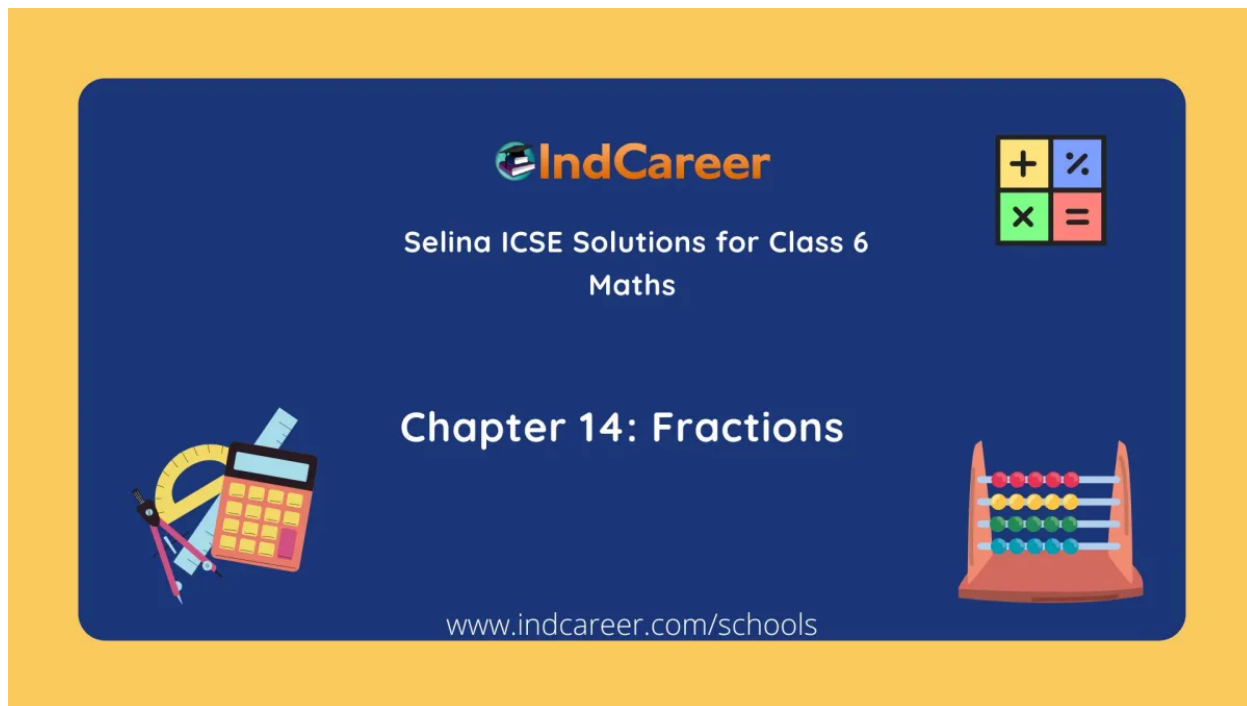


Selina Class 6 ICSE Solutions Mathematics : Chapter 14- Fractions



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Chapter 14- Fractions

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Exercise 14(A)

1. For each expression, given below, write a fraction:

(i) 2 out of 7 =

(ii) 5 out of 17 =

(iii) three-fifths =

Solution:

(i) The fraction for 2 out of 7 is written as $2 / 7$

(ii) The fraction for 5 out of 17 is written as $5 / 17$

(iii) The fraction for three-fifths is written as $3 / 5$

2. Fill in the blanks:

(i) $5 / 8$ is fraction

(ii) $8 / 5$ is fraction

(iii) $-15 / -15$ isfraction

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(iv) The value of $5 / 5 = \dots\dots\dots$

(v) The value of $5 / -5 = \dots\dots\dots$

Solution:

(i) $5 / 8$ is **proper** fraction

(ii) $8 / 5$ is **improper** fraction

(iii) $-15 / -15$ is **improper** fraction

(iv) The value of $5 / 5 = 1$

(v) The value of $5 / -5 = -1$

3. From the following fractions, separate:

(i) Proper fractions

(ii) Improper fractions:

$2 / 9$, $4 / 3$, $7 / 15$, $11 / 20$, $20 / 11$, $18 / 23$ and $27 / 35$

Solution:

(i) A fraction whose numerator is less than denominator is known as proper fractions

The proper fractions are $2 / 9$, $7 / 15$, $11 / 20$, $18 / 23$ and $27 / 35$

(ii) A fraction whose numerator is greater than denominator is known as improper fractions

The improper fractions are $4 / 3$ and $20 / 11$

4. Change the following mixed fractions to improper fractions:

(i)

(ii)

$$3\frac{1}{4}$$

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(iii)

$$7\frac{1}{8}$$

(iv)

Solution:

(i)

