EXERCISE 3C

Reduce to a single fraction:

(i) 1/2 + 2/3
(ii) 3/5 – 1/10
(iii) 2/3 – 1/6
(iv) 1 1/3 + 2 1/4
(v) 1/4 + 5/6 – 1/12
(vi) 2/3 – 3/5 + 3 – 1/5
(vii) 2/3 – 1/5 + 1/10
(viii) 2 1/2 + 2 1/3 – 1 1/4
(ix) 2 5/8 – 2 1/6 + 4 3/4
Solution:

(i) 1/2 + 2/3
Here the LCM of 2 and 3 is 6
= (1 × 3)/ (2 × 3) + (2 × 2)/ (3 × 2)
By further calculation
= 3/6 + 4/6
= (3 + 4)/ 6
So we get
= 7/6
= 1 1/6

(ii) 3/5 – 1/10
Here the LCM of 5 and 10 is 10
= (3 × 2)/ (5 × 2) – 1/10
By further calculation
= 6/10 – 1/10
So we get
= (6 – 1)/ 10
= 5/10
= 1/2

(iii) 2/3 – 1/6
Here the LCM of 3 and 6 is 6
= (2 × 2)/ (3 × 2) – 1/6
By further calculation
= 4/6 – 1/6
So we get
= (4 – 1)/ 6
= 3/6
= 1/2

(iv) 1 1/3 + 2 1/4
It can be written as
= 4/3 + 9/4
Here LCM of 3 and 4 is 12
= (4 × 4)/ (3 × 4) + (9 × 3)/ (4 × 3)
By further calculation

= 16/12 + 27/12
So we get
= (16 + 27)/ 12
= 43/12
= 3 7/12

(v) 1/4 + 5/6 – 1/12
Here LCM of 4, 6 and 12 is 12
= (1 × 3)/ (4 × 3) + (5 × 2)/ (6 × 2) – 1/12
By further calculation
= 3/12 + 10/12 – 1/12
So we get
= (3 + 10 – 1)/ 12
= 12/12
= 1

(vi) 2/3 – 3/5 + 3 – 1/5
Here LCM of 3 and 5 is 15
= (2 × 5)/ (3 × 5) – (3 × 3)/ (5 × 3) + (3 × 15)/ 15 – (1 × 3)/ (5 × 3)
By further calculation
= 10/15 – 9/15 + 45/15 – 3/15
So we get
= (10 – 9 + 45 – 3)/ 15
= (55 – 12)/ 15
= 43/15
= 2 13/15

(vii) 2/3 – 1/5 + 1/10
Here the LCM of 3, 5 and 10 is 30
= (2 × 10)/ (3 × 10) – (1 × 6)/ (5 × 6) + (1 × 3)/ (10 × 3)
By further calculation
= 20/30 – 6/30 + 3/30
So we get
= (20 – 6 + 3)/ 30
= (23 – 6)/ 30
= 17/30

(viii) 2 1/2 + 2 1/3 – 1 ¼
It can be written as
= 5/2 + 7/3 – 5/4
Here the LCM of 2, 3 and 4 is 12
= (5 × 6)/ (2 × 6) + (7 × 4)/ (3 × 4) – (5 × 3)/ (4 × 3)
By further calculation
= 30/12 + 28/12 – 15/12
So we get
= (30 + 28 – 15)/ 12
= (58 – 15)/ 12
= 43/12
= 3 7/12

(ix) 2 5/8 – 2 1/6 + 4 3/4
It can be written as
= 21/8 – 13/6 + 19/4
Here the LCM of 8, 6 and 4 is 24
= (21 × 3)/ (8 × 3) – (13 × 4)/ (6 × 4) + (19 × 6)/ (4 × 6)
By further calculation
= 63/24 – 52/24 + 114/24
So we get
= (63 – 52 + 114)/ 24
= (177 – 52)/ 24
= 125/24
= 5 5/24

