is 25

$$= (-5 \times 25) / (1 \times 25) + (52 \times 1) / (25 \times 1)$$

By further calculation

$$= (-125 + 52) / 25$$

$$= -73/25$$

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4. What rational number should be added to $-3/16$ to get $11/24$?

Solution:

It is given that

Sum of two rational numbers = $11/24$

One rational number = $-3/16$

Other number = $11/24 - (-3/16)$

It can be written as

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

2	24,16
2	12,8
2	6,4
2	3,2
3	3,1
	1,1

Here LCM of 16 and 24 is 48

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

By further calculation

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

$$= 31/48$$

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

Solution:

So the required rational number = $2 - (-3/5)$

It can be written as

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$$= 2 + 3/5$$

LCM of 1 and 5 is 5

$$= (2 \times 5)/(1 \times 5) + (3 \times 1)/(5 \times 1)$$

By further calculation

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

So we get

$$= 13/5$$

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

6. What rational number should be subtracted from $-5/12$ to get $5/24$?

Solution:

Required rational number = $-5/12 - 5/24$

2	12,24
2	6, 12
2	3, 6
3	3, 3
	1, 1

Here the LCM of 12 and 24 is 72

$$= (-5 \times 6)/(12 \times 6) - (5 \times 3)/(24 \times 3)$$

By further calculation

$$= (-30 - 15)/ 72$$

So we get

$$= - 45/72$$

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$$= -5/8$$

7. What rational number should be subtracted from $5/8$ to get $8/5$?

Solution:

$$\text{Required rational number} = 5/8 - 8/5$$

2	8,5
2	4,5
2	2,5
5	1,5
	1,1

Here LCM of 8 and 5 is 40

$$= (5 \times 5) / (8 \times 5) - (8 \times 8) / (5 \times 8)$$

By further calculation

$$= (25 - 64) / 40$$

$$= -39/40$$

8. Evaluate:

(i) $(7/8 \times 24/21) + (-5/9 \times 6/-25)$

(ii) $(8/15 \times -25/16) + (-18/35 \times 5/6)$

(iii) $(18/33 \times -22/27) - (13/25 \times -75/26)$

(iv) $(-13/7 \times -35/39) - (-7/45 \times 9/14)$

Solution:

(i) $(7/8 \times 24/21) + (-5/9 \times 6/-25)$

It can be written as

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$$= (7 \times 24) / (8 \times 21) + (-5 \times 6) / (9 \times -25)$$

By further simplification

$$= (1 \times 3) / (1 \times 3) + (1 \times 2) / (3 \times 5)$$

So we get

$$= 3/3 + 2/15$$

3	3,15
5	1,5
	1,1

Here LCM of 3 and 15 is 15

$$= (3 \times 5) / (3 \times 5) + (2 \times 1) / (15 \times 1)$$

By further calculation

$$= (15 + 2) / 15$$

$$= 17/15$$

$$= 1 \frac{2}{15}$$

$$(ii) (8/15 \times -25/16) + (-18/35 \times 5/6)$$

It can be written as

$$= (8 \times -25) / (15 \times 16) + (-18 \times 5) / (35 \times 6)$$

By further calculation

$$= (1 \times -5) / (3 \times 2) + (-3 \times 1) / (7 \times 1)$$

So we get

$$= -5/6 - 3/7$$

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2	6,7
3	3,7
7	1,7
	1,1

Here LCM of 6 and 7 is 42

$$= (-5 \times 7) / (6 \times 7) - (3 \times 6) / (7 \times 6)$$

By further calculation

$$= (-35 - 18) / 42$$

$$= -53/42$$

$$(iii) (18/33 \times -22/27) - (13/25 \times -75/26)$$

It can be written as

$$= (18 \times -22) / (33 \times 27) - (13 \times -75) / (25 \times 26)$$

By further calculation

$$= (2 \times -2) / (3 \times 3) - (1 \times -3) / (1 \times 2)$$

So we get

$$= -4/9 - (-3/2)$$

$$= -4/9 + 3/2$$

2	9,2
3	9,1
3	3,1
	1,1

Here LCM of 9 and 2 is 18

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

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By further calculation

$$= (-8 + 27)/ 18$$

$$= 19/18$$

$$= 1 \frac{1}{18}$$

$$(iv) (-13/7 \times -35/39) - (-7/45 \times 9/14)$$

It can be written as

$$= (-13 \times -35)/ (7 \times 39) + (7 \times 9)/ (45 \times 14)$$

By further calculation

$$= (-1 \times -5)/ (1 \times 3) + (1 \times 1)/ (5 \times 2)$$

So we get

$$= 5/3 + 1/10$$

2	3,10
3	3,5
5	1,5
	1,1

Here the LCM of 3 and 10 is 30

$$= (5 \times 10)/ (3 \times 10) + (1 \times 3)/ (10 \times 3)$$

By further calculation

$$= (50 + 3)/ 30$$

$$= 53/30$$

$$= 1 \frac{23}{30}$$

9. The product of two rational numbers is 24. If one of them is $-36/11$, find the other.

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Solution:

It is given that

Product of two rational numbers = 24

One rational number = $-36/11$

Other rational number = $24 \div (-36/11)$

It can be written as

$$= 24 \times (-11/36)$$

By further calculation

$$= 2 \times (-11/3)$$

$$= -22/3$$

10. By what rational number should we multiply $20/-9$, so that the product may be $-5/9$?

Solution:

Here the required rational number = $-5/9 \div (20/-9)$

By further calculation

$$= -5/9 \times (-9/20)$$

$$= 1/4$$



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