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

The conversion of mixed fraction to an improper fraction is shown below

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

$$= (10 + 1) / 5$$

$$= 11 / 5$$

(ii)

$$3\frac{1}{4}$$

The conversion of mixed fraction to an improper fraction is shown below

$$3\frac{1}{4} = (3 \times 4 + 1) / 4$$

$$= (12 + 1) / 4$$

$$= 13 / 4$$

(iii)

$$7\frac{1}{8}$$

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The conversion of mixed fraction to an improper fraction is shown below

$$7\frac{1}{8} = (7 \times 8 + 1) / 8$$

$$= (56 + 1) / 8$$

$$= 57 / 8$$

(iv)

$$2\frac{1}{11}$$

The conversion of mixed fraction to an improper fraction is shown below

$$2\frac{1}{11} = (2 \times 11 + 1) / 11$$

$$= (22 + 1) / 11$$

$$= 23 / 11$$

5. Change the following improper fractions to mixed fractions:

(i) $100 / 17$

(ii) $81 / 11$

(iii) $-209 / 7$

(iv) $-113 / 15$

Solution:

(i) $100 / 17$

The conversion of an improper fraction into mixed fractions is shown below

$$100 / 17 =$$

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$$5\frac{15}{17}$$

(ii) $81 / 11$

The conversion of an improper fraction into mixed fraction is shown below

$$81 / 11 =$$

$$7\frac{4}{11}$$

(iii) $-209 / 7$

The conversion of an improper fraction into mixed fraction is shown below

$$-209 / 7 =$$

$$-29\frac{6}{7}$$

(iv) $-113 / 15$

The conversion of an improper fraction into mixed fraction is shown below

$$-113 / 15 =$$

$$-7\frac{8}{15}$$

6. Change the following groups of fractions to like fractions:

(i) $1 / 3, 2 / 5, 3 / 4, 1 / 6$

(ii) $5 / 6, 7 / 8, 11 / 12, 3 / 10$

(iii) $2 / 7, 7 / 8, 5 / 14, 9 / 16$

Solution:

(i) $1 / 3, 2 / 5, 3 / 4, 1 / 6$

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The conversion of fractions to like fractions is shown below

LCM of the denominator 3, 5, 4, 6 = 60

2	3	5	4	6
3	3	5	2	3
	1	5	2	1

$$= 2 \times 3 \times 1 \times 5 \times 2 \times 1$$

$$= 60$$

$$1 / 3 = (1 \times 20) / (3 \times 20)$$

$$= 20 / 60$$

$$2 / 5 = (2 \times 12) / (5 \times 12)$$

$$= 24 / 60$$

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

$$= 45 / 60$$

$$1 / 6 = (1 \times 10) / (6 \times 10)$$

$$= 10 / 60$$

Hence $1 / 3, 2 / 5, 3 / 4, 1 / 6 = 20 / 60, 24 / 60, 45 / 60, 10 / 60$

(ii) $5 / 6, 7 / 8, 11 / 12, 3 / 10$

The conversion of fractions to like fractions is shown below

LCM of the denominators 6, 8, 12, 10 = 120

2	6	8	12	10
2	3	4	6	5
3	3	2	3	5
	1	2	1	5

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$$= 2 \times 2 \times 3 \times 1 \times 2 \times 1 \times 5$$

$$= 120$$

$$5 / 6 = (5 \times 20) / (6 \times 20)$$

$$= 100 / 120$$

$$7 / 8 = (7 \times 15) / (8 \times 15)$$

$$= 105 / 120$$

$$11 / 12 = (11 \times 10) / (12 \times 10)$$

$$= 110 / 120$$

$$3 / 10 = (3 \times 12) / (10 \times 12)$$

$$= 36 / 120$$

Hence $5 / 6, 7 / 8, 11 / 12, 3 / 10 = 100 / 120, 105 / 120, 110 / 120, 36 / 120$

(iii) $2 / 7, 7 / 8, 5 / 14, 9 / 16$

LCM of the denominators 7, 8, 14, 16 = 112

2	7	8	14	16
7	7	4	7	8
4	1	4	1	8
	1	1	1	2

$$= 2 \times 7 \times 4 \times 1 \times 1 \times 1 \times 2$$

$$= 112$$

$$2 / 7 = (2 \times 16) / (7 \times 16)$$

$$= 32 / 112$$

$$7 / 8 = (7 \times 14) / (8 \times 14)$$

$$= 98 / 112$$

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$$5 / 14 = (5 \times 8) / (14 \times 8)$$

$$= 40 / 112$$

$$9 / 16 = (9 \times 7) / (16 \times 7)$$

$$= 63 / 112$$

Hence $2 / 7, 7 / 8, 5 / 14, 9 / 16 = 32 / 112, 98 / 112, 40 / 112, 63 / 112$

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

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

$$= 2 / 3$$

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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) $7/9 =$

(v) $9/7 =$

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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) $7 / 9 =$