2. Simplify:
(i) 3/4 × 6
(ii) 2/3 × 15
(iii) 3/4 × 1/2
(iv) 9/12 × 4/7
(v) 45 × 2 1/3
(vi) 36 × 3 1/4
(vii) 2 ÷ 1/3
(viii) 3 ÷ 2/5
(ix) 1 ÷ 3/5
(x) 1/3 ÷ 1/4
(xi) -5/8 ÷ 3/4
(xii) 3 3/7 ÷ 1 1/14
(xiii) 3 ¾ × 1 1/5 × 20/21
Solution:

(i) 3/4 × 6
It can be written as
= 3/4 × 6/1
= (3 × 6)/ (4 × 1)
So we get
= 18/4
HCF of 18 and 4 is 2
Dividing both numerator and denominator by 2
= (18 ÷ 2)/ (4 ÷ 2)
= 9/2
= 4 1/2

(ii) 2/3 × 15
It can be written as
= 2/3 × 15/1
= (2 × 15)/ (3 × 1)
So we get
= 30/3
= 10

(iii) 3/4 × 1/2

It can be written as
= (3 × 1)/ (4 × 2)
= 3/8

(iv) 9/12 × 4/7
It can be written as
= (9 × 4)/ (12 × 7)
So we get
= 36/84
Here the HCF of 36 and 84 is 12
Dividing both numerator and denominator by 12
= (36 ÷ 12)/ (84 ÷ 12)
= 3/7

(v) 45 × 2 1/3
It can be written as
= 45/1 × 7/3
= (45 × 7)/ (1 × 3)
So we get
= 315/3
= 105

(vi) 36 × 3 1/4
It can be written as
= 36/1 × 13/4
= (36 × 13)/ (4 × 1)
So we get
= 468/4
= 117

(vii) 2 ÷ 1/3
It can be written as
= 2/1 × 3/1
= (2 × 3)/ (1 × 1)
So we get
= 6/1
= 6

(viii) 3 ÷ 2/5
It can be written as
= 3/1 × 5/2
= (3 × 5)/ (1 × 2)
So we get
= 15/2
= 7 ½

(ix) 1 ÷ 3/5
It can be written as
= 1 × 5/3
= (1 × 5)/ 3

So we get
= 5/3
= 1 2/3

(x) 1/3 ÷ 1/4
It can be written as
= 1/3 × 4/1
= (1 × 4)/ (3 × 1)
So we get
= 4/3
= 1 1/3

(xi) -5/8 ÷ 3/4
It can be written as
= -5/8 × 4/3
= (-5 × 4)/ (8 × 3)
So we get
= - 20/24
Here the HCF of 20 and 24 is 4
So by dividing both numerator and denominator by 4
= (-20 ÷ 4)/ (24 ÷ 4)
= -5/6

(xii) 3 3/7 ÷ 1 1/14
It can be written as
= 24/7 × 14/15
= (24 × 14)/ (7 × 15)
So we get
= 336/105
Here the HCF of 336 and 105 is 21
So by dividing both numerator and denominator by 21
= (336 ÷ 21)/ (105 ÷ 21)
= 16/5
= 3 1/5

(xiii) 3 ¾ × 1 1/5 × 20/21
It can be written as
= 15/4 × 6/5 × 20/21
= (15 × 6 × 20)/ (4 × 5 × 21)
So we get
= 1800/420
Here the HCF of 1800 and 420 is 60
So by dividing both numerator and denominator by 60
= (1800 ÷ 60)/ (420 ÷ 60)
= 30/7
= 4 2/7

3. Subtract:
(i) 2 from 2/3
(ii) 1/8 from 5/8

(iii) -2/5 and 2/5
(iv) – 3/7 from 3/7
(v) 0 from - 4/5
(vi) 2/9 from 4/5
(vii) – 4/7 from -6/11
Solution:

(i) 2 from 2/3
It can be written as
= 2/3 – 2/1
LCM of 3 and 1 is 3
= 2/3 – (2 × 3)/ 3
= 2/3 – 6/3
So we get
= (2 – 6)/ 3
= -4/3
= - 1 1/3

