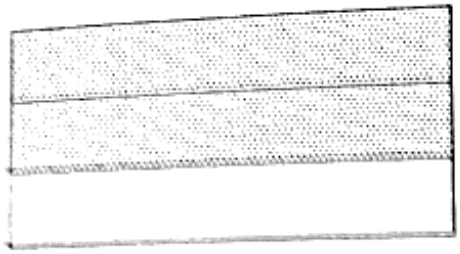
Fractions

Exercise 6.1

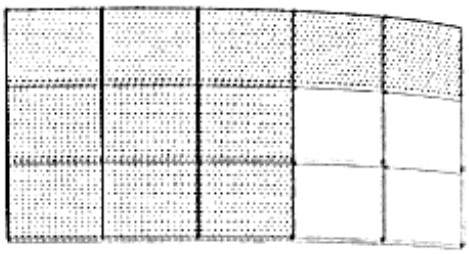
Question: 1

Write the fraction representing the shaded portion:

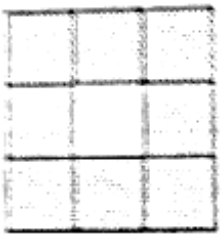
(i)



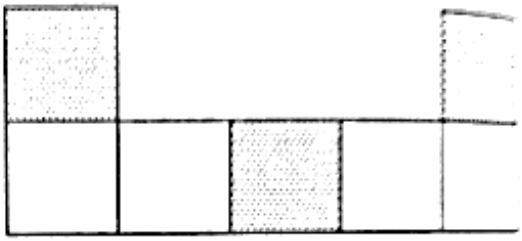
(ii)



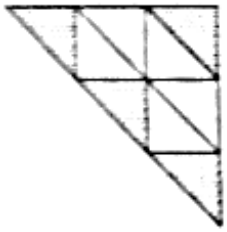
(iii)



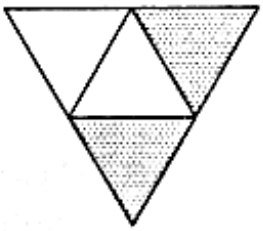
(iv)



(v)

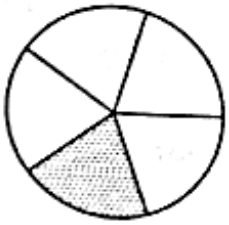


(vi)

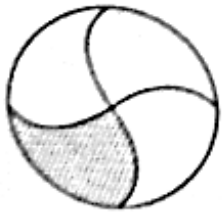


(vii)

(viii)



(ix)



Solution:

Fraction of the shaded portion = Number of shaded parts/Total number of parts

(i) Total number of parts = 3

Number of shaded parts = 2

Fraction of the shaded portion = 2/3

(ii) Total number of parts = 15

Number of shaded parts = 11

Fraction of the shaded portion = 11/15

(iii) Total number of parts = 9

Number of shaded parts = 8

Fraction of the shaded portion = 8/9

(iv) Total number of parts = 7

Number of shaded parts = 3

Fraction of the shaded portion = 3/7

(v) Total number of parts = 9

Number of shaded parts = 4

Fraction of the shaded portion = 4/9

(vi) Total number of parts = 4

Number of shaded parts = 2

Fraction of the shaded portion = 2/4 = 1/2

(vii) Total number of parts = 2

Number of shaded parts = 1

Fraction of the shaded portion = 1/2

(viii) Total number of parts = 5

Number of shaded parts = 1

Fraction of the shaded = 1/5

(ix) Total number of parts = 4

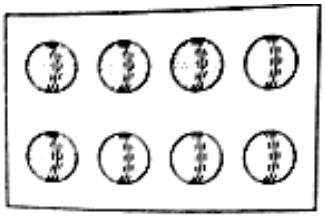
Number of shaded parts = 1

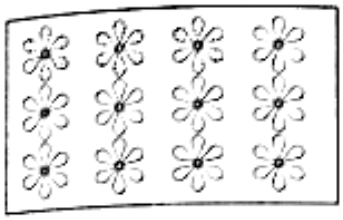
Fraction of the shaded portion = ¼

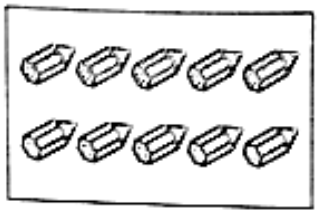
Question: 2

Write the fraction representing the shaded parts:

(i) 

(ii) 

(iii) 

(iv) 

Solution:

Fraction of the shaded portion = Number of shaded parts = Total number of parts

(i) Total number of parts = 9

Number of shaded parts = 3

Fraction of the shaded portion = 3/9 = 1/3

(ii) Total number of parts = 8

Number of shaded parts = 5

Fraction of the shaded portion = 4/8 = 1/2

(iii) Total number of parts = 12

Number of shaded parts = 3

Fraction of the shaded portion = 3/12 = 1/4

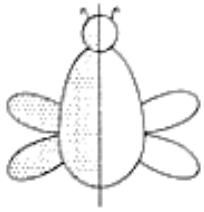
(iv) Total number of parts = 10

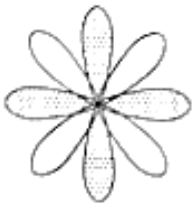
Number of shaded parts = 5

Fraction of the shaded portion = 5/10 = ½

Question: 3

Write the fraction representing the shaded portion:

(i) 

(ii) 

Solution:

a) Total number of parts = 2

Number of shaded parts = 1

Fraction of the shaded portion = Number of shaded parts

Total number of parts = 1/2

b) Total number of parts = 8

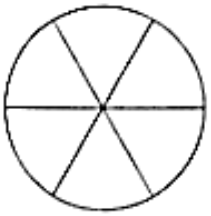
Number of shaded parts = 4

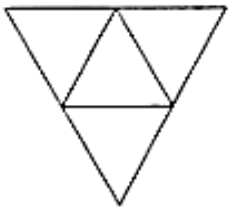
Fraction of the shaded portion = Number of shaded parts

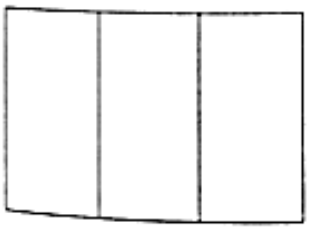
Total number of parts = 4/8

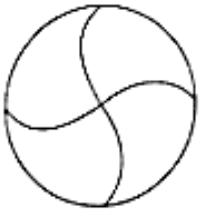
Question: 4

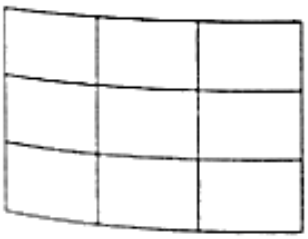
Colour the part according to the fraction given:

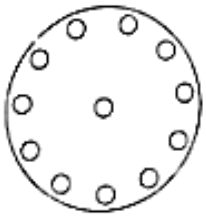
(i) $\frac{1}{6}$ 

(ii) $\frac{2}{4}$ 

(iii) $\frac{1}{3}$ 

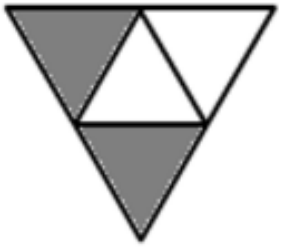
(iv) $\frac{3}{4}$ 

(v) $\frac{4}{9}$ 

(vi) $\frac{1}{4}$ 

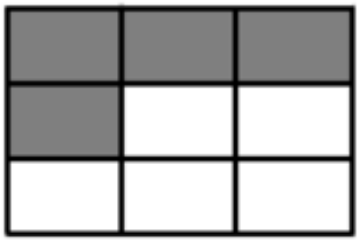
Solution:

(i) $\frac{1}{6}$ 

(ii) $\frac{2}{4}$ 

(iii) $\frac{1}{3}$ 

(iv) $\frac{3}{4}$ 

(v) $\frac{4}{9}$ 

(vi) $\frac{1}{4}$ 

Question: 5

What fraction of an hour is 20 minutes?

Solution:

Minutes in an hour = 60

20 minutes of an hour = 2060 = 13

Question: 6

Write the natural numbers from 2 to 12. What fraction of them are prime numbers?

Solution:

Natural numbers from 2 to 12 are 2, 3, 4 , 5 , 6 , 7 , 8 , 9 , 10 , 11 and 12.

Prime numbers from 2 to 12 are 2, 3 , 5 , 7 and 11

Out of 11 numbers, 5 are prime.

Fraction of the prime numbers = 511

Question: 7

Write the natural numbers from 102 to 113. What fraction of them are prime numbers.

Solution:

Natural numbers from 102 to 113 are 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112 and 113.

Prime numbers from 102 to 113 are 103, 107, 109 and 113.

Out of 12 natural numbers, 4 are prime.

Fraction of the prime numbers = 4/12 = 1/3

Question: 8

Mukesh has a box of 24 pencils. He gives half of them to sunita. How many does sunita get? How many does mukesh still have?

Solution:

Given data: Mukesh has 24 pencils

Sunita gets half of mukesh’s pencils

Sunita gets 242 pencils, that is, 12 pencils.