The given expression can be solved as below

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

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

Hence false

(v) $9 / 7 =$

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$$1\frac{1}{7}$$

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

$$\text{Hence } 3 / 5 = (3 \times 3) / (5 \times 3)$$

$$= 9 / 15 \text{ and}$$

$$2 / 3 = (2 \times 5) / (3 \times 5)$$

$$= 10 / 15$$

We know that

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

$$\text{Thus, } 2 / 3 > 3 / 5$$

Hence $2 / 3$ is greater fraction

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

The given expression can be simplified as follows

First convert the given expression into like fractions

$$\text{So, } 5/9 = (5 \times 4) / (9 \times 4)$$

$$= 20/36 \text{ and}$$

$$3/4 = (3 \times 9) / (4 \times 9)$$

$$= 27/36$$

We know that

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

$$\text{Thus } 3/4 > 5/9$$

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

$$\text{So, } 11/14 = (11 \times 5) / (14 \times 5)$$

$$= 55/70 \text{ and}$$

$$26/35 = (26 \times 2) / (35 \times 2)$$

$$= 52/70$$

We know that

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

$$\text{Thus, } 11/14 > 26/35$$

Hence $11/14$ is greater fraction

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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

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

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

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

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

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

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

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$$= 60 / 105$$

We know that

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

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

Hence $8 / 15$ is the smaller fraction

$$\text{(iii) } 7 / 26 \text{ or } 10 / 39$$

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

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

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

Hence $10 / 39$ is the smaller fraction

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

$$\text{(i) } 5 / 16, 13 / 24, 7 / 8$$

$$\text{(ii) } 4 / 5, 7 / 15, 11 / 20, 3 / 4$$

$$\text{(iii) } 5 / 7, 3 / 8, 9 / 11$$

Solution:

$$\text{(i) } 5 / 16, 13 / 24, 7 / 8$$

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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

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 and

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

= 26 / 48 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

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

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$$= 60$$

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

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

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

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

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

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

$$= 45 / 55$$

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

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

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

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

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

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

$$= 12 / 48$$

Hence, fractions in ascending order are

$$12 / 48, 27 / 48, 28 / 48 \text{ i.e}$$

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

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

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

$$\text{LCM of } 6, 7, 9, 3 = 3 \times 3 \times 2 \times 7$$

$$= 126$$

Converting the given expression into like fractions, we get

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

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

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

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

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

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

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

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$$= 42 / 126$$

Hence, fractions in ascending order are

$$36 / 126, 42 / 126, 105 / 126, 112 / 126 \text{ i.e}$$

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

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

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

$$\text{LCM of } 3, 9, 6, 8 = 72$$

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

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

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

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

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

= $54/99$ and

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

$$= 55 / 99$$

Therefore,

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

$$6 / 11 < 5 / 9$$

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

$$\text{LCM of } 7, 13 = 91$$

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,

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

$$3 / 7 < 9 / 13$$

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

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

Converting the given expression into like fraction

We get

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

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

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

$$= 56 / 64$$

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

Total number of articles = 50

Number of articles broken = 36

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Remaining articles = $50 - 36$

= 14

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 = $14 / 50$

= $7 / 25$

Exercise 14(C)

1. Add the following fractions:

(i) and $3 / 8$

(ii) $2 / 5$, and $7 / 10$

(iii) , and

(iv) , , and

(v) , $11 / 18$ and

Solution:

(i)

$1\frac{3}{4}$ and $3 / 8$

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The given fractions can be added as follows

$$7/4 + 3/8 = (7 \times 2) / (4 \times 2) + 3/8$$

$$= 14/8 + 3/8$$

$$= 17/8$$

$$=$$

$$2\frac{1}{8}$$

Hence,

$$2\frac{1}{8}$$

is the addition of given fractions

(ii) $2/5$,

$$2\frac{3}{15}$$

and $7/10$

The given fractions can be added as follows

$$2/5 + 33/15 + 7/10 = (2 \times 6) / (5 \times 6) + (33 \times 2) / (15 \times 2) + (7 \times 3) / (10 \times 3)$$

$$= 12/30 + 66/30 + 21/30$$

$$= 99/30$$

$$= 33/10$$

$$=$$

$$3\frac{3}{10}$$

Hence,

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$3\frac{3}{10}$ is the addition of given fractions

(iii)

$$1\frac{7}{8},$$

$$1\frac{1}{2} \text{ and}$$

$$1\frac{3}{4}$$

The given fractions can be added as follows

$$15/8 + 3/2 + 7/4 = (15 \times 1) / (8 \times 1) + (3 \times 4) / (2 \times 4) + (7 \times 2) / (4 \times 2)$$

$$= 15/8 + 12/8 + 14/8$$

$$= 41/8$$

$$=$$

$$5\frac{1}{8}$$

Hence,

$5\frac{1}{8}$ is the addition of the given fractions

(iv)

$$3\frac{3}{4},$$

$$2\frac{1}{6} \text{ and}$$

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$$1\frac{5}{8}$$

The given fractions can be added as follows

$$15 / 4 + 13 / 6 + 13 / 8 = (15 \times 6) / (4 \times 6) + (13 \times 4) / (6 \times 4) + (13 \times 3) / (8 \times 3)$$