(ii) 1/8 from 5/8
It can be written as
= 5/8 – 1/8
= (5 – 1)/ 8
So we get
= 4/8
= 1/2

(iii) -2/5 and 2/5
It can be written as
= 2/5 – (-2/5)
= 2/5 + 2/5
So we get
= (2 + 2)/ 5
= 4/5

(iv) – 3/7 from 3/7
It can be written as
= 3/7 – (-3/7)
= 3/7 + 3/7
So we get
= (3 + 3)/ 7
= 6/7

(v) 0 from - 4/5
It can be written as
= -4/5 – 0
= - 4/5

(vi) 2/9 from 4/5
It can be written as
= 4/5 – 2/9

LCM of 5 and 9 is 45
= (4 × 9)/ (5 × 9) – (2 × 5)/ (9 × 5)
By further calculation
= 36/45 – 10/45
= (36 – 10)/ 45
= 26/45

(vii) – 4/7 from -6/11
It can be written as
= -6/11 – (-4/7)
= - 6/11 + 4/7
Here LCM of 7 and 11 is 77
= (- 6 × 7)/ (11 × 7) + (4 × 11)/ (7 × 11)
By further calculation
= - 42/77 + 44/77
So we get
= (-42 + 44)/ 77
= 2/77

4. Find the value of:
(i) ½ and 10 kg
(ii) 3/5 of 1 hour
(iii) 4/7 of 2 1/3 kg
(iv) 3 ½ times of 2 metre
(v) 1/2 of 2 2/3
(vi) 5/11 of 4/5 of 22 kg
Solution:

(i) ½ and 10 kg
It can be written as
= (1/2 × 10) kg
= 5 kg

(ii) 3/5 of 1 hour
It can be written as
= (3/5 × 60) minutes
= 3 × 12
= 36 minutes

(iii) 4/7 of 2 1/3 kg
It can be written as
= (4/7 × 7/3) kg
So we get
= 4/3 kg
= 1 1/3 kg

(iv) 3 ½ times of 2 metre
It can be written as
= (7/2 × 2) metres
= 7 metres

(v) 1/2 of 2 2/3
It can be written as
= 1/2 × 8/3
So we get
= 4/3
= 1 1/3

(vi) 5/11 of 4/5 of 22 kg
It can be written as
= (5/11 × 4/5 × 22/1) kg
So we get
= 4 × 2
= 8 kg

5. Simplify and reduce to a simple fraction:
(i) 3/ 3 ¾
(ii) 3/5/ 7
(iii) 3/ 5/7
(iv) 2 1/5/ 1 1/10
(v) 2/5 of 6/11 × 1 ¼
(vi) 2 ¼ ÷ 1/7 × 1/3
(vii) 1/3 × 4 2/3 ÷ 3 ½ × 1/2
(viii) 2/3 × 1 ¼ ÷ 3/7 of 2 5/8
(ix) 0 ÷ 8/11
(x) 4/5 ÷ 7/15 of 8/9
(xi) 4/5 ÷ 7/15 × 8/9
(xii) 4/5 of 7/15 ÷ 8/9
(xiii) 1/2 of 3/4 × 1/2 ÷ 2/3
Solution:

(i) 3/ 3 ¾
It can be written as
= 3 / 15/4
So we get
= (3 × 4)/ 15
= 4/5

(ii) 3/5/ 7
It can be written as
= 3/5 × 1/7
= 3/35

(iii) 3/ 5/7
It can be written as
= 3 × 7/5
So we get
= 21/5
= 4 1/5

(iv) 2 1/5/ 1 1/10

It can be written as
= 11/5 / 11/10
So we get
= 11/5 × 10/11
= 2

(v) 2/5 of 6/11 × 1 ¼
It can be written as
= 2/5 of 6/11 × 5/4
So we get
= 12/55 × 5/4
= 3/11