Number of pencils mukesh still has = 24 – 12 = 12

Question: 9

Kavita has 44 cassettes. She gives 3/4 *of them to Sonia. How many does Sonia get? How many does kavita keep?*

Solution:

Kavita has 44 cassettes.

She gives 34 of the cassettes to Sonia.

For this, Kavita divides 44 cassettes in 4 equal parts and takes 3 parts.

Therefore, 44/4 = 11

It means that Kavita gives 33 cassettes to Sonia.

Number of cassettes Kavita has = 44 – 33 = 11

Question: 10

Shikas has three frocks that she wears when playing. The material is good, but the colours are faded. Her mother buys some blue dye and uses it on two of the frocks. What fraction of all of the shikas play frocks did her mother dye?

Solution:

Total frocks shikha has = 3

Number of frocks dyed by shikha’s mother = 2

Fraction of the dyed frocks = 23

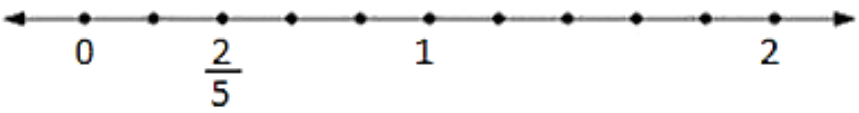
Therefore, shikha’s mother dyed 23 of shikha’s frocks.

Exercise 6.2

Question: 1

Represent 2/5 *on a number line.*

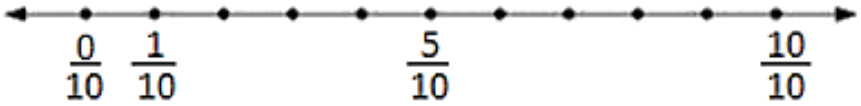
Solution:



Question: 2

Represent 0/10, 1/10, 5/10 *and* 10/10 *on a number line.*

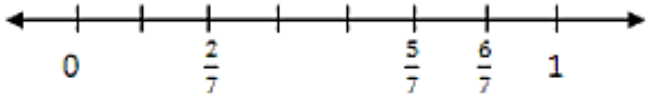
Solution:



Question: 3

Represent 2/7, 5/7 *and* 6/7 *on a number line.*

Solution:



Question: 4

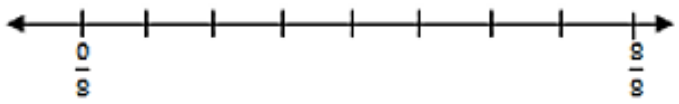
How many fractions lie between 0 and 1?

Infinite. We can check this by taking numerator less than denominator in a fraction.

Question: 5

Represent 0/8 *and* 8/8 *on a number line.*

Solution:



Exercise 6.3

Question: 1

Write each of the following divisions as fraction :

1. 6 ÷ 3

2. 25 ÷ 5

3.125 ÷ 50

4. 55 ÷ 11

Solution:

1. 6/3

2. 25/5

3. 125/50

4. 55/11

Question: 2

Write each of the following fractions as divisions:

1. 9/7

2. 3/11

3. 90/63

4. 1/5

Solution:

1. 9 ÷ 7

2. 3 ÷ 11

3. 90 ÷ 63

4. 1 ÷ 5 <

Exercise 6.4

Question: 1

Convert each of the following into a mixed fraction:

i) 28/9

ii) 226/15

iii) 145/9

iv) 128/5

Solution:

i) $3\frac{1}{9}$

ii) $15\frac{1}{15}$

iii) $16\frac{1}{9}$

iv) $25\frac{3}{5}$

Question: 2

Convert each of the following into an improper fraction:

i) $7\frac{1}{4}$

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

iii) $5\frac{3}{10}$

iv) $12\frac{7}{15}$

Solution:

i) 29/9

ii) 61/7

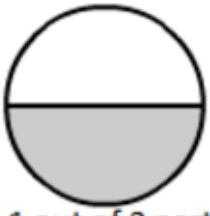
iii) 53/10

iv) 187/15

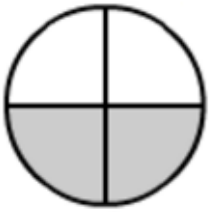
Exercise 6.5

Question: 1

(i)

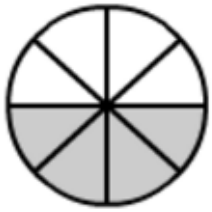


1 out of 2 parts is shaded



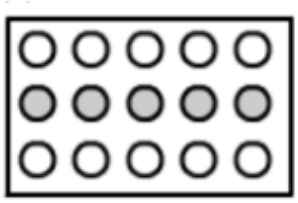
2 out of 4 parts are shaded

3 out of 6 parts are shaded



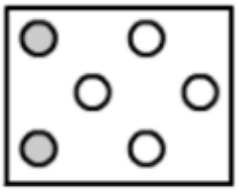
4 out of 8 parts are shaded

(ii)

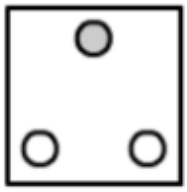


5 out of 15 parts are shaded

3 out of 9 parts are shaded



2 out of 6 parts are shaded



1 out of 3 parts is shaded

Solution:

(i)

Fraction = 1/2

Fraction = 2/4 = 1/2

Fraction = 3/6 = 1/2

Fraction = 4/8 = 1/2

Yes, they are equivalent

(ii)

Fraction = 5/15 = 1/3

Fraction = 3/9 = 1/3

Fraction = 2/6 = 1/3

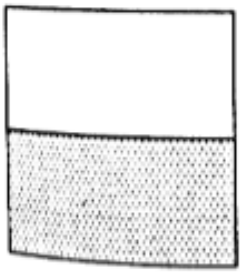
Fraction = 1/3

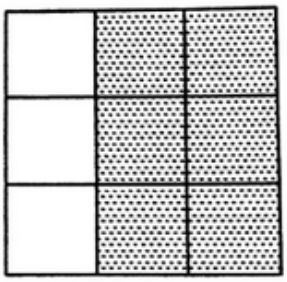
Yes, they are equivalent

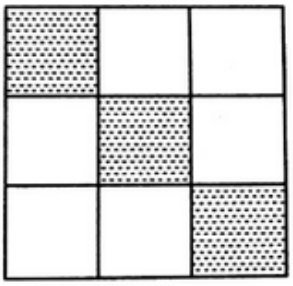
Question: 2

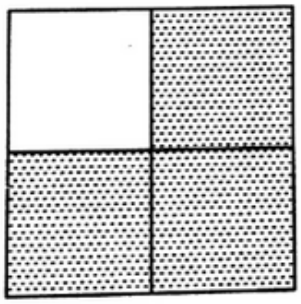
Write the fractions and match fractions in column I with the equivalent fractions in column II.

Column I

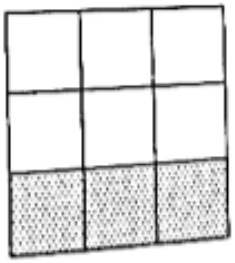
(i) 

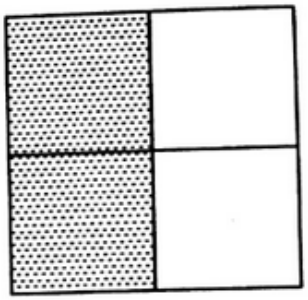
(ii) 

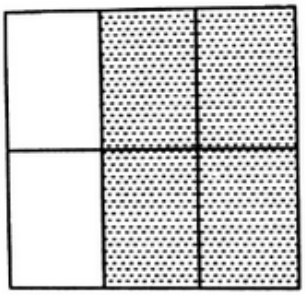
(iii) 

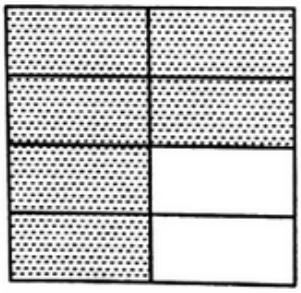
(iv) 

Column II

(a) 

(b) 

(c) 

(d) 

Solution:

(i) (b)

(ii) (c)

(iii) (a)

(iv) (d)

Question: 3

Replace * in each of the following by the correct number:

(i) 2/7 = 6/*

(ii) 5/8 = 10/*

(iii) 4/5 = */20

(iv) 45/60 = 15/*

(v) 18/24 = */4

Solution:

(i) 2/7 = 6/21

(ii) 5/8 = 10/16

(iii) 4/5 = 16/20

(iv) 45/60 = 15/20

(v) 18/24 = 3/8

Question: 4

Find the equivalent fraction of 35, having:

(i) Numerator 9

(ii) Denominator 30

(iii) Denominator 21

(iv) Numerator 40

Solution:

(i) 3/5 = 9

Consider the numerator = 9

As 3 × 3 = 9, we will multiply both the numerator and denominator by 3, we have

3/5 × 3/3 = 9/15

(ii) 3/5 = 30

Consider the denominator = 30

As 5 × 6 = 30, we multiply both the numerator and denominator by 6, we have

3/5 × 6/6 = 18/30 = 3/5

(iii) 3/5 = 21

Consider the denominator = 21

As 3 × 7 = 21, we multiply both the numerator and denominator by 7, we have

3/5 × 7/7 = 21/35

(iv) 3/5 = 40

Consider the numerator = 40

As 5 × 8 = 40, we multiply both the numerator and denominator by 8, we have

3/5 × 8/8 = 24/40

Question: 5

Find the fraction equivalent to 45/60, having:

(i) Numerator 15

(ii) Denominator 4

(iii) Denominator 240

(iv) Numerator 135

Solution:

(i) 45/60 = 15

Consider the numerator = 15

As 45 ÷ 3 = 15, we will divide both the numerator and denominator by 3, we have,

45/60 ÷ 3/3 = 15/20

(ii) 45/60 = 4

Consider the denominator = 4

As 60 ÷ 15 = 4, We divide both the numerator and denominator by 15,

we have ,

45/60 ÷ 15/15 = 3/4

(iii) 45/60 = 240

Consider the denominator = 240

As 60 × 4 = 240, we multiply both the numerator and denominator by 4, we have

45/60 × 4/4 = 180/240

(iv) 45/60 = 135

Consider the numerator = 135

As 45 x 3 = 135, we multiply both the numerator and denominator by 3, we have

45/60 × 3/3 = 135/180

Question: 6

Find the fraction equivalent to 35/42, having:

(i) Numerator 15

(ii) Denominator 18

(iii) Denominator 30

(iv) Numerator 30

Solution:

Firstly, we will reduce 35/42 into the lowest term. Now, we will divide both the numerator and denominator by the HCFs of 35 and 42, i.e 7, we have

35/42 ÷ 7/7 = 5/6

(i) 5/6 = 15

Consider the numerator = 15

As 5 × 3 = 15, we will multiply both the numerator and denominator by 3, we have

5/6 × 3/3 = 15/18

(ii) 5/6 = 18

Consider the denominator = 18

As 6 × 3 = 18, we multiply both the numerator and denominator by 3, we have

5/6 × 3/3 = 15/18

(iii) 5/6 = 30

Consider the denominator = 30

As 6 × 5 = 30, we multiply both the numerator and denominator by 5, we have

5/6 × 5/5 = 25/30

(iv) 5/6 = 30

Consider the numerator = 30

As 5 × 6 = 30, we multiply both the numerator and denominator by 6, we have

5/6 × 6/6 = 30/36

Question: 7

Check whether the given fractions are equivalent:

(i) 5/9, 30/54

(ii) 2/7, 16/42

(iii) 7/13, 5/11

(iv) 4/11, 32/88

(v) 3/10, 12/50

(vi) 9/27, 25/75

Solution:

(i) 5/9 × 6/6 = 30/54

Hence, the given fractions are equivalent

(ii) 2/7 × 8/8 = 16/42

27 is not equivalent to 16/42

(iii) 7/13 × 5/5 = 35/65

5/11 × 7/7 = 35/77

7/13 is not equivalent to 5/11

(iv) 4/11 × 8/8 = 32/88

4/11 is equivalent to 32/88

(v) 3/10 × 4/4 = 12/50

3/10 is not equivalent 12/50

(vi) 9/27 × 13/13 = 25/75

9/27 is equivalent 25/75

Question: 8

Match the equivalent fractions and write another 2 for each:

(i) 250/400	(a) 2/3
(ii) 180/200	(b) 2/5
(iii) 660/990	(c) 1/2
(iv) 180/360	(d) 5/8
(v) 220/550	(e) 9/10

Solution:

The correct matches for the above question are given below:

(i) (d), 250/400, 5/8

(ii) (e), 180/200, 9/10

(iii) (a), 660/990, 2/3

(iv) (c), 180/360, 1/2

(v) (b), 220/550, 2/5

Question: 9

Write some equivalent fractions which contain all digits from 1 to 9 once only.

Solution:

2/6 = 3/9 = 58/174, 2/4 = 3/6 = 79/158

Question: 10

Ravish had 20 pencils , sikha had 50 pencils and priya had 80 pencils. After 4 months, Ravish used up 10 pencils, sikha used up 25 pencils and priya used 40 pencils. What fraction did each use up? Check if each has used up an equal fraction of their pencils?

Solution:

Total pencils Ravish had = 20

Pencils used by Ravish = 10

Fraction of pencils used by ravish = 10 ÷ 10/20 ÷ 10 = 12 (Dividing both the numerator &

denominator by the HCFs of 10 & 20) Total pencils Shikha had = 50 Pencils used by

Shikha = 25 Fraction of pencils used by Shikha = 25 ÷ 25/50 ÷ 25 = 12 (Dividing both the numerator & denominator by the HCFs of 25 & 50)

Total pencils Priya had = 80

Pencils used by Priya = 40

Fraction of pencils used by Priya = 40 ÷ 40/80 ÷ 40 = 12 (Dividing both the numerator

& denominator by the HCFs of 40 & 80)

Yes, each of them has utilized an equal fraction of pencils.

Exercise 6.6

Question: 1

Reduce each of the following fractions to its lowest term (simplest form):

i) 40/75

ii) 42/28

iii) 12/52

iv) 40/72

v) 80/24

vi) 84/56

Solution:

i) 40/75

Factors of 40 are 1, 2, 4, 5, 8, 10, 20 and 40.

Factors of 75 are 1, 3, 5, 15 and 75.

Common factors of 40 and 75 are 1 and 5.

HCF = 5

Divide both the numerator & denominator by 5.

$$40 \div 575 \div 5 = \frac{8}{15}$$

Therefore, the simplest form obtained is 8/15

ii) 42/28

Factors of 42 are 1, 2, 3, 6, 7, 14, 21, 42

Factors of 28 are 1, 2, 4, 7, 14, 28

Common factors of 42 & 28 are 1, 2 and 4.

HCF = 4

Divide both the numerator & denominator by

$$\frac{14}{42} \div \left(\frac{14}{28}\right) \div 14 = 32$$

Therefore, the simplest form obtained is 32

iii) 12/52

Factors of 12 are 1, 2, 3, 4, 6 and 12.

Factors of 52 are 1, 2, 4, 13, 26 and 52.

Common factors of 12 and 52 are 1, 2 and 4

HCF = 4

Divide both the numerator & denominator by 4.

On solving the above we have,

3/13

Therefore, the simplest form obtained is 3/13

iv) 40/72

Factors of 40 are 1, 2, 4, 5, 8, 10, 20, 40

Factors of 72 are 1, 2, 3, 4, 6, 8, 9, 12, 18, 24, 36, 72

Common factors of 40 and 72 are 1, 2, 4 and 8.

HCF = 8

Divide both the numerator & denominator by 8.

On solving the above equation, we have:

5/9

Therefore, the simplest form obtained is 5/9

v) 80/24

Factors of 80 are 1, 2, 4, 5, 8, 10, 16, 20, 40 and 80.

Factors of 24 are 1, 2, 3, 4, 6, 8, 12 and 24.

Common factors of 80 and 24 are 1, 2 , 4 , 8

HCF = 8

Divide both the numerator & denominator by 4.

On solving the above equation, we have:

10/3

Therefore, the simplest form obtained is 10/3

vi) 84/56

Factors of 84 are 1, 2, 3, 4, 6, 7, 12, 14, 21, 28, 42 and 84.

Factors of 56 are 1, 2, 4, 7, 8, 14, 28 and Common factors of 84 & 56 are 1, 2, 4, 7, 14 and 28.

HCF = 28

Divide both the numerator & denominator by 28

On solving the above equation, we have:

3/2

Therefore, the simplest form obtained is 3/2

Question: 2

Simplify each of the following to its lowest form:

i) 75/80

ii) 52/76

iii) 84/98

iv) 68/17

v) 150/50

vi) 162/108

Solution:

i) 75/80

Factors of 75 are 1, 3, 5, 15, 25 and 75.

Factors of 80 are 1, 2, 4, 5, 8, 10, 12, 16, 20, 40 and 80.

Common factors of 75 and 80 are 1 and 5.

HCF of 75 and 80 is 5.

Dividing both the numerator and denominator by 5, we get:

$$\frac{75}{80} \div \frac{5}{5} = \frac{15}{16}$$

Therefore, the simplest form obtained is

$$\frac{75}{80} = \frac{15}{16}$$

ii) 52/76

Factors of 52 are 1, 2, 4, 13, 26 and 52.

Factors of 76 are 1, 2, 4, 19, 38 and 76.

Common factors of 52 and 76 are 1, 2 and 4.

HCF of 52 and 76 is 4.

Dividing both the numerator and denominator by 5, we get:

$$\frac{52}{72} \div \frac{4}{4} = \frac{13}{19}$$

Therefore, the simplest form obtained is

$$\frac{52}{72} = \frac{13}{19}$$

iii) 84/98

Factors of 84 are 1, 2, 3, 4, 6, 7, 12, 14, 21, 28, 42 and 84.

Factors of 98 are 1, 2, 7, 14, 49 and 98.

Common factors of 84 and 98 are 1, 2, 7 and 14.

HCF of 84 and 98 is 14

Dividing both the numerator and denominator by 5, we get:

$$\frac{84}{98} \div \frac{14}{14} = \frac{6}{7}$$

Therefore, the simplest form obtained is

84/98 = 6/7

iv) 68/17

Factors of 68 are 1, 2, 4, 17, 34 and 68.