$$= 90 / 24 + 52 / 24 + 39 / 24$$

$$= 181 / 24$$

=

$$7\frac{13}{24}$$

Hence,

$$7\frac{13}{24}$$

is the addition of given fractions

(v)

$$2\frac{8}{9}$$

, $11 / 18$ and

$$3\frac{5}{6}$$

The given fractions can be added as follows

$$26 / 9 + 11 / 18 + 23 / 6 = (26 \times 2) / (9 \times 2) + 11 / 18 + (23 \times 3) / (6 \times 3)$$

$$= 52 / 18 + 11 / 18 + 69 / 18$$

$$= 132 / 18$$

$$= 22 / 3$$

=

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$$7\frac{1}{3}$$

Hence,

$$7\frac{1}{3}$$
 is the addition of given fractions

2. Simplify:

(i) $- 13 / 16$

(ii) $-$

(iii) $+ 3 / 14 - 13 / 21$

(iv) $- 1 / 6 -$

(v) $6 + 3 / 10 -$

Solution:

(i)

$$1\frac{11}{12} - 13 / 16$$

The given expression can be simplified as below

$$23 / 12 - 13 / 16 = (23 \times 4) / (12 \times 4) - (13 \times 3) / (16 \times 3)$$

$$= (92 - 39) / 48$$

$$= 53 / 48$$

$$=$$

$$1\frac{5}{48}$$

Hence, simplified form of the given expression is

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$$1\frac{5}{48}$$

(ii)

$$2\frac{3}{4}$$

$$1\frac{5}{6}$$

The given expression can be simplified as below

$$11 / 4 - 11 / 6 = (11 \times 6) / (4 \times 6) - (11 \times 4) / (6 \times 4)$$

$$= (66 - 44) / 24$$

$$= 22 / 24$$

$$= 11 / 12$$

Hence, simplified form of the given expression is 11 / 12

(iii)

$$2\frac{5}{7} + 3 / 14 - 13 / 21$$

The given expression can be simplified as below

$$19 / 7 + 3 / 14 - 13 / 21 = (19 \times 6) / (7 \times 6) + (3 \times 3) / (14 \times 3) - (13 \times 2) / (21 \times 2)$$

$$= 114 / 42 + 9 / 42 - 26 / 42$$

$$= (114 + 9 - 26) / 42$$

$$= 97 / 42$$

$$=$$

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$$2\frac{13}{42}$$

Hence, simplified form of the given expression is

$$2\frac{13}{42}$$

(iv)

$$3\frac{5}{6} - 1\frac{1}{6} -$$

$$1\frac{1}{12}$$

The given expression can be simplified as below

$$23/6 - 1/6 - 13/12 = (23 \times 2) / (6 \times 2) - (1 \times 2) / (6 \times 2) - 13/12$$

$$= 46/12 - 2/12 - 13/12$$

$$= (46 - 2 - 13) / 12$$

$$= 31/12$$

=

$$2\frac{7}{12}$$

Hence, simplified form of the given expression is

$$2\frac{7}{12}$$

(v) $6 + 3/10 -$

$$1\frac{8}{15}$$

<https://www.indcareer.com/schools/selina-class-6-icse-solutions-mathematics-chapter-14-fractional/>

The given expression can be simplified as below

$$6 / 1 + 3 / 10 - 23 / 15 = (6 \times 30) / (1 \times 30) + (3 \times 3) / (10 \times 3) - (23 \times 2) / (15 \times 2)$$

$$= 180 / 30 + 9 / 30 - 46 / 30$$

$$= (180 + 9 - 46) / 30$$

$$= 143 / 30$$

$$=$$

$$4\frac{23}{30}$$

Hence, simplified form of the given expression is

$$4\frac{23}{30}$$

Exercise 14(D)

1. Simplify:

(i) $3 / 7 \times 2 / 5$

(ii) $4 / 9 \times 3 / 5$

(iii) $5 / 12 \times 8$

(iv) $7 / 6$ of $3 / 14$

(v) $\times$

Solution:

(i) $3 / 7 \times 2 / 5$

The given expression can be simplified as below

$$3 / 7 \times 2 / 5 = (3 \times 2) / (7 \times 5)$$

$$= 6 / 35$$

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Hence, the simplified form of the given expression is $6 / 35$

