EXERCISE 2D

1. Evaluate:
(i) 5/4 × 3/7
(ii) 2/3 × -6/7
(iii) (-12/5) × (10/-3)
(iv) -45/39 × -13/ 15
(v) 3 1/8 × (-2 2/5)
(vi) 2 14/25 × (-5/16)
(vii) (-8/9) × (-3/ 16)
(viii) (5/-27) × (-9/ 20)
Solution:

(i) 5/4 × 3/7
It can be written as
= (5 × 3)/ (4 × 7)
= 15/28

(ii) 2/3 × -6/7
It can be written as
= (2 × -6)/ (3 × 7)
By further calculation
= (2 × -2)/ 7
= -4/7

(iii) (-12/5) × (10/-3)
It can be written as
= (-12 × 10)/ (5 × -3)
By further calculation
= 4 × 2
= 8

(iv) -45/39 × -13/ 15
It can be written as
= (-45 × -13)/ (39 × 15)
By further calculation
= (-3 × -1)/ (3 × 1)
So we get
= 3/3
= 1

(v) 3 1/8 × (-2 2/5)
It can be written as
= (3 × 8 + 1)/ 8 × (-2 × 5 + 2)/ 5
By further calculation
= 25/8 × (-12/5)
So we get
= (25 × -12)/ (8 × 5)
On further simplification
= (5 × -3)/ (2 × 1)

= -15/2

(vi) 2 14/25 × (-5/16)
It can be written as
= (2 × 25 + 14)/ 25 × (-5/16)
By further calculation
= 64/25 × (-5/16)
= (64 × -5)/ (25 × 16)
On further simplification
= (4 × -1)/ (5 × 1)
= -4/5

(vii) (-8/9) × (-3/ 16)
It can be written as
= (-8 × -3)/ (9 × 16)
By further calculation
= (-1 × -1)/ (3 × 2)
= 1/6

(viii) (5/-27) × (-9/ 20)
It can be written as
= (5 × -9)/ (-27 × 20)
By further calculation
= (1 × 1)/ (3 × 4)
= 1/12

2. Multiply:
(i) 3/25 and 4/5
(ii) 1 1/8 and 10 2/3
(iii) 6 2/3 and -3/8
(iv) -13/15 and -25/26
(v) 1 1/6 and 18
(vi) 2 1/14 and -7
(vii) 5 1/8 and -16
(viii) 35 and -18/25
(ix) 6 2/3 and -3/8
(x) 3 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 × 4/5
By further calculation
= (3 × 4)/ (25 × 5)
= 12/125

(ii) 1 1/8 and 10 2/3
It can be written as

= 9/8 × 32/2
By further calculation
= (9 × 32)/ (8 × 3)
= 3 × 4
= 12

(iii) 6 2/3 and -3/8
It can be written as
= 20/3 × -3/8
By further calculation
= (20 × -3)/ (3 × 8)
So we get
= (5 × -1)/ (1 × 2)
= -5/2

(iv) -13/15 and -25/26
It can be written as
= (-13 × -25)/ (15 × 26)
By further calculation
= (-1 × -5)/ (3 × 2)
= 5/6

(v) 1 1/6 and 18
It can be written as
= 7/6 × 18
By further calculation
= 7 × 3
= 21

(vi) 2 1/14 and -7
It can be written as
= (2 × 14 + 1)/ 14 × (-7)
By further calculation
= 29/4 × (-7)
So we get
= (29 × -1)/ 2
= -29/2

(vii) 5 1/8 and -16
It can be written as
= 41/8 × -16
By further calculation
= 41 × -2
= -82

(viii) 35 and -18/25
It can be written as
= 35 × -18/25
By further calculation
= (35 × -18)/ 25

So we get
= (7 × -18)/ 5
= -126/5

(ix) 6 2/3 and -3/8
It can be written as
= 20/3 × -3/8
By further calculation
= (20 × -3)/ (3 × 8)
So we get
= (5 × -1)/ (1 × 2)
= -5/2

(x) 3 3/5 and -10
It can be written as
= (3 × 5 + 3)/ 5 × -10
By further calculation
= 18/5 × -10
So we get
= 18 × -2
= -36

(xi) 27/28 and -14
It can be written as
= 27/28 × -14
By further calculation
= (27 × -1)/ 2
= -27/2

(xii) -24 and 5/16
It can be written as
= (-24 × 5)/ 16
By further calculation
= (-3 × 5)/ 2
So we get
= -15/2

3. Evaluate:
(i) (6 × 5/18) – (- 4 2/9)
(ii) (7/8 × 8/7) + (-5/9) × (6/-25)
(iii) (11/-9 × 21/44) + (-5/9) × (63/ -100)
(iv) (-5/9 × 6/-25) + (24/21 × 7/8)
(v) (-35/39 × -13/7) – (7/90 × -18/14)
(vi) (-4/5 × 3/2) + (9/-5 × 10/3) – (-3/2 × -1/4)
Solution:

(i) (6 × 5/18) – (- 4 2/9)
It can be written as
= (-1 × 5/3) – [- (4 × 9 + 2)/ 9]
LCM of 3 and 9 is 9

= -5/3 – (-38/9)
So we get
= -5/3 + 38/9
By further calculation
= (-5 × 3)/ (3 × 3) + (38 × 1)/ (9 × 1)
= (-15 + 38)/ 9
= 23/9
= 2 5/9

(ii) (7/8 × 8/7) + (-5/9) × (6/-25)
It can be written as
= (7/8 × 8/7) + (-5/9 × 6/-25)
By further calculation
= 1/1 + (1 × 2)/ (3 × 5)
So we get
= 1/1 + 2/15
= (15 + 2)/ 15
= 17/15
= 1 2/15

(iii) (11/-9 × 21/44) + (-5/9) × (63/ -100)
It can be written as
= (11/-9 × 21/44) + (5/9 × 63/100)
By further calculation
= (-1 × 7)/ (3 × 4) + (1 × 7)/ (1 × 20)
So we get
= -7/12 + 7/20
LCM of 12 and 20 is 60
= (-7 × 5)/ (12 × 5) + (7 × 3)/ (20 × 3)
Here
= -35/60 + 211/60
= (-35 + 21)/ 60
= -14/60
= -7/30

(iv) (-5/9 × 6/-25) + (24/21 × 7/8)
It can be written as
= (5/9 × 6/25) + (24/21 × 7/8)
By further calculation
= 2/ (3 × 5) + 1
= 2/15 + 1
LCM of 15 and 1 is 15
= (2 + 15)/ 15
= 17/15
= 1 2/15

(v) (-35/39 × -13/7) – (7/90 × -18/14)
It can be written as
= (-35/39 × -13/7) – (7/90 × -18/14)
By further calculation

= (-5 × -1)/ (3 × 1) – (1 × -1)/ (5 × 2)
So we get
= 5/3 – (-1/10)
LCM of 3 and 10 is 30
= (5 × 10)/ (3 × 10) + 1/ (10 × 3)
We get
= (50 + 3)/ 30
= 53/30
= 1 23/30

(vi) (-4/5 × 3/2) + (9/-5 × 10/3) – (-3/2 × -1/4)
It can be written as
= (-2 × 3)/ (5 × 1) + (3 × 2)/ (-1 × 1) – (-3 × -1)/ (2 × 4)
By further calculation
= -6/5 + -6/1 – 3/8
LCM of 5, 1 and 8 is 40
= = (-6 × 8)/ (5 × 8) – (6 × 40)/ (1 × 40) – (3 × 5)/ (8 × 5)
So we get
= (-48 – 240 – 15)/ 40
= - 303/40

4. Find the cost of 3 ½ m cloth, if one metre cloth costs ₹ 325 ½.
Solution:

It is given that cost of one metre cloth = ₹ 325 ½
We can write it as
= (2 × 325 + 1)/ 2
By further calculation
= (650 + 1)/ 2
= ₹ 651/2

Cost of 3 ½ m cloth
(2 × 3 + 1)/ 2 = 7/2 m
We get
= 651/2 × 7/2
It can be written as
= (651 × 7)/ (2 × 2)
= 4557/4
= ₹ 1139 ¼

5. A bus is moving with a speed of 65 ½ km per hour. How much distance will it cover in 1 1/3 hours.
Solution:

It is given that
Speed of bus = 65 ½ km per hour
We can write it as
= (2 × 65 + 1)/ 2
By further calculation
= (130 + 1)/ 2
= 131/ 2 km

Distance covered in 1 1/3 hour = 4/3 hour can be written as
= 131/2 × 4/3
We get
= 131/1 × 2/3
We know that distance covered = speed × time
= 131/2 × 4/3
= (131 × 2)/ (1 × 3)
So we get
= 262/3
= 87 1/3 km

6. Divide:
(i) 15/28 by ¾
(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
(vii) 35 by -7/9
(viii) 21/44 by -11/9
Solution:

(i) 15/28 by ¾
We know that
= 15/28 ÷ 3/4
It can be written as
= 15/28 × 4/3
By further calculation
= 5/7 × 1/1
= 5/7

(ii) -20/9 by -5/9
We know that
= -20/9 ÷ -5/9
It can be written as
= -20/9 × 9/-5
By further calculation
= -4/-1
= 4

(iii) 16/-5 by -8/7
We know that
= 16/-5 ÷ -8/7
It can be written as
= 16/-5 × 7/-8
By further calculation
= 2/-5 × 7/-1
= (2 × 7)/ (-5 × -1)
So we get
= 14/5

= 2 4/5

(iv) -7 by -14/5
We know that
= -7 ÷ - 14/5
It can be written as
= -7 × 5/-14
By further calculation
= 1 × 5/2
= (1 × 5)/ 2
= 5/2
= 2 ½