Factors of 17 are 1 and 17.

Common factor of 68 and 17 is 17

HCF of 68 and 17 is 17

Dividing both the numerator and denominator by 5, we get:

$$\frac{68}{17} \div \frac{17}{17} = \frac{4}{1}$$

Therefore, the simplest form obtained is

68/17 = 4/1

v) 150/50

Factors of 150 are 1, 2, 3, 5, 6, 10, 15, 25, 50 and 150.

Factors of 50 are 1, 2, 5, 10, 25 and 50.

Common factor of 150 and 50 is 50

HCF of 150 and 50 is 50

Dividing both the numerator and denominator by 50, we get:

$$\frac{150}{50} \div \frac{50}{50} = 31$$

Therefore, the simplest form obtained is

150/50 = 3/1

vi) 162/108

Factors of 162 are 1, 2, 3, 6, 9, 18, 27, 54, 81 and 162.

Factors of 108 are 108, 1, 2, 3, 4, 6, 9, 12, 18, 27 and 54.

Common factor of 162 and 108 are 1, 2, 3, 6, 9, 18, 27, 54

HCF of 162 and 108 is 54

Dividing both the numerator and denominator by 54, we get:

$$\frac{162}{108} \div \frac{54}{54} = \frac{3}{2}$$

Therefore, the simplest form obtained is

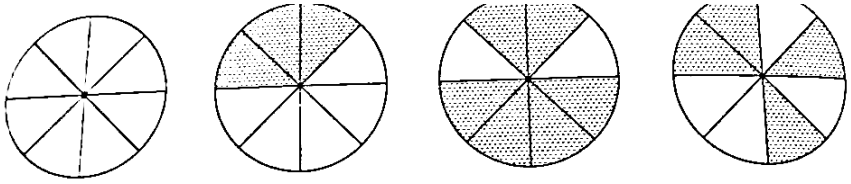
162/108 = 3/2

Exercise 6.7

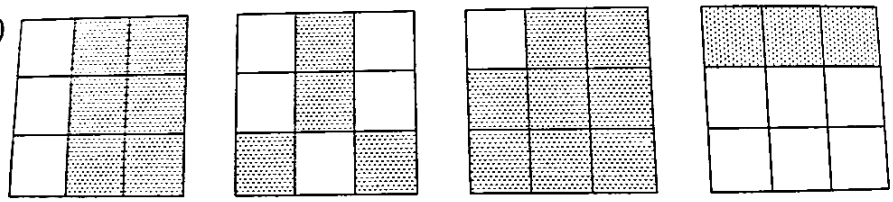
Question: 1

Write each fraction. Arrange them in ascending and descending order using correct sign ` < ` , ` = ` > ` between the fractions:

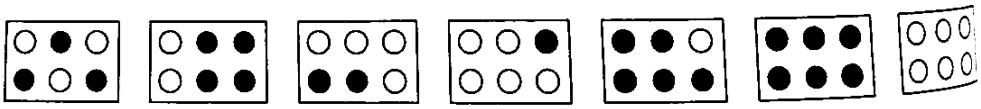
(i)



(ii)

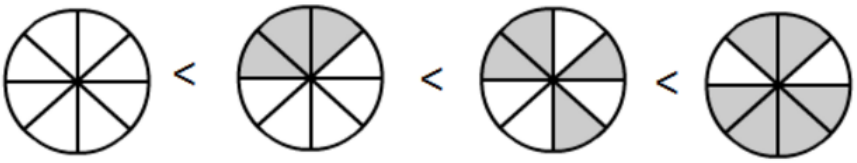


(iii)



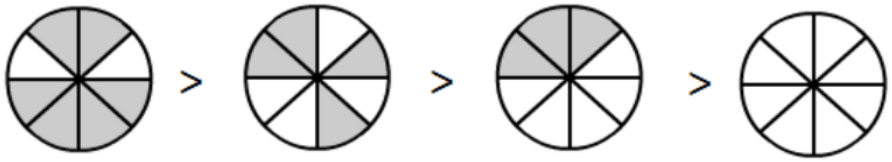
Solution:

(i) Ascending order



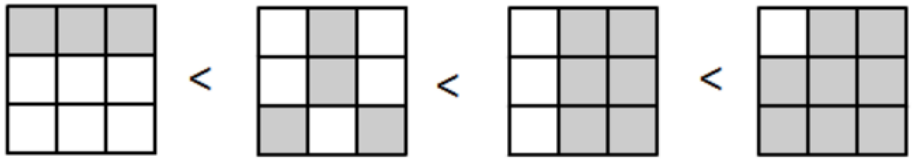
Fraction= $\frac{0}{8}$ Fraction= $\frac{3}{8}$ Fraction= $\frac{4}{8}$ Fraction= $\frac{6}{8}$

Descending order



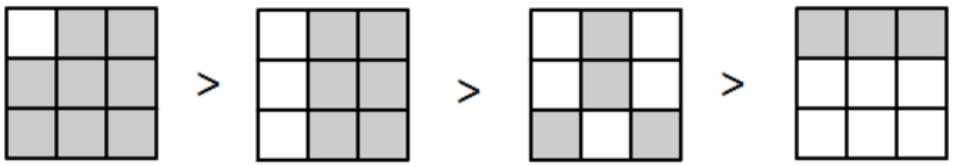
Fraction= $\frac{6}{8}$ Fraction= $\frac{4}{8}$ Fraction= $\frac{3}{8}$ Fraction= $\frac{0}{8}$

(ii) Ascending order



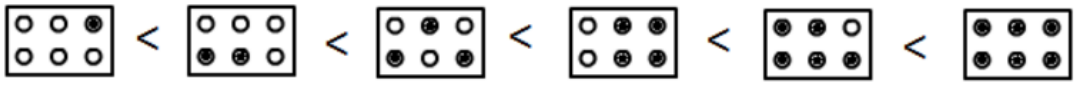
Fraction= $\frac{3}{9}$ Fraction= $\frac{4}{9}$ Fraction= $\frac{6}{9}$ Fraction= $\frac{8}{9}$

Descending order



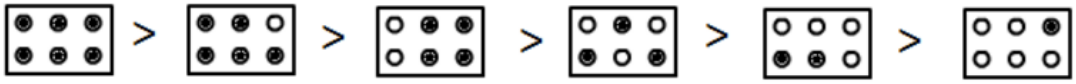
Fraction= $\frac{8}{9}$ Fraction= $\frac{6}{9}$ Fraction= $\frac{4}{9}$ Fraction= $\frac{3}{9}$

(iii) Ascending order



Fraction= $\frac{1}{6}$ Fraction= $\frac{2}{6}$ Fraction= $\frac{3}{6}$ Fraction= $\frac{4}{6}$ Fraction= $\frac{5}{6}$ Fraction= $\frac{6}{6}$

Descending order



Fraction= $\frac{6}{6}$ Fraction= $\frac{5}{6}$ Fraction= $\frac{4}{6}$ Fraction= $\frac{3}{6}$ Fraction= $\frac{2}{6}$ Fraction= $\frac{1}{6}$

Question: 2

Mark 2/6,4/6, 8/6, 6/6 on the number line and put appropriate signs between fractions given below:

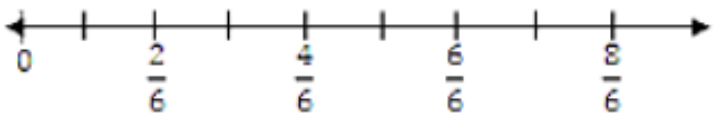
i) $\frac{5}{6}$ — — — — $\frac{2}{6}$

ii) $\frac{3}{6}$ — — — — $\frac{0}{6}$

iii) $\frac{1}{6}$ — — — — $\frac{6}{6}$

iv) $\frac{8}{6}$ — — — — $\frac{5}{6}$

Solution:



i) 56 > 26 because 5 > 2 and the denominator is the same.

ii) 36 > 06 because 3 > 0 and the denominator is the same.

iii) 16 < 66 because 6 > 1 and the denominator is the same.

iv) 86 > 56 because 8 > 5 and the denominator is the same.

Question: 3

Compare the following fractions and put an appropriate:

i) $\frac{3}{6} \_\_\_ \frac{5}{6}$

ii) $\frac{4}{5} \_\_\_ \frac{0}{5}$

iii) $\frac{3}{20} \_\_\_ \frac{4}{20}$

iv) $\frac{1}{7} \_\_\_ \frac{1}{4}$

Solution:

i) 36 < 56 because 3 < 5 and the denominator is the same.

ii) 45 > 05 because 4 > 0 and the denominator is the same.

iii) 320 < 420 because 3 < 4 and the denominator is the same.

iv) 17 < 14 because 7 > 4; if the numerator is the same, then the fraction that has smaller denominator is greater.