(ii) $4 / 9 \times 3 / 5$

The given expression can be simplified as below

$$4 / 9 \times 3 / 5 = (4 \times 3) / (9 \times 5)$$

$$= (4 \times 1) / (3 \times 5)$$

$$= 4 / 15$$

Hence, the simplified form of the given expression is $4 / 15$

(iii) $5 / 12 \times 8$

The given expression can be simplified as below

$$5 / 12 \times 8 / 1 = (5 \times 8) / (12 \times 1)$$

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

$$= 10 / 3$$

$$=$$

$$3\frac{1}{3}$$

Hence, the simplified form of the given expression is

$$3\frac{1}{3}$$

(iv) $7 / 6$ of $3 / 14$

The given expression can be simplified as below

$$7 / 6 \times 3 / 14 = (1 \times 1) / (2 \times 2)$$

$$= 1 / 4$$

Hence, the simplified form of the given expression is $1 / 4$

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(v)

$$3\frac{3}{8 \times}$$

$$3\frac{6}{7}$$

The given expression can be simplified as below

$$3\frac{3}{8 \times}$$

$$3\frac{6}{7} = (27 \times 27) / (8 \times 7)$$

$$= 729 / 56$$

=

$$13\frac{1}{56}$$

Hence, the simplified form of the given expression is

$$13\frac{1}{56}$$

2. Simplify:

(i) $2 / 3 \div$

(ii) $\div 4 / 9$

(iii) $1 \div 2 / 5$

(iv) $4 / 9 \div 4 / 9$

(v) $\div$

Solution:

<https://www.indcareer.com/schools/selina-class-6-icse-solutions-mathematics-chapter-14-fraction/>

(i) $2 / 3 \div$

$$1\frac{1}{5}$$

The given expression can be simplified as below

$$2 / 3 \div 6 / 5 = (2 \times 5) / (3 \times 6)$$

$$= 5 / 9$$

Hence, the simplified form of the given expression is $5 / 9$

(ii)

$$4\frac{1}{2} \div 4 / 9$$

The given expression can be simplified as below

$$9 / 2 \div 4 / 9 = (9 \times 9) / (2 \times 4)$$

$$= 81 / 8$$

=

$$10\frac{1}{8}$$

Hence, the simplified form of the given expression is

$$10\frac{1}{8}$$

(iii) $1 \div 2 / 5$

The given expression can be simplified as below

$$1 / 1 \div 2 / 5 = (1 \times 5) / (1 \times 2)$$

$$= 5 / 2$$

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=

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

Hence, the simplified form of the given expression is

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

(iv) $4 / 9 \div 4 / 9$

The given expression can be simplified as below

$$4 / 9 \div 4 / 9 = (4 \times 9) / (9 \times 4)$$

$$= 1$$

Hence, the simplified form of the given expression is 1

(v)

$$2\frac{1}{3} \div$$

$$1\frac{3}{4}$$

The given expression can be simplified as below

$$2\frac{1}{3} \div$$

$$1\frac{3}{4} = (7 \times 4) / (3 \times 7)$$

$$= 4 / 3$$

=

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$$1\frac{1}{3}$$

Hence, the simplified form of the given expression is

$$1\frac{1}{3}$$

3. Simplify:

(i) $1/4$ of $\div 3/5$

(ii) $\times 1/2 \div$

(iii) $\times 0 \times$

(iv) $3/4 \times \div 3/7$ of

(v) $\div 2/7$ of $\times 2/3$

Solution:

(i) $1/4$ of

$$2\frac{2}{7 \div 3/5}$$

The given expression can be simplified as follows:

$$1/4 \times 16/7 \div 3/5 = 4/7 \div 3/5$$

$$= (4 \times 5) / (7 \times 3)$$

$$= 20/21$$

Hence, $20/21$ is the simplified form of the given expression

(ii) $\times 1/2 \div$

$$1\frac{1}{3}$$

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The given expression can be simplified as follows

$$1\frac{1}{4} \times 1/2 \div$$

$$1\frac{1}{3} = 5/4 \times 1/2 \times 3/4$$

$$= 5/8 \times 3/4$$

$$= 15/32$$

Hence, 15 / 32 is the simplified form of the given expression

(iii)

$$6\frac{1}{7} \times 0 \times$$

The given expression can be simplified as follows

$$6\frac{1}{7} \times 0 \times = (43 \times 0 \times 43) / (7 \times 0 \times 8)$$

$$= 0$$

Hence, 0 is the simplified form of the given expression

(iv) $3/4 \times$

$$1\frac{1}{3} \div 3/7 \text{ of}$$

$$2\frac{5}{8}$$

The given expression can be simplified as follows

$$3/4 \times$$

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$$1\frac{1}{3} \div 3/7 \text{ of}$$

$$2\frac{5}{8} = 3/4 \times 4/3 \div 9/8$$

$$\therefore 3/7 \text{ of}$$

$$2\frac{5}{8} = 3/7 \times 21/8 = 9/8$$

$$= 3/4 \times 4/3 \times 8/9$$

$$= 8/9$$

Hence, 8 / 9 is the simplified form of the given expression

(v)

$$2\frac{1}{4} \div 2/7 \text{ of}$$

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

The given expression can be simplified as follows[2 / 7 of

$$1\frac{1}{3}$$

$$= 2/7 \times 4/3 = 8/21]$$

We get

$$= 9/4 \div 8/21 \times 2/3$$

$$= 9/4 \times 21/8 \times 2/3$$

$$= 63/16$$

=

<https://www.indcareer.com/schools/selina-class-6-icse-solutions-mathematics-chapter-14-fractions/>

$$3\frac{15}{16}$$

Hence,

$$3\frac{15}{16}$$
 is the simplified form of the given expression

4. Simplify:

(i) $5 - (8 / 11 -)$

(ii) $1 / 2 \div (7 / 8 - 3 / 5)$

(iii) $\div (+)$

(iv) $(-$

$$3\frac{3}{5}) \div 1 / 2$$

(v) $4 / 7 \div (1 / 3 \times$

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

Solution:

(i) $5 - (8 / 11 -)$

The given expression can be simplified as below

$$5 - (8 / 11 -$$

$$3\frac{3}{11}) = 5 - (8 / 11 - 36 / 11)$$

$$= 5 - (8 - 36) / 11$$

$$= 5 - (-28 / 11)$$

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On further calculation, we get

$$= 5 / 1 + 28 / 11$$

$$= 83 / 11$$

=

$$7\frac{6}{11}$$

Hence,

$7\frac{6}{11}$ is the simplified form of the given expression

(ii) $1 / 2 \div (7 / 8 - 3 / 5)$

The given expression can be simplified as below

$$1 / 2 \div (7 / 8 - 3 / 5) = 1 / 2 \div (5 \times 7 - 8 \times 3) / 40$$

$$= 1 / 2 \div (35 - 24) / 40$$

$$= 1 / 2 \div (11 / 40)$$

$$= 1 / 2 \times 40 / 11$$

We get

$$= 20 / 11$$

=

$$1\frac{9}{11}$$

Hence,

$1\frac{9}{11}$ is the simplified form of the given expression

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(iii)

 $\div (+)$

The given expression can be simplified as below

$$2\frac{1}{3} \div (+) = 7/3 \div (11/2 + 15/4)$$

$$= 7/3 \div (2 \times 11 + 1 \times 15) / 4$$

On further calculation, we get

$$= 7/3 \div (22 + 15) / 4$$

$$= 7/3 \div (37/4)$$

$$= 7/3 \times 4/37$$

$$= 28/111$$

Hence, 28 / 111 is the simplified form of the given expression

(iv) (–

 $) \div 1/2$

The given expression can be simplified as below

(–

$$3\frac{3}{5} \div 1/2 = (31/8 - 18/5) \div 1/2$$

By taking LCM, we get

$$= [(31 \times 5 - 18 \times 8) / (8 \times 5)] \div 1/2$$

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$$= (155 - 144) / 40 \div 1 / 2$$

$$= (11 / 40) \div 1 / 2$$

By calculating further, we get

$$= 11 / 40 \times 2 / 1$$

$$= 11 / 20$$

Hence, $11 / 20$ is the simplified form of the given expression

(v) $4 / 7 \div (1 / 3 \times$

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

The given expression can be simplified as below

$$4 / 7 \div (1 / 3 \times$$

$$2\frac{4}{5}) = 4 / 7 \div (1 / 3 \times 14 / 5)$$

$$= 4 / 7 \div (14 / 15)$$

On further calculation, we get

$$= 4 / 7 \times 15 / 14$$

$$= 2 / 7 \times 15 / 7$$

$$= 30 / 49$$

Hence, $30 / 49$ is the simplified form of the given expression

5. Simplify

(i) $(1 / 2 + 1 / 3) \div (1 / 4 - 1 / 6)$

(ii) $(24 / 35 \div 6 / 7 + 5 / 9) \times 3 / 4$

(iii) $3 / 4$ of $-2 / 3$ of

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(iv) $7 / 30$ of $(1 / 3 + 7 / 15) \div (5 / 6 - 3 / 5)$

(v) $- \times +$

Solution:

(i) $(1 / 2 + 1 / 3) \div (1 / 4 - 1 / 6)$

The given expression can be simplified as follows

$$(1 / 2 + 1 / 3) \div (1 / 4 - 1 / 6) = [(3 + 2) / 6] \div [(3 - 2) / 12]$$

On further calculation, we get

$$= (5 / 6) \div (1 / 12)$$

$$= 5 / 6 \times 12 / 1$$

$$= 5 \times 2$$

$$= 10$$

Hence, the simplified form of the given expression is 10

(ii) $(24 / 35 \div 6 / 7 + 5 / 9) \times 3 / 4$

The given expression can be simplified as follows

$$(24 / 35 \div 6 / 7 + 5 / 9) \times 3 / 4 = (24 / 35 \times 7 / 6 + 5 / 9) \times 3 / 4$$