(vi) 2 ¼ ÷ 1/7 × 1/3
It can be written as
= 9/4 ÷ 1/7 × 1/3
So we get
= 9/4 × 7/1 × 1/3
= 21/4
= 5 ¼

(vii) 1/3 × 4 2/3 ÷ 3 ½ × 1/2
It can be written as
= 1/3 × 14/3 ÷ 7/2 × 1/2
So we get
= 1/3 × 14/3 × 2/7 × 1/2
= 2/9

(viii) 2/3 × 1 ¼ ÷ 3/7 of 2 5/8
It can be written as
= 2/3 × 5/4 ÷ 3/7 of 21/8
So we get
= 2/3 × 5/4 ÷ 9/8
Here
= 2/3 × 5/4 × 8/9
= 20/27

(ix) 0 ÷ 8/11
It can be written as
= 0 × 11/8
= 0

(x) 4/5 ÷ 7/15 of 8/9
From BODMAS rule
= 4/5 ÷ 156/135
So we get
= 4/5 × 135/56
= 27/14
= 1 13/14

(xi) 4/5 ÷ 7/15 × 8/9
It can be written as
= 4/5 × 15/7 × 8/9
So we get
= 32/21
= 1 11/21

(xii) 4/5 of 7/15 ÷ 8/9
From BODMAS rule
= 28/75 ÷ 8/9
So we get
= 28/75 × 9/8
By further calculation
= (7 × 3)/ (25 × 2)
= 21/50

(xiii) 1/2 of 3/4 × 1/2 ÷ 2/3
From BODMAS rule
= 3/8 × 1/2 ÷ 2/3
So we get
= 3/8 × 1/2 × 3/2
= 9/32

6. A bought 3 ¾ kg of wheat and 2 ½ kg of rice. Find the total weight wheat and rice bought.
Solution:

It is given that
Weight of wheat = 3 ¾ kg = 15/4 kg
Weight of rice = 2 ½ kg = 5/2 kg
So the total weight of wheat and rice = 15/4 + 5/2
Here the LCM of 4 and 2 is 4
= (15 × 1)/ (4 × 1) + (5 × 2)/ (2 × 2)
So we get
= (15 + 10)/ 4
= 25/4 kg
= 6 ¼ kg

7. Which is greater, 3/5 or 7/10 and by how much?
Solution:

By cross multiplying
3 × 10 = 30 and 7 × 5 = 35
Here 30 is smaller than 35
So 3/5 < 7/10

We know that difference between 7/10 and 3/5
= 7/10 – 3/5
LCM of 10 and 5 is 10
= (7 × 1)/ (10 × 1) – (3 × 2)/ (5 × 2)
So we get

= (7 – 6)/ 10
= 1/10

Therefore, 7/10 is greater than 3/5 by 1/10.

8. What number should be added to 8 2/3 to get 12 5/6?
Solution:

To find the fraction we must subtract 8 2/3 from 12 5/6
So the required number = 12 5/6 – 8 2/3
It can be written as
= 77/6 – 26/3
Here the LCM of 3 and 6 is 6
= (77 × 1)/ (6 × 1) – (26 × 2)/ (3 × 2)
By further calculation
= (77 – 52)/ 6
= 25/6
= 4 1/6

9. What should be subtracted from 8 ¾ to get 2 2/3?
Solution:

Required number = 8 ¾ - 2 2/3
It can be written as
= 35/4 – 8/3
LCM of 4 and 3 is 12
= (35 × 3)/ (4 × 3) – (8 × 4)/ (3 × 4)
By further calculation
= (105 – 32)/ 12
= 73/12
= 6 1/12

