

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

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

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

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

Solution:

(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

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

So we get

$$= 3/3$$

$$= 1$$

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

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

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

$$= -4/5$$

(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 $-18/25$

(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

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

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

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

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

$$= 41 \times -2$$

$$= -82$$

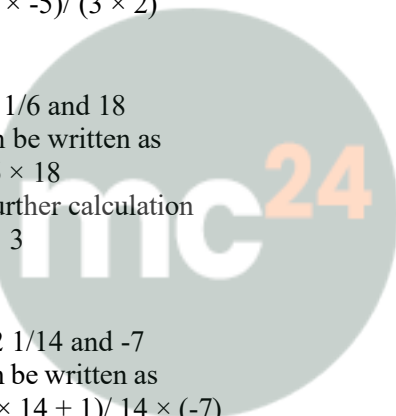
(viii) 35 and $-18/25$

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
 $= 20/3 \times -3/8$
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 $5/16$
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

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

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

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

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

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

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

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

$$= -303/40$$

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

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

$$= 1\frac{1}{2} \times \frac{4}{3}$$

We get

$$= 1\frac{1}{1} \times \frac{2}{3}$$

We know that distance covered = speed \times time

$$= 1\frac{1}{2} \times \frac{4}{3}$$

$$= (1\frac{1}{2} \times 2) / (1 \times 3)$$

So we get

$$= \frac{26}{3}$$

$$= 8\frac{2}{3} \text{ km}$$

6. Divide:

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

(ii) $-\frac{20}{9}$ by $-\frac{5}{9}$

(iii) $\frac{16}{-5}$ by $-\frac{8}{7}$

(iv) -7 by $-\frac{14}{5}$

(v) -14 by $\frac{7}{-2}$

(vi) $-\frac{22}{9}$ by $\frac{11}{18}$

(vii) 35 by $-\frac{7}{9}$

(viii) $\frac{21}{44}$ by $-\frac{11}{9}$

Solution:

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

We know that

$$= \frac{15}{28} \div \frac{3}{4}$$

It can be written as

$$= \frac{15}{28} \times \frac{4}{3}$$

By further calculation

$$= \frac{5}{7} \times \frac{1}{1}$$

$$= \frac{5}{7}$$

(ii) $-\frac{20}{9}$ by $-\frac{5}{9}$

We know that

$$= -\frac{20}{9} \div -\frac{5}{9}$$

It can be written as

$$= -\frac{20}{9} \times \frac{9}{-5}$$

By further calculation

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

$$= 4$$

(iii) $\frac{16}{-5}$ by $-\frac{8}{7}$

We know that

$$= \frac{16}{-5} \div -\frac{8}{7}$$

It can be written as

$$= \frac{16}{-5} \times \frac{7}{-8}$$

By further calculation

$$= \frac{2}{-5} \times \frac{7}{-1}$$

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

So we get

$$= \frac{14}{5}$$

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

(iv) -7 by $-\frac{14}{5}$

We know that

$$= -7 \div -\frac{14}{5}$$

It can be written as

$$= -7 \times \frac{5}{-14}$$

By further calculation

$$= 1 \times \frac{5}{2}$$

$$= \frac{(1 \times 5)}{2}$$

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

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

(v) -14 by $\frac{7}{-2}$

We know that

$$= -14 \div \frac{7}{-2}$$

It can be written as

$$= -14 \times \frac{-2}{7}$$

By further calculation

$$= \frac{(-2 \times -2)}{(1 \times 1)}$$

$$= 4$$

(vi) $-\frac{22}{9}$ by $\frac{11}{18}$

We know that

$$= -\frac{22}{9} \div \frac{11}{18}$$

It can be written as

$$= -\frac{22}{9} \times \frac{18}{11}$$

By further calculation

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

$$= \frac{(-2 \times 2)}{(1 \times 1)}$$

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

$$= -4$$

(vii) 35 by $-\frac{7}{9}$

We know that

$$= 35 \div -\frac{7}{9}$$

It can be written as

$$= 35 \times \frac{9}{-7}$$

By further calculation

$$= 5 \times \frac{9}{-1}$$

So we get

$$= \frac{(5 \times 9)}{-1}$$

$$= \frac{45}{-1}$$

$$= -45$$

(viii) $\frac{21}{44}$ by $-\frac{11}{9}$

We know that

$$= \frac{21}{44} \div -\frac{11}{9}$$

It can be written as

$$= \frac{21}{44} \times \frac{-9}{11}$$



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

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

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

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

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

$$\text{Product of two numbers} = 14$$

$$\text{One of the number} = -8/7$$

$$\text{Other number} = 14 \div -8/7$$

We can write it as

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

$$= -98/8$$

$$= -49/4$$

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

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

$$= ₹ 40/17$$

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

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

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

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

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

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

It can be written as

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

$$= 152/7$$

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

We can write it as

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

So we get

$$= 152/49$$

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