$$= (4 / 5 + 5 / 9) \times 3 / 4$$

By taking LCM, we get

$$= [(36 + 25) / 45] \times 3 / 4$$

$$= (61 / 45) \times 3 / 4$$

We get

$$= 61 / 60$$

=

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$$1\frac{1}{60}$$

Hence, the simplified form of the given expression is

$$1\frac{1}{60}$$

(iii) $3/4$ of

$$6\frac{1}{8} - 2/3 \text{ of}$$

$$2\frac{1}{4}$$

The given expression can be simplified as below

$3/4$ of

$$6\frac{1}{8} - 2/3 \text{ of}$$

$$2\frac{1}{4} = 3/4 \text{ of } 49/8 - 2/3 \text{ of } 9/4$$

$$= 3/4 \times 49/8 - 2/3 \text{ of } 9/4$$

$$= 147/32 - 2/3 \times 9/4$$

We get

$$= 147/32 - 3/2$$

On taking LCM, we get

$$= [(147 - 48)]/32$$

$$= 99/32$$

=

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$$3\frac{3}{32}$$

Hence, the simplified form of the given expression is

$$3\frac{3}{32}$$

(iv) $7 / 30$ of $(1 / 3 + 7 / 15) \div (5 / 6 - 3 / 5)$

The given expression can be simplified as below

$$7 / 30 \text{ of } (1 / 3 + 7 / 15) \div (5 / 6 - 3 / 5) = 7 / 30 \text{ of } [(5 + 7) / 15] \div [(25 - 18) / 30]$$

We get

$$= 7 / 30 \text{ of } (4 / 5) \div (7 / 30)$$

$$= 7 / 30 \times 4 / 5 \times 30 / 7$$

$$= 4 / 5$$

Hence, the simplified form of the given expression is $4 / 5$

(v)



- x +

The given expression can be simplified as below

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

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

$$1\frac{3}{4}+$$

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$$= 5/2 - 7/2 \times 7/4 + 5/2$$

$$= 5/2 - 49/8 + 5/2$$

$$= 5/2 + 5/2 - 49/8$$

By taking LCM, we get

$$= (20 + 20 - 49) / 8$$

$$= (40 - 49) / 8$$

$$= -9/8$$

$$= -$$



Hence, –

$$1\frac{1}{8}$$

is the simplified form of the given expression

Exercise 14(e)

1. From a rope of m long, m is cut off. Find the length of the remaining rope

Solution:

Given

Length of the rope =

$$10\frac{1}{2}m$$

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Length of cut off rope =

$$4\frac{5}{8}\text{m}$$

Remaining rope =



We get

$$= 21 / 2 - 37 / 8$$

By taking LCM, we get

$$= (84 - 37) / 8$$

$$= 47 / 8 \text{ m}$$

=

$$5\frac{7}{8}$$

Hence, the length of the remaining rope is



2. A piece of cloth is 5 metre long. After washing, it shrinks by $1 / 25$ of its length. What is the length of the cloth after washing?

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Solution:

Given

Length of piece of cloth = 5 metre

After washing, it shrinks by = $1 / 25$ of its length

Hence, the shrunk cloth can be calculated as below

Shrunk cloth = $1 / 25$ of 5 m

= $1 / 5$ m

Hence, length of cloth after washing can be calculated as below

Length of cloth after washing = $5 - 1 / 5$

By taking LCM, we get

= $(25 - 1) / 5$

= $24 / 5$

=

$4\frac{4}{5}$ m

Hence the length of cloth after washing is



3. I bought wheat worth Rs , rice worth Rs and vegetables worth Rs . If I gave a hundred-rupee note to the shopkeeper; how much did he return to me

Solution:

Given

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Wheat = Rs



Rice = Rs

$$25\frac{3}{4}$$

Vegetables = Rs

$$10\frac{1}{4}$$

Hence, total amount used to purchase the goods can be calculated as below

Total amount of goods = Rs (

$$12\frac{1}{2} +$$

$$25\frac{3}{4} +$$



We get

$$= 25 / 2 + 103 / 4 + 41 / 4$$

$$= \text{Rs } 194 / 4$$

Hence, money returned by shopkeeper can be calculated as below

$$\text{Money returned} = \text{Rs } (100 - 194 / 4)$$

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By taking LCM, we get

$$= \text{Rs } (400 - 194) / 4$$

$$= \text{Rs } 103 / 2$$

$$= \text{Rs}$$

$$51\frac{1}{2}$$

Hence, money returned by the shopkeeper is Rs

$$51\frac{1}{2}$$

4. Out of 500 oranges in a box, $3 / 25$ are rotten and $1 / 5$ are kept for some guests. How many oranges are left in the box?

Solution:

Given

Number of oranges in a box = 500

Rotten oranges out of 500 = $3 / 25$

Oranges for guests out of 500 = $1 / 5$

Rotten oranges = $3 / 25$ of 500

We get,

$$= 3 / 25 \times 500$$

$$= 60$$

Oranges for guests = $1 / 5$ of 500

We get,

$$= 1 / 5 \times 500$$

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$$= 100$$

$$\text{Oranges left in box} = 500 - 60 - 100$$

$$= 340$$

Hence, 340 oranges are left in the box

5. An ornament piece is made of gold and copper. Its total weight is 96 g. If $1/12$ of the ornament is copper, find the weight of gold in it.