(v) -14 by 7/-2
We know that
= -14 ÷ 7/-2
It can be written as
= -14 × -2/7
By further calculation
= (-2 × -2)/ (1 × 1)
= 4

(vi) -22/9 by 11/18
We know that
= - 22/9 ÷ 11/18
It can be written as
= -22/9 × 18/11
By further calculation
= -2/1 × 2/1
= (-2 × 2)/ (1 × 1)
= - 4/1
= - 4

(vii) 35 by -7/9
We know that
= 35 ÷ -7/9
It can be written as
= 35 × 9/-7
By further calculation
= 5 × 9/-1
So we get
= (5 × 9)/ -1
= 45/-1
= -45

(viii) 21/44 by -11/9
We know that
= 21/44 ÷ -11/9
It can be written as
= 21/44 × -9/11

By further calculation
= (21 × -9)/ (44 × 11)
= -189/484

7. Evaluate:
(i) 3 5/12 + 1 2/3
(ii) 3 5/12 – 1 2/3
(iii) (3 5/12 + 1 2/3) ÷ (3 5/12 – 1 2/3)
Solution:

(i) 3 5/12 + 1 2/3
It can be written as
= (12 × 3 + 5)/ 12 + (3 × 1 + 2)/ 3
= 41/12 + 5/3
LCM of 12 and 3 is 12
= (41 × 1)/ (12 × 1) + (5 × 4)/ (3 × 4)
By further calculation
= 41/12 + 20/12
= (41 + 20)/ 12
= 61/12
= 5 1/12

(ii) 3 5/12 – 1 2/3
It can be written as
= (12 × 3 + 5)/ 12 – (3 × 1 + 2)/ 3
= 41/12 – 5/3
LCM of 12 and 3 is 12
= (41 × 1)/ (12 × 1) – (5 × 4)/ (3 × 4)
By further calculation
= (41 – 20)/ 12
= 21/12
= 2/4
= 1 ¾

(iii) (3 5/12 + 1 2/3) ÷ (3 5/12 – 1 2/3)
It can be written as
= [(12 × 3 + 5)/ 12 + (3 × 1 + 2)/ 3] ÷ [(12 × 3 + 5)/ 12 – (3 × 1 + 2)/ 3]
= (41/12 + 5/3) ÷ (41/12 – 5/3)
LCM of 12 and 3 is 12
= (41 + 20)/ 12 ÷ (41 – 20)/ 12
By further calculation
= 61/12 ÷ 21/12
We can write it as
= 61/12 × 12/21
= 61/21
= 2 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 ÷ -8/7
We can write it as
= 14 × -7/8
= -98/8
= - 49/4

9. The cost of 11 pens is ₹ 24 ¾. Find the cost of one pen.
Solution:

It is given that
Cost of 11 pens = ₹ 24 ¾
We can write it as
= (24 × 4 + 3)/ 4
= ₹ 99/4

So the cost of one pen = 99/4 ÷ 11
It can be written as
= 99/4 × 1/11
= ₹ 9/4
= ₹ 2 ¼

10. If 6 identical articles can be bought for ₹ 2 6/17. Find the cost of each article.
Solution:

It is given that
Cost of 6 articles = ₹ 2 6/17
We can write it as
= (2 × 17 + 6)/ 17
= ₹ 40/17

So the cost of each article = 40/17 ÷ 6
It can be written as
= 40/17 × 1/6
= ₹ 20/51

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

Number = -3/8 ÷ (-9/16)
We can write it as
= -3/8 × 16/-9
By further calculation
= 2/3
= 1 ½

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

Consider the number as x
-5/7 ÷ x = -15/28
It can be written as
-5/7 × 1/x = -15/28
By further calculation
-5/7x = -15/28
So we get
x = 5/7 × 28/15 = 4/3
x = 1 1/3

13. Evaluate: (32/15 + 8/5) ÷ (32/15 – 8/5).
Solution:

It is given that
(32/15 + 8/5) ÷ (32/15 – 8/5)
LCM of 15 and 5 is 15
= [(32 × 1)/ (15 × 1) + (8 × 3)/ (5 × 3)] ÷ [(32 × 1)/ (15 × 1) – (8 × 1)/ (5 × 1)]
By further calculation
= (32 + 24)/ 15 ÷ (32 – 24)/ 15
So we get
= 56/15 ÷ 8/15
= 56/15 × 15/8
= 7

14. Seven equal pieces are made out of a rope of 21 5/7 m. Find the length of each piece.
Solution:

It is given that
Length of 7 pieces of rope = 21 5/7 m
It can be written as
= (21 × 7 + 5)/ 7
= 152/7

So the length of each piece = 152/7 ÷ 7
We can write it as
= 152/7 × 1/7
So we get
= 152/49
= 3 5/49 m