10. A rectangular field is 16 ½ m long and 12 2/5 m wide. Find the perimeter of the field.
Solution:

Dimensions of rectangular field are
Length = 16 ½ m
Breadth = 12 2/5 m
So the perimeter = 2 (l + b)
Substituting the values
= 2 × (16 ½ + 12 2/5)
It can be written as
= 2 × (33/2 + 62/5)
LCM of 2 and 5 is 10
= 2 × [(33 × 5)/ (2 × 5) + (62 × 2)/ (5 × 2)]
By further calculation
= 2 × [(165 + 124)/ 10)]
So we get
= 2 × 289/10
= 289/5 m

= 57 4/5 m

11. Sugar costs ₹ 37 ½ per kg. Find the cost of 8 ¾ kg sugar.
Solution:

It is given that
Cost of 1 kg sugar = ₹ 37 1/2
So the cost of 8 ¾ kg sugar = 37 ½ × 8 ¾
It can be written as
= 75/2 × 35/4
= 2625/8
= ₹ 328 1/8

12. A motor cycle runs 31 ¼ km consuming 1 litre of petrol. How much distance will it run consuming 1 3/5 litre of petrol?
Solution:

It is given that
Distance covered consuming 1 litre petrol = 31 ¼ km = 125/4 km
So the distance covered consuming 1 3/5 litre petrol = 125/4 × 8/5
= 1000/20
= 50 km

13. A rectangular park has length = 23 2/5 m and breadth = 16 2/3 m. Find the area of the park.
Solution:

Dimensions of rectangular park are
Length = 23 2/5 m = 117/5 m
Breadth = 16 2/3 m = 50/3 m
So the area = l × b
Substituting the values
= 117/5 × 50/3
= 39 × 10
= 390 m^2

14. Each of 40 identical boxes weighs 4 4/5 kg. Find the total weight of all the boxes.
Solution:

It is given that
Weight of one box = 4 4/5 kg = 24/5 kg
So the weight of 40 boxes = 40 × 24/5
= 8 × 24
= 192 kg

15. Out of 24 kg of wheat, 5/6th of wheat is consumed. Find, how much wheat is still left?
Solution:

Wheat available = 24 kg
Wheat consumed = 5/6th of 24 kg
= 5/6 × 24

= 20kg
So the remaining wheat = 24 – 20 kg = 4 kg

16. A rod of length 2 2/5 metre is divided into five equal parts. Find the length of each part so obtained.
Solution:

Length of rod = 2/5 m
It is given that the length of rod should be divided into 5 equal parts
So the length of each part of rod = 2 2/5 ÷ 5
It can be written as
= 12/5 × 1/5
= 12/25 m

17. If A = 3 3/8 and B = 6 5/8, find: (i) A ÷ B (ii) B ÷ A.
Solution:

We know that
A = 3 3/8 = 27/8
B = 6 5/8 = 53/8

(i) A ÷ B
Substituting the values
= 27/8 ÷ 53/8
It can be written as
= 27/8 × 8/53
= 27/53

(ii) B ÷ A
Substituting the values
= 53/8 ÷ 27/8
It can be written as
= 53/8 × 8/27
= 53/27
= 1 26/27

18. Cost of 3 5/7 litres of oil is ₹ 83 ½. Find the cost of one litre oil.
Solution:

It is given that
Cost of 3 5/7 litres of oil = ₹ 83 ½
So the cost of one litre oil = ₹ 83 ½ ÷ 3 5/7
It can be written as
= ₹ 167/2 ÷ 26/7
We get
= ₹ 167/2 × 7/26
= ₹ 1169/52
= ₹ 22 25/52

19. The product of two numbers is 20 5/7. If one of these numbers is 6 2/3, find the other.
Solution:

It is given that
Product of two numbers = 20 5/7 = 145/7
One number = 6 2/3 = 20/3
So the other number = 145/7 ÷ 20/3
By further calculation
= 145/7 × 3/20
So we get
= 87/28
= 3 3/28

20. By what number should 5 5/6 be multiplied to get 3 1/3?
Solution:

Here the required number = 3 1/3 ÷ 5 5/6
It can be written as
= 10/3 ÷ 35/6
So we get
= 10/3 × 6/35
= 4/7