Solution:

Given

$$\text{Weight of an ornament} = 96 \text{ g}$$

$$\text{Weight of copper} = 1/12 \text{ of } 96 \text{ g}$$

$$\text{Weight of copper} = 1/12 \times 96$$

We get,

$$= 8 \text{ g}$$

$$\text{Weight of gold} = 96 - 8$$

$$= 88 \text{ g}$$

Hence, the weight of gold in ornament is 88 g

6. A girl did half of some work on Monday and one-third of it on Tuesday. How much will she have to do on Wednesday in order to complete the work?

Solution:

Given

Half of work is done on Monday and one-third on Tuesday by a girl

Let total work done by a girl is 1

$$\text{Work done on Monday} = 1/2$$

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Work done on Tuesday = $1 / 3$

Hence, remaining work done on Wednesday to complete the work is calculated as below

Remaining work done = $1 - [(1 / 2 + 1 / 3)]$

Taking LCM, we get

$$= 1 - [(3 + 2) / 6]$$

$$= 1 - 5 / 6$$

$$= (6 - 5) / 6$$

$$= 1 / 6$$

Hence, work done by a girl on Wednesday to complete is $1 / 6$

7. A man spends $3 / 8$ of his money and still has Rs 720 left with him. How much money did he have at first?

Solution:

Given

Man spends $3 / 8$ of his money

Let us assume a man has Rs 1

Amount spent = $3 / 8$ of 1

We get,

$$= \text{Rs } 3 / 8$$

Amount left = $1 - 3 / 8$

We get,

$$= (8 - 3) / 8$$

$$= \text{Rs } 5 / 8$$

Since $5 / 8$ of his total money = Rs 720

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$$\therefore \text{Total money} = \text{Rs } (720 \times 8) / 5$$

$$= \text{Rs } 5760 / 5$$

$$= \text{Rs } 1152$$

Hence, total money a man has is Rs 1152

8. In a school, $4/5$ of the students are boys, and the number of girls is 100. Find the number of boys

Solution:

Given

Total number of girls = 100

Number of boys = $4/5$

Let us assume the total number of boys and girls be x

Total number of boys = $4/5$ of x

We get,

$$= 4x / 5$$

According to question, total strength of school can be calculated as below

$$x - (4x/5) = 100$$

$$(5x - 4x)/5 = 100$$

$$x = 500$$

Number of boys = Total strength – Girls

$$= 500 - 100$$

$$= 400$$

Hence number of boys are 400

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9. After finishing $3/4$ of my journey, I find that 12 km of my journey is covered. How much distance is still left to be covered?

Solution:

Let x km be the total journey

Given that total distance covered = $3/4$ of the journey is 12 km

According to the question, the distance covered can be calculated as below

$$3/4 \text{ of } x = 12 \text{ km}$$

$$x = 4/3 \times 12$$

$$x = 4 \times 4$$

$$x = 16 \text{ km}$$

$$\text{Remaining distance} = 16 - 12$$

$$= 4 \text{ km}$$

Hence, 4 km of distance is left to be covered

10. When Ajit travelled 15 km, he found that one-fourth of his journey was still left. What was the full length of the journey?

Solution:

Let the total journey = x km

Given total distance covered = 15 km

Journey left = $1/4$ of x

Hence, according to the question, the total distance of journey can be calculated as below

$$1/4 \text{ of } x = x - 15$$

$$x - x/4 = 15$$

By calculating further, we get

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$$(4x - x) / 4 = 15$$

$$3x / 4 = 15$$

$$3x = 60$$

$$x = 60 / 3$$

$$x = 20$$

Hence, the full length of the journey is 20 km

11. In a particular month, a man earns Rs 7, 200. Out of this income, he spends $3 / 10$ on food, $1 / 4$ on house rent, $1 / 10$ on insurance and $2 / 25$ on holidays. How much did he save in that month?

Solution:

Given

Money earned by a man in a particular month = Rs 7200

Amount spend on food, house rent, insurance and holidays by him are $3 / 10$, $1 / 4$, $1 / 10$ and $2 / 25$ respectively

Amount spend on food = $3 / 10$ of 7200

$$= 3 / 10 \times 7200$$

$$= 3 \times 720$$

$$= \text{Rs } 2160$$

Amount spend on house rent = $1 / 4$ of 7200

$$= 1 / 4 \times 7200$$

$$= \text{Rs } 1800$$

Amount spend on insurance = $1 / 10$ of 7200

$$= 1 / 10 \times 7200$$

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$$= \text{Rs } 720$$

Amount spend on holidays = $2 / 25$ of 7200

$$= 2 / 25 \times 7200$$

$$= \text{Rs } 576$$

Total amount spend = Rs (2160 + 1800 + 720 + 576)

$$= \text{Rs } 5256$$

Amount saved by man = $7200 - 5256$

$$= \text{Rs } 1944$$

Hence, amount saved by a man in a month is Rs 1944



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