Question: 4

Compare the following fractions using the symbol > or <:

i) 6/7 and 6/11

ii) 3/7 and 5/7

iii) 2/3 and 8/12

iv) 1/5 and 4/15

v) 8/3 and 8/13

vi) 4/9 and 15/8

Solution:

i) 6/7 > 6/11 because if the numerator is the same, then the fraction with smaller denominator is greater.

ii) 3/7 < 5/7 because 3 < 5 and the denominator is the same.

iii) $\frac{8}{12} = \frac{2 \times 2 \times 2}{2 \times 2 \times 3} = \frac{2}{3}$ therefore, $\frac{2}{3} = \frac{8}{12}$

iv) $\frac{1}{5} = \frac{1}{5} \times \frac{3}{3} = \frac{3}{15}$, therefore $\frac{3}{15} < \frac{4}{15}$

(Because 3 < 4 and the denominator is the same. Therefore, 1/15 < 4/15)

v) 8/3 < 8/13 Because if the numerator is the same, then the fraction with smaller denominator is greater.

vi) $\frac{4}{9} = \frac{4}{9} \times \frac{8}{8} = \frac{32}{72}$

$\frac{15}{8} = \frac{15}{8} \times \frac{9}{9} = \frac{135}{72} \frac{32}{72} < \frac{135}{72}$

(Because 135 > 32 and the denominator is the same)

Therefore, 4/9 < 15/8

Question: 5

The following fractions represent just three different numbers. Separate them in to three groups of equal fractions by changing each one to its simplest form:

i) 2/12

ii) 3/15

iii) 8/50

iv) 16/100

v) 10/60

vi) 15/75

vii) 12/60

viii) 16/96

ix) 12/75

x) 12/72

xi) 3/18

xii) 4/25

Solution:

i) 2/12

HCF of 2 & 12 is 2.

Divide both the numerator & denominator by the HCF of 2 &12

$$2 \div \frac{2}{12} \div 2 = \frac{1}{6}$$

ii) 3/15

HCF of 3 & 15 is 3.

Divide both the numerator & denominator by the HCF of 3 &15.

$$3 \div \frac{3}{15} \div 3 = \frac{1}{5}$$

iii) 8/50

HCF of 8 & 50 is 2.

Divide both the numerator & denominator by the HCF of 8 & 50.

$$8 \div \frac{2}{50} \div 2 = \frac{4}{25}$$

iv) 16/100

HCF of 16 & 100 is 4.

Divide both the numerator & denominator by the HCF of 16 & 100.

$$16 \div \frac{4}{100} \div 4 = \frac{4}{25}$$

v) 10/60

HCF of 10 & 60 is 10.

Divide both the numerator & denominator by the HCF of 10 & 60.

$$10 \div \frac{10}{60} \div 10 = \frac{1}{6}$$

vi) 15/75

HCF of 15 & 75 is 15.

Divide both the numerator & denominator by the HCF of 15 & 75.

$$15 \div \frac{15}{75} \div 15 = \frac{1}{5}$$

vii) 12/60

HCF of 12 & 60 is 12.

Divide both the numerator & denominator by the HCF of 12 & 60.

$$12 \div \frac{12}{60} \div 12 = \frac{1}{5}$$

viii) 16/96

HCF of 16 & 96 is 16.

Divide both the numerator & denominator by the HCF of 16 & 96

$$16 \div \frac{16}{96} \div 16 = \frac{1}{6}$$

ix) 12/75

HCF of 12 & 75 is 3.

Divide both the numerator & denominator by the HCF of 12 & 75.

$$12 \div \frac{3}{75} \div 3 = \frac{4}{25}$$

x) 12/72

HCF of 12 & 72 is 12.

Divide both the numerator & denominator by the HCF of 12 & 72

$$12 \div \frac{12}{72} \div 12 = \frac{1}{6}$$

xi) 3/18

HCF of 3 & 18 is 3.

Divide both the numerator & denominator by the HCF of 3 & 18.

$$3 \div \frac{3}{18} \div 3 = \frac{1}{6}$$

xii) 4/25

HCF of 4 & 25 is 1.

Divide both the numerator & denominator by the HCF of 4 & 25

$$4 \div \frac{1}{25} \div 1 = \frac{4}{25}$$

Three groups of equal fractions:

$$\frac{2}{12}, \frac{10}{60}, \frac{16}{96}, \frac{12}{72}, \frac{3}{18}; \frac{3}{15}, \frac{8}{50}, \frac{16}{100}, \frac{15}{75}, \frac{12}{60}, \frac{12}{75}, \frac{4}{25}$$

Question: 6

Isha read 25 pages of a book containing 100 pages. Nagma read 1/2 of the same book. Who read less?

Solution:

Total pages in the book = 100

$$\text{Fraction of the book read by Isha} = 25 \div \frac{25}{100} \div 25 = \frac{1}{4}$$

(Dividing numerator & denominator by the HCF of 25 & 100)

Fraction of the book read by Nagma = 12

Now, compare 14 & 12.

LCM of 4 & 2 is 4.

Convert each fraction into equivalent fraction with 4 as its denominator.

$$1 \times \frac{1}{4} \times 1 \text{ and } 1 \times \frac{2}{2} \times \frac{2}{14} \text{ and } \frac{1}{4} = \frac{2}{4}$$

Therefore, Isha read less.

Question: 7

Arrange the following fractions in the ascending order:

i) $\frac{2}{9}, \frac{7}{9}, \frac{3}{9}, \frac{4}{9}, \frac{1}{9}, \frac{6}{9}, \frac{5}{9}$

ii) $\frac{7}{8}, \frac{7}{25}, \frac{7}{11}, \frac{7}{18}, \frac{7}{10}$

iii) $\frac{37}{47}, \frac{37}{50}, \frac{37}{100}, \frac{37}{100}, \frac{37}{85}, \frac{37}{41}$

iv) $\frac{3}{5}, \frac{1}{5}, \frac{4}{5}, \frac{2}{5}$

v) $\frac{2}{5}, \frac{3}{4}, \frac{1}{2}, \frac{3}{5}$

vi) $\frac{3}{8}, \frac{3}{12}, \frac{3}{6}, \frac{3}{4}$

vii) $\frac{4}{6}, \frac{3}{8}, \frac{6}{12}, \frac{5}{16}$

Solution:

i) 2/9, 7/9, 3/9, 4/9, 1/9, 6/9, 5/9, when the denominators are the same and numerators are different, then the fraction with greater numerator has a larger

value.

ii) 7/8, 7/25, 7/11, 7/18, 7/10, when numerator are the same and denominators are different, the fraction with greater denominator has a smaller value.

iii) 37/47, 37/50, 37/100, 37/100, 37/85, 37/41

When numerators are the same and denominator has a smaller value.

iv) 3/5, 1/5, 4/5, 2/5

When denominators are the same and numerators are different, then the fraction with greater numerator has a larger value.

v) LCM of 2, 4 and 5 is 20

$$\frac{2}{5}=\frac{2}{5}\times\frac{4}{4}=\frac{8}{20}$$

$$\frac{3}{4}=\frac{3}{4}\times\frac{5}{5}=\frac{15}{20}$$

$$\frac{2}{5}=\frac{2}{5}\times\frac{4}{4}=\frac{8}{20}$$

vi) 3/12, 3/8, 3/6, 3/4.

vii) 5/16, 3/8, 6/12, 4/6

Question: 8

Arrange in descending order in each of the following using symbols >:

i) 8/17, 8/9, 8/5, 8/13

ii) 5/9, 3/12, 1/3, 4/15

Solution:

i) 8/5 > 8/9 > 8/13 > 8/17

ii) 5/9 > 1/3 > 3/12 > 4/15

Question: 9

Find answers to the following. Write and indicate how you solved them.

i) Is 5/9 equal to 4/5?

ii) Is 9/16 equal to 5/9?

iii) Is 4/5 equal to 16/20?

iv) Is 1/15 equal to 4/30?

Solution:

i) No. $5 \times 5 \neq 9 \times 4$

ii) No. $9 \times 9 \neq 16 \times 5$

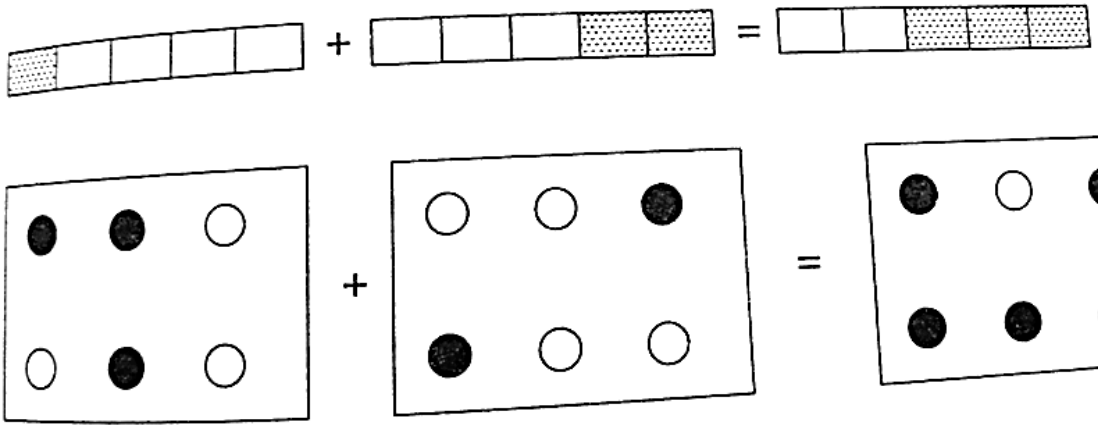
iii) yes. $4 \times 20 = 16 \times 5$

iv) No. $1 \times 30 = 15 \times 4$

Exercise 6.8

Question: 1

Write these fractions appropriately as additions or subtraction:



Solution:

(i) $\frac{1}{5}+\frac{2}{5}=\frac{3}{5}$ $\quad\left[\because \frac{1+2}{5}=\frac{3}{5}\right]$

(ii) $\frac{3}{6}+\frac{2}{6}=\frac{5}{6}$

Question: 2

Solve:

i) $\frac{5}{12}+\frac{1}{12}$

ii) $\frac{3}{15}+\frac{7}{15}$

iii) $\frac{3}{22}+\frac{7}{22}$

iv) $\frac{1}{4}+\frac{0}{4}$

v) $\frac{4}{13}+\frac{2}{13}+\frac{1}{13}$

vi) $\frac{0}{15}+\frac{2}{15}+\frac{1}{15}$

vii) $\frac{7}{31}-\frac{4}{31}+\frac{9}{31}$

viii) $3\frac{2}{7}+\frac{1}{7}-2\frac{3}{7}$

ix) $2\frac{1}{3}-1\frac{2}{3}-4\frac{1}{3}$

x) $\frac{1}{1}-\frac{2}{3}+\frac{7}{3}$

xi) $\frac{16}{7}-\frac{5}{7}+\frac{9}{7}$

Solution:

i) The given fractions are:

$$\frac{5}{12}+\frac{1}{12}=\frac{1+2}{5}=\frac{3}{5}$$

Hence the answer is 3/5

ii) The given fractions are:

$$\frac{3}{6}+\frac{2}{6}=\frac{3+2}{6}=\frac{8}{6}=\frac{4}{3}$$

Hence the answer is 4/3

iii) the given fractions are:

$$\frac{3}{22}+\frac{7}{22}=\frac{3+7}{22}=\frac{10}{22}=\frac{5}{11}$$

Hence the answer is 5/11

iv) the given fractions are:

$$\frac{1}{4}+\frac{0}{4}$$

$$=\frac{1+0}{4}=\frac{1}{4}$$

Hence the answer is 1/4

v) The given fractions are:

$$\frac{4}{13}+\frac{2}{13}+\frac{1}{13}$$

$$=\frac{4+2+1}{13}=\frac{7}{13}$$

Hence the answer is 7/13

vi) the given fractions are:

$$\frac{0}{15}+\frac{2}{15}+\frac{1}{15}$$

$$=\frac{0+2+1}{15}=\frac{3}{15}=\frac{1}{5}$$

Hence the answer is 1/5

vii) the given fractions are:

$$\frac{7}{31}-\frac{4}{31}+\frac{9}{31}$$

$$=\frac{7-4+9}{31}=\frac{12}{31}$$

Hence the answer is 12/31

viii) the given fractions are:

$$3\frac{2}{7}+\frac{1}{7}-2\frac{3}{7}$$

$$=\frac{23+1-17}{7}=\frac{7}{7}=\frac{1}{1}=1$$

Hence the answer is 1/1 = 1

ix) the given fractions are:

$$3\frac{2}{7}+\frac{1}{7}-2\frac{3}{7}$$

$$=\frac{23+1-17}{7}=\frac{35}{7}=\frac{5}{1}=5$$

Hence the answer is 5/1 = 5

x) the given fractions are:

$$\frac{1}{1}-\frac{2}{3}+\frac{7}{3}$$

$$=\frac{3-2+7}{3}=\frac{8}{3}$$

Hence the answer is 8/3

xi) the given fractions are:

$$\frac{16}{7}-\frac{5}{7}+\frac{9}{7}$$

$$=\frac{16-5+9}{7}=\frac{20}{7}$$

Hence the answer is 20/7

Question: 3

Shikha painted 1/5 of the wall space in her room. Her brother ravish helped and painted 3/5 of the wall space. How much did they paint together? How much the room is left unpainted?

Solution:

Shikha painted 1/5 of the wall space in her room

Ravish painted 3/5 of the wall space

Wall space painted by both of them together $= \frac{1}{5} + \frac{3}{5} = \frac{1+3}{5} = \frac{4}{5}$

Unpainted part of the room $= \frac{1-4}{5} = \frac{5-4}{5} = \frac{1}{5}$

Question: 4

Ramesh bought $2\frac{1}{2}\,\text{kg}$ sugar whereas rohit bought $3\frac{1}{2}\,\text{kg}$ of sugar. Find the total amount of sugar bought by both of them.

Solution:

Quantity of sugar bought by ramesh = $2\frac{1}{2}\,\text{kg}$

$= \frac{(2 \times 2) + 1}{2} = \frac{5}{2}\,\text{kg}$

Quantity of sugar bought by rohit = $3\frac{1}{2}\,\text{kg}$

$= \frac{(2 \times 3) + 1}{2} = \frac{7}{2}\,\text{kg}$

Total amount of sugar bought by them:

Quantity of sugar bought by rohit + Quantity of sugar bought by ramesh

$= \frac{5}{2}\,\text{kg} + \frac{7}{2}\,\text{kg}$

= 6 kg (Dividing numerator and denominator by their HCF (6))

Question: 5

The teacher taught 3/5 **of the book, Vivek revised** 1/5 **more on his own. How much does he still have to revise?**

Solution:

Fraction of the book taught by the teacher = 3/5

Fraction of the book revised by vivek = 1/5

Fraction of the book still left for revision by vivek:

$$\frac{3}{5}-\frac{1}{5}=\frac{3-1}{5}=\frac{2}{5}$$

Therefore, Fraction of the book still left for revision by vivek is 2/5

Question: 6

Amit was given 5/7 **of a bucket of oranges. What fraction of oranges was left in the basket?**

Solution:

Fraction of oranges given to amit = 5/7

Fraction of oranges left in the basket:

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

Therefore, Fraction of oranges left in the basket is 2/7

Question: 7

i) $\frac{7}{10}-\frac{*}{*}=\frac{3}{10}$

ii) $\frac{*}{*}-\frac{3}{21}=\frac{5}{21}$

iii) $\frac{*}{*}-\frac{3}{6}=\frac{3}{6}$

iv) $\frac{*}{*}-\frac{5}{27}=\frac{12}{27}$

Solution:

i) Given:

$$\frac{7}{10} - \frac{*}{*} = \frac{3}{10}$$

$$\frac{7}{10} - \frac{3}{10} = \frac{*}{*}$$

$$\frac{7-3}{10} = \frac{2}{5}$$

Therefore,

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

ii) Given:

$$\frac{*}{*} - \frac{3}{21} = \frac{5}{21}$$

$$\frac{*}{*} = -\frac{3}{21} + \frac{5}{21}$$

$$\frac{5-3}{21} = \frac{2}{21}$$

Therefore,

$$\frac{*}{*} = \frac{2}{21}$$

iii) Given:

$$\frac{*}{*} - \frac{3}{6} = \frac{3}{6}$$

$$\frac{*}{*} = \frac{3}{6} + \frac{3}{6}$$

$$\frac{3+3}{6} = \frac{6}{6}$$

Therefore,

$$\frac{*}{*} = \frac{6}{6} = \frac{1}{1} = 1$$

iv) Given:

$$\frac{*}{*} - \frac{5}{27} = \frac{12}{27}$$

$$\frac{*}{*} = \frac{5}{27} + \frac{12}{27}$$

$$\frac{5+12}{27} = \frac{17}{27}$$

Therefore,

$$\frac{*}{*} = \frac{17}{27}$$

Exercise 6.9

Question: 1

Add:

i) 3/4 and 5/6

ii) 7/10 and 2/15

iii) 8/13 and 2/3

iv) 4/5 and 7/15

Solution:

i) Given: 3/4 and 5/6

$$\frac{3}{4}+\frac{5}{6}$$

LCM of 4 and 6 is 12, so we will convert each fraction into an equivalent fraction with denominator 12.

$$=\frac{3\,x\,3}{4\,x\,3}+\frac{5\,x\,2}{6\,x\,2}$$

$$=\frac{9}{12}+\frac{10}{12}$$

$$=\frac{9+10}{12}=\frac{19}{12}$$

ii) Given: 7/10 and 2/15

$$\frac{7}{10}+\frac{2}{15}$$

LCM of 10 and 15 is 30, so we will convert each fraction into an equivalent fraction with denominator 30.

$$= \frac{7 \times 3}{10 \times 3} + \frac{2 \times 2}{15 \times 2}$$

$$= \frac{21}{30} + \frac{4}{30}$$

$$= \frac{21 + 4}{30} = \frac{25}{30}$$

iii) Given: 8/13 and 2/3

$$\frac{8}{13} + \frac{2}{3}$$

LCM of 13 and 3 is 39, so we will convert each fraction into an equivalent fraction with denominator 39.

$$= \frac{8 \times 3}{13 \times 3} + \frac{2 \times 13}{3 \times 13}$$

$$= \frac{24}{39} + \frac{26}{39}$$

$$= \frac{24 + 26}{39} = \frac{50}{39}$$

iv) Given: 4/5 and 7/15

$$\frac{4}{5} + \frac{7}{15}$$

LCM of 5 and 15 is 1, so we will convert each fraction into an equivalent fraction with denominator 15.

