EXERCISE 2C

Add:

(i) 7/5 and 2/5
(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 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
= -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
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 × 7)/ (5 × 7) + (3 × 5)/ (7 × 5)
LCM of 5 and 7 is 35
= -14/35 + 15/35
By further calculation
= (-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 × 6)/ (6 × 6) + (4 × 4)/ (9 × 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 × 3)/ (1 × 3) + (2 × 1)/ (3 × 1)
By further calculation
= -9/3 + 2/3
So we get
= (-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 × 2)/ (9 × 2) + (7 × 1)/ (18 × 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 × 2)/ (24 × 2) + (-5 × 1)/ (48 × 1)
By further calculation
= -14/48 + -5/48
So we get
= (-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 × 3)/ (18 × 3) + (-5 × 2)/ (27 × 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 × 3)/ (25 × 3) + (-1 × 1)/ (75 × 1)
By further calculation
= -27/75 + -1/75
So we get
= (-27 – 1)/ 75
= -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 × 3)/ (16 × 3) + (-11 × 2)/ (24 × 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 × 1)/ (16 × 1) + (-11 × 2)/ (8 × 2)
By further calculation
= 9/16 + -22/16
So we get
= (9 – 22)/ 16
= -13/16

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

(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 × 2)/ (24 × 2) + (-1 × 6)/ (8 × 6) + (3 × 3)/ (16 × 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 × 5)/ (6 × 5) + (-4 × 2)/ (15 × 2) + (4 × 1)/ (30 × 1)
By further calculation
= -35/30 + -8/30 + 4/30
So we get
= (-35 – 8 + 4)/ 30
= (-43 + 4)/ 30
= - 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 × 15)/ (1 × 15) + (2 × 3)/ (5 × 3) + (-2 × 1)/ (15 × 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 × 4)/ (12 × 4) + (5 × 3)/ (16 × 3) + (-3 × 6)/ (8 × 6)
By further calculation
= -44/48 + 15/48 + -18/48
So we get
= (-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 × 1)/ (18 × 1) + (-3 × 2)/ (9 × 2) + (-2 × 6)/ (3 × 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
It can be written as
= -9/4 + 13/3 + 25/6
LCM of 4, 3 and 6 is 24
= (-9 × 6)/ (4 × 6) + (13 × 8)/ (3 × 8) + (25 × 4)/ (6 × 4)
By further calculation
= -54/24 + 104/24 + 100/24
So we get
= (-54 + 104 + 100)/ 24
= 150/24
= 25/4
= 6 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 × 24)/ (1 × 24) + (-5 × 3)/ (8 × 3) + (5 × 2)/ (12 × 2)
By further calculation
= -120/24 + -15/24 + 10/24
So we get
= (-120 – 15 + 10)/24
= -125/24

(iv) -2/3 + 5/2 + 2
It can be written as
= -2/3 + 5/2 + 2/1
LCM of 3, 2 and 1 is 6
= (-2 × 2)/ (3 × 2) + (5 × 3)/ (2 × 3) + (2 × 6)/ (1 × 6)
By further calculation
= -4/6 + 15/6 + 12/6
So we get
= (-4 + 15 + 12)/ 6
= 23/6
= 3 5/6

(v) 5 + -3/4 + -5/8
It can be written as
= 5/1 + -3/4 + -5/8
LCM of 1, 4 and 8 is 8
= (5 × 8)/ (1 × 8) + (-3 × 2)/ (4 × 2) + (-5 × 1)/ (8 × 1)

By further calculation
= 40/8 + -6/8 + -5/8
So we get
= (40 – 6 – 5)/ 8
= (40 – 11)/8
= 29/8
= 3 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
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
It can be written as
= -2/1 – (-4/11)
LCM of 1 and 11 is 11
= (- 2 × 11)/ (1 × 11) + (4 × 1)/ (11 × 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
It can be written as
= 1/5 – (-3/10)
LCM of 5 and 10 is 10
= (1 × 2)/ (5 × 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 × 5)/ (5 × 5) + 6/25
By further calculation
= -40/25 + 6/25
So we get
= (-40 + 6)/ 25
= -34/25

(iii) -7/4 from -2
It can be written as

= (-2/1) – (-7/4)
LCM of 1 and 4 is 4
= (-2 × 4)/ (1 × 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 16/21

(v) -8/15 from 0
It can be written as
= 0 – (-8/15)
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 × 10)/10
= 17/10
= 1 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 × 2)/ (8 × 2)
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 × 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 × 3)/ (8 × 3)
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 × 2)/ (12 × 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.
Solution:

It is given that
Sum of two rational numbers = -4
One of the rational number = -13/12
Other rational number = - 4 – (-13/12)

LCM of 1 and 12 is 12
= - 4 + 13/12
By further calculation
= (-4 × 12 + 13)/ 12
So we get
= (-48 + 13)/ 12
= -35/12

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

Consider x as the required rational number
Other number = -3/16
Sum of two numbers = 11/24
From the question
-3/16 + x = 11/24
By further calculation
x = 11/24 + 3/16
LCM of 16 and 24 is 48
x = (11 × 2)/ (24 × 2) + (3 × 3)/ (16 × 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 × 5 + 3)/ 5
So we get
= (10 + 3)/ 5
= 13/5
= 2 3/5

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

Consider x as the required rational number
Other number = -4/5
Here the difference between two numbers is 1
From the question
-4/5 – x = 1
By further calculation

-4/5 – 1 = x
So we get
x = (-4 – 1 × 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 × 5)/ (1 × 5)
By further calculation
= (-6 + 10)/ 5
= 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 × 3)/ (8 × 3) + (7 × 2)/ (12 × 2)
By further calculation
= 9/24 + 14/24
So we get
= (9 + 14)/ 24 = 23/34

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

Consider x as the first number
Other number is 5/9
Here the difference between two numbers is 9/5
Using the question
5/9 – x = 9/5
So we get
x = 5/9 – 9/5
LCM of 9 and 5 is 45
x = (5 × 5)/ (9 × 5) – (9 × 9)/ (5 × 9)
By further calculation
x = 25/45 – 81/45
x = (25 - 81)/ 45 = - 56/45