

EXERCISE 14(B)**1. Reduce the given fractions to their lowest terms:**

(i) $8 / 10$

(ii) $50 / 75$

(iii) $18 / 81$

(iv) $40 / 120$

(v) $105 / 70$

Solution:

(i) $8 / 10$

The fraction $8 / 10$ can be simplified as below

$$8 / 10 = (8 \div 2) / (10 \div 2)$$

$$= 4 / 5$$

Hence $4 / 5$ is the simplified form of $8 / 10$

(ii) $50 / 75$

The fraction $50 / 75$ can be simplified as below

$$50 / 75 = (50 \div 25) / (75 \div 25)$$

$$= 2 / 3$$

Hence $2 / 3$ is the simplified form of $50 / 75$

(iii) $18 / 81$

The fraction $18 / 81$ can be simplified as below

$$18 / 81 = (18 \div 9) / (81 \div 9)$$

$$= 2 / 9$$

Hence $2 / 9$ is the simplified form of $18 / 81$

(iv) $40 / 120$

The fraction $40 / 120$ can be simplified as below

$$40 / 120 = (40 \div 40) / (120 \div 40)$$

$$= 1 / 3$$

Hence $1 / 3$ is the simplified form of $40 / 120$

(v) $105 / 70$

The fraction $105 / 70$ can be simplified as below

$$105 / 70 = (105 \div 35) / (70 \div 35)$$

$$= 3 / 2$$

Hence $3 / 2$ is the simplified form of $105 / 70$ **2. State, whether true or false?**

(i) $2 / 5 = 10 / 15$

(ii) $35 / 42 = 5 / 6$

(iii) $5 / 4 = 4 / 5$

$$(iv) 7/9 = 1\frac{1}{7}$$

$$(v) 9/7 = 1\frac{1}{7}$$

Solution:

$$(i) 2/5 = 10/15$$

The given expression can be solved as below

$$2/5 = (10 \div 5) / (15 \div 5)$$

$$2/5 \neq 2/3$$

Hence false

$$(ii) 35/42 = 5/6$$

The given expression can be solved as below

$$(35 \div 7) / (42 \div 7) = 5/6$$

$$5/6 = 5/6$$

Hence true

$$(iii) 5/4 = 4/5$$

The given expression can be solved as below

$$5/4 \neq 4/5$$

Hence false

$$(iv) 7/9 = 1\frac{1}{7}$$

The given expression can be solved as below

$$7/9 = (7 \times 1 + 1) / 7$$

$$7/9 \neq 8/7$$

Hence false

$$(v) 9/7 = 1\frac{1}{7}$$

The given expression can be solved as below

$$9/7 = (7 \times 1 + 1) / 7$$

$$9/7 \neq 8/7$$

Hence false

3. Which fraction is greater?

(i) $3/5$ or $2/3$

(ii) $5/9$ or $3/4$

(iii) $11/14$ or $26/35$

Solution:

(i) $3/5$ or $2/3$

The given fractions can be simplified as follows

LCM of 5, 3 is 15

$$\begin{aligned} \text{Hence } 3/5 &= (3 \times 3) / (5 \times 3) \\ &= 9/15 \text{ and} \end{aligned}$$

$$\begin{aligned} 2/3 &= (2 \times 5) / (3 \times 5) \\ &= 10/15 \end{aligned}$$

We know that

$$10/15 > 9/15 \quad [\text{Numerator is greater}]$$

Thus, $2/3 > 3/5$

Hence $2/3$ is greater fraction

(ii) $5/9$ or $3/4$

The given expression can be simplified as follows

First convert the given expression into like fractions

$$\begin{aligned} \text{So, } 5/9 &= (5 \times 4) / (9 \times 4) \\ &= 20/36 \text{ and} \end{aligned}$$

$$\begin{aligned} 3/4 &= (3 \times 9) / (4 \times 9) \\ &= 27/36 \end{aligned}$$

We know that

$$27/36 > 20/36 \quad [\text{Numerator is greater}]$$

Thus $3/4 > 5/9$

Hence $3/4$ is greater fraction

(iii) $11/14$ or $26/35$

The given expression can be simplified as follows

First convert the given expression into like fractions

$$\begin{aligned} \text{So, } 11/14 &= (11 \times 5) / (14 \times 5) \\ &= 55/70 \text{ and} \end{aligned}$$

$$\begin{aligned} 26/35 &= (26 \times 2) / (35 \times 2) \\ &= 52/70 \end{aligned}$$

We know that

$$55/70 > 52/70 \quad [\text{Numerator is greater}]$$

Thus, $11/14 > 26/35$

Hence $11/14$ is greater fraction

4. Which fraction is smaller?

(i) $3/8$ or $4/5$

(ii) $8/15$ or $4/7$

(iii) $7/26$ or $10/39$

Solution:

(i) $3/8$ or $4/5$

The given expression can be simplified as follows

First convert the given expression into like fractions

$$\text{So, } 3/8 = (3 \times 5) / (8 \times 5)$$

$$= 15/40 \text{ and}$$

$$4/5 = (4 \times 8) / (5 \times 8)$$

$$= 32/40$$

We know that

$$15/40 < 32/40 \quad [\text{Numerator is smaller}]$$

$$\text{Thus, } 3/8 < 4/5$$

Hence $3/8$ is the smaller fraction

(ii) $8/15$ or $4/7$

The given expression can be simplified as follows

First convert the given expression into like fractions

$$\text{So, } 8/15 = (8 \times 7) / (15 \times 7)$$

$$= 56/105 \text{ and}$$

$$4/7 = (4 \times 15) / (7 \times 15)$$

$$= 60/105$$

We know that

$$56/105 < 60/105 \quad [\text{Numerator is smaller}]$$

$$\text{Thus, } 8/15 < 4/7$$

Hence $8/15$ is the smaller fraction

(iii) $7/26$ or $10/39$

The given expression can be simplified as follows

First convert the given expression into like fractions

$$\text{So, } 7/26 = (7 \times 3) / (26 \times 3)$$

$$= 21/78 \text{ and}$$

$$10/39 = (10 \times 2) / (39 \times 2)$$

$$= 20/78$$

We know that

$$20/78 < 21/78 \quad [\text{Numerator is smaller}]$$

$$\text{Thus, } 10/39 < 7/26$$

Hence $10/39$ is the smaller fraction

5. Arrange the given fractions in descending order of magnitude:

(i) $5/16, 13/24, 7/8$

(ii) $4/5, 7/15, 11/20, 3/4$

(iii) $5/7, 3/8, 9/11$

Solution:

(i) $5/16, 13/24, 7/8$

The given expression can be simplified as follows

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

$$\text{LCM of } 16, 24, 8 = 2 \times 2 \times 2 \times 2 \times 3$$

$$= 48$$

Converting given expression into like fractions, we get

$$5/16 = (5 \times 3) / (16 \times 3)$$

$$= 15/48 \text{ and}$$

$$13/24 = (13 \times 2) / (24 \times 2)$$

$$= 26/48 \text{ and}$$

$$7/8 = (7 \times 6) / (8 \times 6)$$

$$= 42/48$$

Hence, fractions in descending order are $7/8, 13/24, 5/16$

(ii) $4/5, 7/15, 11/20, 3/4$

The given expression can be simplified as follows

4	5	15	20	4
5	5	15	5	1
3	1	3	1	1
	1	1	1	1

$$\text{LCM of } 5, 15, 20, 4 = 4 \times 5 \times 3$$

$$= 60$$

Converting the given expression into like fractions, we get

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

$$= 48/60 \text{ and}$$

$$7/15 = (7 \times 4) / (15 \times 4)$$

$$= 28/60 \text{ and}$$

$$11/20 = (11 \times 3) / (20 \times 3)$$

$$= 33/60 \text{ and}$$

$$3/4 = (3 \times 15) / (4 \times 15)$$

$$= 45/60$$

Hence, fractions in descending order are $4/5, 3/4, 11/20, 7/15$

(iii) $5/7, 3/8, 9/11$

The given expression can be simplified as follows

3	5	3	9
5	5	1	3
3	1	1	3
	1	1	1

$$\text{LCM of } 5, 3, 9 = 3 \times 3 \times 5$$

$$= 45$$

Converting the given expression into like fractions, we get

$$5/7 = (5 \times 9) / (7 \times 9)$$

$$= 45 / 63 \text{ and}$$

$$3/8 = (3 \times 15) / (8 \times 15)$$

$$= 45 / 120 \text{ and}$$

$$9/11 = (9 \times 5) / (11 \times 5)$$

$$= 45 / 55$$

The fraction with the smallest denominator is the biggest fraction if the numerator is same

Hence, fractions in descending order are

$$45 / 55, 45 / 63, 45 / 120 \text{ i.e.}$$

$$9 / 11, 5 / 7, 3 / 8$$

6. Arrange the given fractions in ascending order of magnitude:

(i) $9 / 16, 7 / 12, 1 / 4$

(ii) $5 / 6, 2 / 7, 8 / 9, 1 / 3$

(iii) $2 / 3, 5 / 9, 5 / 6, 3 / 8$

Solution:

(i) $9 / 16, 7 / 12, 1 / 4$

The given fractions can be simplified as follows

4	16	12	4
4	4	3	1
3	1	3	1
	1	1	1

$$\text{LCM of } 16, 12, 4 = 48$$

Converting the given expression into like fractions, we get

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

$$= 27 / 48 \text{ and}$$

$$7 / 12 = (7 \times 4) / (12 \times 4)$$

$$= 28 / 48 \text{ and}$$

$$1 / 4 = (1 \times 12) / (4 \times 12)$$

$$= 12 / 48$$

Hence, fractions in ascending order are

$12 / 48, 27 / 48, 28 / 48$ i.e

$1 / 4, 9 / 16, 7 / 12$

(ii) $5 / 6, 2 / 7, 8 / 9, 1 / 3$

The given fractions can be simplified as follows

3	6	7	9	3
3	2	7	3	1
2	2	7	1	1
7	1	7	1	1
	1	1	1	1

LCM of 6, 7, 9, 3 = $3 \times 3 \times 2 \times 7$
= 126

Converting the given expression into like fractions, we get

$$5 / 6 = (5 \times 21) / (6 \times 21)$$

$$= 105 / 126 \text{ and}$$

$$2 / 7 = (2 \times 18) / (7 \times 18)$$

$$= 36 / 126 \text{ and}$$

$$8 / 9 = (8 \times 14) / (9 \times 14)$$

$$= 112 / 126 \text{ and}$$

$$1 / 3 = (1 \times 42) / (3 \times 42)$$

$$= 42 / 126$$

Hence, fractions in ascending order are

$36 / 126, 42 / 126, 105 / 126, 112 / 126$ i.e

$2 / 7, 1 / 3, 5 / 6, 8 / 9$

(iii) $2 / 3, 5 / 9, 5 / 6, 3 / 8$

The given fractions can be simplified as follows

2	3	9	6	8
3	3	9	3	4
3	1	3	1	4
4	1	1	1	4
	1	1	1	1

LCM of 3, 9, 6, 8 = 72

Converting the given expressions into like fractions, we get

$$2 / 3 = (2 \times 24) / (3 \times 24)$$

$$= 48 / 72 \text{ and}$$

$$5 / 9 = (5 \times 8) / (9 \times 8)$$

$$= 40 / 72 \text{ and}$$

$$5 / 6 = (5 \times 12) / (6 \times 12)$$

$$= 60 / 72 \text{ and}$$

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

$$= 27 / 72$$

Hence, fractions in ascending order are

$$27 / 72, 40 / 72, 48 / 72, 60 / 72 \text{ i.e.}$$

$$3 / 8, 5 / 9, 2 / 3, 5 / 6$$

7. I bought one dozen bananas and ate five of them. What fraction of the total number of bananas was left?

Solution:

Given

Number of bananas bought = 1 dozen

We know there are 12 bananas in a dozen

Number of bananas eaten = 5

Number of bananas left = $12 - 5$

$$= 7$$

Therefore, the required fraction is $7 / 12$

8. Insert the symbol ‘=’ or ‘>’ or ‘<’ between each of the pairs of fractions, given below:

(i) $6 / 11$ $5 / 9$

(ii) $3 / 7$ $9 / 13$

(iii) $56 / 64$ $7 / 8$

(iv) $5 / 12$ $8 / 33$

Solution:

(i) $6 / 11$ $5 / 9$

LCM of 11, 9 = 99

Converting the given expression into like fraction

We get

$$6 / 11 = (6 \times 9) / (11 \times 9)$$

$$= 54 / 99 \text{ and}$$

$$5 / 9 = (5 \times 11) / (9 \times 11)$$

$$= 55 / 99$$

Therefore,

$$54 / 99 < 55 / 99 \text{ i.e.}$$

$$6 / 11 < 5 / 9$$

(ii) $3 / 7$ $9 / 13$

LCM of 7, 13 = 91

Converting the given expression into like fraction

We get

$$3 / 7 = (3 \times 13) / (7 \times 13)$$

$$= 39 / 91 \text{ and}$$

$$9 / 13 = (9 \times 7) / (13 \times 7)$$

$$= 63 / 91$$

Therefore,

$$39 / 91 < 63 / 91 \text{ i.e.}$$

$$3 / 7 < 9 / 13$$

(iii) $56 / 64 \dots 7 / 8$

$$\text{LCM of } 64, 8 = 64$$

Converting the given expression into like fraction

We get

$$56 / 64 = (56 \times 1) / (64 \times 1)$$

$$= 56 / 64 \text{ and}$$

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

$$= 56 / 64$$

Therefore,

$$56 / 64 = 56 / 64 \text{ i.e.}$$

$$56 / 64 = 7 / 8$$

(iv) $5 / 12 \dots 8 / 33$

$$\text{LCM of } 12, 33 = 132$$

Converting the given expression into like fractions

We get

$$5 / 12 = (5 \times 11) / (12 \times 11)$$

$$= 55 / 132 \text{ and}$$

$$8 / 33 = (8 \times 4) / (33 \times 4)$$

$$= 32 / 132$$

$$55 / 132 > 32 / 132 \text{ i.e.}$$

$$5 / 12 > 8 / 33$$

9. Out of 50 identical articles, 36 are broken. Find the fraction of:

(i) The total number of articles and the articles broken.

(ii) The remaining articles and total number of articles.

Solution:

(i) Given

$$\text{Total number of articles} = 50$$

$$\text{Number of articles broken} = 36$$

$$\text{Remaining articles} = 50 - 36$$

$$= 14$$

$$\text{The fraction of total number of articles and articles broken} = 50 / 36$$

$$= 25 / 18$$

(ii) Given

Total number of articles = 50

Number of articles broken = 36

Remaining articles = $50 - 36$

= 14

The fraction of remaining articles and total number of articles = $14 / 50$

= $7 / 25$