$$= \frac{4 \times 3}{5 \times 3} + \frac{7 \times 1}{15 \times 1}$$

$$= \frac{12}{15} + \frac{7}{15}$$

$$= \frac{12 + 7}{15} = \frac{19}{15}$$

Question: 2

Subtract:

i) $\frac{2}{7}$ from $\frac{19}{21}$

ii) $\frac{21}{25}$ from $\frac{18}{20}$

iii) $\frac{7}{16}$ from $\frac{2}{1}$

iv) $\frac{4}{15}$ from $2\frac{1}{5}$

Solution:

i) Given: 2/7 and 19/21

$$\frac{2}{7}+\frac{19}{21}$$

LCM of 21 and 7 is 21, so we will convert each fraction into an equivalent fraction with denominator 21.

$$=\frac{19 \text{ x } 1}{21 \text{ x } 1}-\frac{2 \text{ x } 3}{7 \text{ x } 3}$$

$$=\frac{19}{21}-\frac{6}{21}$$

$$=\frac{19-6}{21}=\frac{13}{21}$$

ii) Given: 21/25 and 18/20

$$\frac{18}{20}-\frac{21}{25}$$

LCM of 20 and 25 is 100, so we will convert each fraction into an equivalent fraction with denominator 100.

$$= \frac{18 \times 5}{20 \times 5} - \frac{21 \times 4}{25 \times 4}$$

$$= \frac{90}{100} - \frac{84}{100}$$

$$= \frac{90 - 84}{100} = \frac{6}{100}$$

iii) Given: 2/1 and 7/16

$$\frac{2}{1} - \frac{7}{16}$$

LCM of 1 and 16 is 16, so we will convert each fraction into an equivalent fraction with denominator 16.

$$= \frac{16 \times 2}{16 \times 1} - \frac{7 \times 1}{16 \times 1}$$

$$= \frac{32}{16} - \frac{7}{16}$$

$$= \frac{32 - 7}{16} = \frac{25}{16}$$

iv) Given: $2\frac{1}{5}$ and $4\frac{1}{5}$

$$\frac{(2 \times 5) + 1}{5} - \frac{4}{15}$$

LCM of 5 and 15 is 15, so we will convert each fraction into an equivalent fraction with denominator 15.

$$= \frac{11 \times 3}{5 \times 3} - \frac{4 \times 1}{15 \times 1}$$

$$= \frac{33}{15} - \frac{4}{15}$$

$$= \frac{33 - 4}{15} = \frac{29}{15}$$

Question: 3

Find the difference of:

i) 13/24 and 7/16

i) 5/18 and 4/15

i) 1/12 and 3/4

i) 2/3 and 6/7

Solution:

i) Given: 13/24 and 7/16

$$\frac{13}{24} - \frac{7}{16}$$

$$= \frac{13 \times 2}{24 \times 2} - \frac{7 \times 3}{16 \times 3}$$

$$= \frac{26}{48} - \frac{21}{48} \text{ (because LCM of 24 and 16 is 48)}$$

$$= \frac{26-21}{48} = \frac{5}{48}$$

ii) Given: 5/18 and 4/15

$$\frac{5}{18} - \frac{4}{15}$$

$$= \frac{5 \times 5}{18 \times 5} - \frac{4 \times 6}{15 \times 6}$$

$$= \frac{25}{90} - \frac{24}{90} \text{ (because LCM of 18 and 15 is 90)}$$

$$= \frac{25-24}{90} = \frac{1}{90}$$

iii) Given: 3/4 and 1/12

$$\frac{3}{4}-\frac{1}{12}$$

$$=\frac{3\,x\,3}{4\,x\,3}-\frac{1\,x\,1}{12\,x1}$$

$$=\frac{9}{12}-\frac{1}{12}\ \text{(because LCM of 4 and 12 is 12)}$$

$$=\frac{9-1}{12}=\frac{8}{12}$$

iv) Given: 6/7 and 2/3

$$\frac{6}{7}-\frac{2}{3}$$

$$=\frac{6\,x\,3}{7\,x\,3}-\frac{2\,x\,7}{3\,x\,7}$$

$$=\frac{18}{21}-\frac{14}{21}\ \text{(because LCM of 7 and 3 is 21)}$$

$$=\ \frac{18-14}{21}=\frac{4}{21}$$

Question: 4

Subtract as indicated:

i) $\frac{8}{3}-\frac{5}{9}$

ii) $4\frac{2}{5}-2\frac{1}{5}$

iii) $5\frac{6}{7}-2\frac{2}{3}$

iv) $4\frac{3}{4}-2\frac{1}{6}$

Solution:

i) Given: 8/3 and 5/9

$$\frac{8}{3} - \frac{5}{9}$$

$$= \frac{8\,x\,3}{3\,x\,3} - \frac{5\,x\,1}{9\,x\,1}$$

$$= \frac{24}{9} - \frac{5}{9}$$ (because LCM of 3 and 9 is 9)

$$= \frac{24-5}{9} = \frac{19}{9}$$

ii) Given : $4\frac{2}{5}$ and $2\frac{1}{5}$

$$4\frac{2}{5} - 2\frac{1}{5}$$

$$\frac{(5\,x\,4)+2}{5} - \frac{(5\,x\,2)+1}{5}$$

$$= \frac{22}{5} - \frac{11}{5}$$

$$= \frac{22-11}{5} = \frac{11}{5}$$

iii) Given : $5\frac{6}{7}$ and $2\frac{2}{3}$

$$5\frac{6}{7} - 2\frac{2}{3}$$

$$= \frac{(5\,x\,7)+6}{7} - \frac{(3\,x\,2)+2}{3}$$

$$= \frac{41}{7} - \frac{8}{3}$$

$$= \frac{(41\,x\,3)}{7\,x\,3} - \frac{(8\,x\,7)}{3\,x\,7}$$

(because LCM of 7 and 3 is 21)

$$= \frac{123}{21} - \frac{56}{21}$$

$$= \frac{123-56}{21} = \frac{67}{21}$$

iv) Given: $4\frac{3}{4}$ and $2\frac{1}{6}$

$4\frac{3}{4} - 2\frac{1}{6}$

$= \frac{(4 \times 4) + 3}{4} - \frac{(6 \times 2) + 1}{6}$

$= \frac{19}{4} - \frac{13}{6}$

$= \frac{19 \times 3}{4 \times 3} - \frac{(13 \times 2)}{6 \times 2}$

(because LCM of 4 and 6 is 12)

$= \frac{57}{21} - \frac{26}{21}$

$= \frac{57-26}{21} = \frac{31}{12}$

Question: 5

Simplify:

i) $\frac{2}{3} + \frac{3}{4} + \frac{1}{2}$

ii) $\frac{5}{8} + \frac{2}{5} + \frac{3}{4}$

iii) $\frac{3}{10} + \frac{7}{15} + \frac{3}{5}$

iv) $\frac{3}{4} + \frac{7}{16} + \frac{5}{8}$

v) $4\frac{2}{3} + 3\frac{1}{4} + 7\frac{1}{2}$

vi) $\frac{7}{13} + 3\frac{2}{3} + 5\frac{1}{6}$

vii) $\frac{7}{1} + \frac{7}{4} + 5\frac{1}{6}$

viii) $\frac{5}{6} + \frac{3}{1} + \frac{3}{4}$

ix) $\frac{7}{18} + \frac{5}{6} + 1\frac{1}{12}$

Solution:

i) given: $\frac{2}{3}+\frac{3}{4}+\frac{1}{2}$

$=\frac{2\text{ x }4}{3\text{ x }4}+\frac{3\text{ x }3}{4\text{ x }3}+\frac{1\text{ x }6}{2\text{ x }6}$ (because LCM of 3, 4 and 2 is 12)

$=\frac{8}{12}+\frac{9}{12}+\frac{6}{12}$

$=\frac{8+9+6}{12}=\frac{23}{12}$

ii) given: $\frac{5}{8}+\frac{2}{5}+\frac{3}{4}$

$=\frac{5\,x\,5}{8\,x\,5}+\frac{2\,x\,8}{5\,x\,8}+\frac{3\,x\,10}{4\,x\,10}$ (because LCM of 8, 5 and 4 is 40)

$=\frac{25}{40}+\frac{16}{40}+\frac{30}{40}$

$=\frac{25+16+30}{40}=\frac{71}{40}$

iii) given: $\frac{3}{10}+\frac{2}{5}+\frac{3}{4}$

$=\frac{5\text{ x }5}{8\text{ x }5}+\frac{2\text{ x }8}{5\text{ x }8}+\frac{3\text{ x }10}{4\text{ x }10}$ (because LCM of 8, 5 and 4 is 40)

$=\frac{25}{40}+\frac{16}{40}+\frac{30}{40}$

$=\frac{25+16+30}{40}=\frac{71}{40}$

iv) given: $\frac{3}{4}+\frac{7}{16}+\frac{5}{8}$

$=\frac{3\text{ x }4}{4\text{ x }4}+\frac{7\text{ x }1}{16\text{ x }1}+\frac{5\text{ x }2}{8\text{ x }2}$ (because LCM of 4, 16 and 8 is 16)

$=\frac{12}{16}+\frac{7}{16}+\frac{10}{16}$

$=\frac{12+7+10}{16}=\frac{29}{16}$

v) given: $4\frac{2}{3} + 3\frac{1}{4} + 7\frac{1}{2}$

$= \frac{(4 \times 3) + 2}{3} + \frac{(3 \times 4) + 1}{4} + \frac{(7 \times 2) + 1}{2}$

$= \frac{14}{3} + \frac{13}{4} + \frac{15}{2}$

$= \frac{14 \times 4}{3 \times 4} + \frac{13 \times 3}{4 \times 3} + \frac{15 \times 6}{2 \times 6}$ (because LCM of 3, 4 and 2 is 12)

$= \frac{56}{12} + \frac{39}{12} + \frac{90}{12}$

$= \frac{56 + 39 + 90}{12} = \frac{185}{12}$

vi) given: $7\frac{1}{3} + 3\frac{2}{4} + 5\frac{1}{6}$

$= \frac{(7 \times 3) + 1}{3} + \frac{(3 \times 4) + 2}{4} + \frac{(5 \times 6) + 1}{6}$

$= \frac{22}{3} + \frac{14}{4} + \frac{31}{6}$

$= \frac{22 \times 4}{3 \times 4} + \frac{14 \times 3}{4 \times 3} + \frac{31 \times 2}{6 \times 2}$ (because LCM of 3, 4 and 6 is 12)

$= \frac{88}{12} + \frac{42}{12} + \frac{62}{12}$

$= \frac{88 + 42 + 62}{12} = \frac{16}{1}$

(HCF of numerator and denominator is 12)

vii) given : $\frac{7}{1}+\frac{7}{4}+5\frac{1}{6}$

$=\frac{7 \times 12}{1 \times 12}+\frac{7 \times 3}{4 \times 3}+\frac{31 \times 2}{6 \times 2}$ (because LCM of 1, 4 and 6 is 12)

$=\frac{84}{12}+\frac{21}{12}+\frac{62}{12}$

$=\frac{84+21+62}{12}=\frac{167}{12}$

viii) given : $\frac{5}{6}+\frac{3}{1}+\frac{3}{4}$

$=\frac{5 \times 2}{6 \times 2}+\frac{3 \times 12}{1 \times 12}+\frac{3 \times 3}{4 \times 3}$ (because LCM of 6, 1 and 4 is 12)

$=\frac{10}{12}+\frac{36}{12}+\frac{9}{12}$

$=\frac{10+36+9}{12}=\frac{55}{12}$

ix) given : $\frac{7}{18}+\frac{5}{6}+1\frac{1}{12}$

$=\frac{7}{18}+\frac{5}{6}+\frac{13}{12}$

$=\frac{7 \times 2}{18 \times 2}+\frac{5 \times 6}{6 \times 6}+\frac{13 \times 3}{12 \times 3}$

$=\frac{14}{36}+\frac{30}{36}+\frac{39}{36}$

$=\frac{14+30+39}{36}=\frac{83}{36}$

Question: 6

Replace * with a correct number:

i) $* - \frac{5}{8} = \frac{1}{4}$

ii) $* - \frac{1}{5} = \frac{1}{2}$

iii) $\frac{1}{2} - * = \frac{1}{6}$

Solution:

i) $* - \frac{5}{8} = \frac{1}{4}$

$* = \frac{5}{8} + \frac{1}{4}$

$* = \frac{1 \text{ x } 2}{4 \text{ x } 2} + \frac{5 \text{ x } 1}{8 \text{ x } 1}$

$* = \frac{2}{8} + \frac{5}{8} = \frac{2+5}{8} = \frac{7}{8}$

Therefore, 7/8

ii) $* - \frac{1}{5} = \frac{1}{2}$

$* = \frac{1}{2} + \frac{1}{5}$

$* = \frac{1 \text{ x } 5}{5 \text{ x } 2} + \frac{1 \text{ x } 2}{2 \text{ x } 5}$

$= \frac{5}{10} + \frac{2}{10}$

$= \frac{5+2}{10} = \frac{7}{10}$

iii) $\frac{1}{2} - * = \frac{1}{6}$

$* = \frac{1}{2} - \frac{1}{6}$

$* = \frac{1 \text{ x } 3}{2 \text{ x } 3} - \frac{1 \text{ x } 1}{6 \text{ x } 1}$ (because LCM of 2 and 6 is 6)

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

$= \frac{1}{3}$

Question: 7

Savita bought 2/5 m of ribbon and kavita 3/4 m of ribbon. What was the total length of the ribbon they bought?

Solution:

Length of the ribbon bought by savita = 2/5 metres

Length of the ribbon bought by kavita = 3/4 metres

Total length of the ribbon bought by them:

$$\frac{2}{5}\text{metres} + \frac{3}{4}\text{metres}$$

$$= \frac{2 \text{ x } 4}{5 \text{ x } 4} \text{ metres} + \frac{3 \text{ x } 5}{4 \text{ x } 5}\text{metres}$$

(because LCM of 5 and 4 is 20)

$$= \frac{8}{20}\text{metres} + \frac{15}{20}\text{metres} = \frac{8+15}{20} \text{ metres}$$

$$= \frac{23}{20} \text{ metres}$$

Question: 8

Ravish takes $2\frac{1}{5}$ minutes to walk across the school ground. Rahul takes 7/4 minutes to do the same. Who takes less time and by what fraction?

Solution:

$$\text{Time taken by ravish} = 2\frac{1}{5} = \frac{(5 \text{ x } 2)+1}{5} = \frac{11}{5} \text{ minutes}$$

$$\text{Time taken by rahul} = \frac{7}{4} \text{ minutes}$$

$$\text{Comparing } \frac{11}{5} \text{ minutes and } \frac{7}{4} \text{ minutes, we get:}$$

$$\frac{11\text{x } 4}{5 \text{ x } 4} \text{ minutes}, \frac{7 \text{ x } 5}{4 \text{ x } 5} \text{ minutes}$$

(LCM of 4 and 5 is 20, so will we convert each fraction into an equivalent fraction with denominator 20)

$$\frac{44}{20} > \frac{35}{20}$$

Rahul takes less time,

$$\text{i. e,} \frac{44}{20} - \frac{35}{20} = \frac{44-35}{20} = \frac{9}{20} \text{ minutes.}$$

Question: 9

A piece of a wire 7/8 metres long broke into two pieces. One piece was 1/4 meter long. How long is the other piece?

Solution:

Length of the wire = 7/8 metres

Length of one piece of wire = 1/4 metres

Let the length of the second piece of wire be x m.

Therefore, Length of the wire = length of one piece + length of the second piece

$$\frac{7}{8}\ \text{metres} = \frac{1}{4}\ \text{metres} + x$$

$$X = \frac{7}{8}\ \text{metres} - \frac{1}{4}\ \text{metres}$$

$$X = \frac{7 \times 1}{8 \times 1}\ \text{metres} - \frac{1 \times 2}{4 \times 2}\ \text{metres}$$

$$= \frac{7}{8}\ \text{metres} - \frac{2}{8}\ \text{metres}$$

$$= \frac{7-2}{8}\ \text{metres}$$

$$X = \frac{5}{8}\ \text{metres}$$

Therefore, the length of the second piece is 5/8 metres

Question: 10

Shikha and priya have bookshelves of the same size shikha's shelf is 5/6 full of book and priya's shelf is 2/5 full. Whose bookshelf is more full? By what fraction?

Solution:

Fraction of shikha's filled bookshelf = 5/6

Fraction of Priya's filled bookshelf = 2/5

Comparing 5/6 and 2/5, we get :

LCM of 5 and 6 is 30, so will convert each fraction into an equivalent fraction with denominator 30.

$$= \frac{5 \text{ x } 5}{6 \text{ x } 5} \text{ metres}, \frac{2 \text{ x } 6}{5 \text{ x } 6} \text{ metres}$$

$$\frac{25}{30} > \frac{12}{30}$$

Shikha’s shelf is more full.

Therefore,

$$\frac{25}{30} - \frac{12}{30} = \frac{25 - 12}{30} = \frac{13}{30}$$

Question: 11

Ravish’s house is 9/10 Km from his school. He walked some distance and then took a bus for 1/2 Km. How far did he walk?

Solution:

Total distance between the house and the school = 9/10 Km

Distance covered in the bus = 1/2 Km

Distance covered by walking + distance covered in the bus = total distance between

the house and the school

Distance covered by walking = total distance between the house and the school – Distance

covered in the bus

Distance covered by walking:

9/10 Km – 1/2 Km

LCM of 10 and 2 is 10, so we convert each fraction into an equivalent fraction with denominator 10

$$= \frac{9 \times 1}{10 \times 1} - \frac{1 \times 5}{2 \times 5} = \frac{9}{10} - \frac{5}{10}$$

$$= \frac{9-5}{10} = \frac{4}{10}\ \text{km} = \frac{2}{5}\ \text{km}$$

(HCF of numerator and denominator is 2)