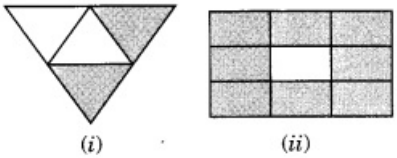
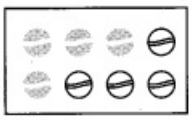
Fractions Class 6 Ex 7.1

Ex 7.1 Class 6 Maths Question 1.
Write the fraction representing the shaded portion.


(i)

(ii)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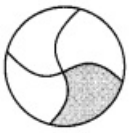
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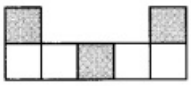
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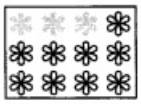
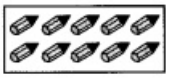
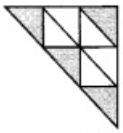
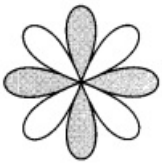
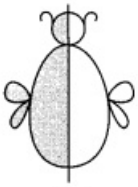

(vi)


(vii)


(viii)


(ix)


(x)

Solution:
(i) Total number of parts = 4
Number of shaded parts = 2
∴ Fraction = $\frac{2}{4}$

(ii) Total number of parts = 9
Number of shaded parts = 8
∴ Fraction = $\frac{8}{9}$

(iii) Total number of parts = 8
Number of shaded parts = 4
∴ Fraction = $\frac{4}{8}$

(iv) Total number of parts = 4
Number of shaded parts = 1
∴ Fraction = $\frac{1}{4}$

(v) Total number of parts = 7
Number of shaded parts = 3
∴ Fraction = $\frac{3}{7}$

(vi) Total number of parts = 12
Number of shaded parts = 3
∴ Fraction = $\frac{3}{12}$

(vii) Total number of parts = 10
Number of shaded parts = 10
∴ Fraction = $\frac{10}{10}$

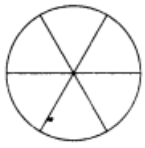
(viii) Total number of parts = 9
Number of shaded parts = 4
∴ Fraction = $\frac{4}{9}$

(ix) Total number of parts = 8
Number of shaded parts = 4

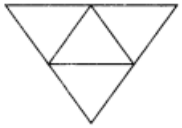
∴ Fraction = $\frac{4}{8}$

(x) Total number of parts = 2
Number of shaded part = 1
∴ Fraction = $\frac{1}{2}$

Ex 7.1 Class 6 Maths Question 2.
Colour the part according to the given fraction.



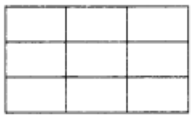
(i) $\frac{1}{6}$



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

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

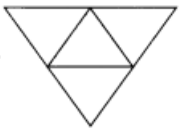
(iv) $\frac{3}{4}$



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

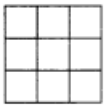
Solution:

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

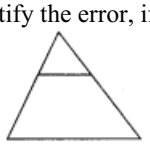
(ii) $\frac{1}{4}$ 

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

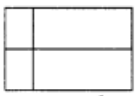
(iv) $\frac{3}{4}$ 

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

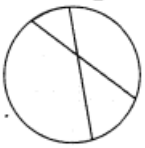
Ex 7.1 Class 6 Maths Question 3.
Identify the error, if any.

(a) 

This is $\frac{1}{2}$

(b) 

This is $\frac{1}{4}$

(c) 

This is $\frac{3}{4}$

Solution:
(a) Since the shaded part is not half.
∴ This is not $\frac{1}{2}$.

(b) Since, the parts are not equal.
∴ Shaded part is not $\frac{1}{4}$.

(c) Since, the part are not equal.
∴ Shaded part is not $\frac{3}{4}$.

Ex 7.1 Class 6 Maths Question 4.

What fraction of a day is 8 hours?
Solution:
Since, a day has 24 hours and we have 8 hours,
∴ Required fraction = $\frac{8}{24}$

Ex 7.1 Class 6 Maths Question 5.
What fraction of a hour is 40 minutes?
Solution:
Since I hours = 60 minutes
∴ Fraction of 40 minutes = $\frac{40}{60}$

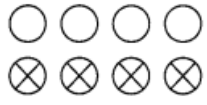
Ex 7.1 Class 6 Maths Question 6.
Arya, Abhimanyu and Vivek shared lunch. Arya has brought two sandwiches, one made of vegetable and one of Jam. The other two boys forgot to bring their lunch. Arya agreed to share his sandwiches so that each person will have an equal share of each sandwich.
(a) How can Arya divide his sandwiches so that each person has an equal share?
(b) What part of a sandwich will each boy receive?
Solution:
(a) Arya has divided his sandwich into three equal parts.
So, each of them will get one part.
(b) Each one of them will receive $\frac{1}{3}$ part.
∴ Required fraction = $\frac{1}{3}$

Ex 7.1 Class 6 Maths Question 7.
Kanchan dyes dresses. She had to dye 30 dresses. She has so far finished 20 dresses. What fraction of dresses has she finished?
Solution:
Total number of dresses to be dyed = 30
Number of dresses finished = 20
∴ Required fraction = $\frac{20}{30} = \frac{2}{3}$

Ex 7.1 Class 6 Maths Question 8.
Write the natural numbers from 2 to 12. What fraction of them are prime numbers?
Solution:
Natural numbers between 2 and 12 are;
2,3,4, 5, 6, 7, 8, 9, 10,11, 12
Number of given natural numbers = 11
Number of prime numbers = 5
∴ Required fraction = $\frac{5}{11}$

Ex 7.1 Class 6 Maths Question 9.
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, 112,113
Total number of given natural numbers = 12
Prime numbers are 103, 107, 109, 113
∴ Number of prime numbers = 4
∴ Required fraction = $\frac{4}{12} = \frac{1}{3}$

Ex 7.1 Class 6 Maths Question 10.
What fraction of these circles have X's in them?



Solution:
Total number'of circles = 8
Number of circles having X's in them = 4
Required fraction = $\frac{4}{8} = \frac{1}{2}$

Ex 7.1 Class 6 Maths Question 11.
Kristin received a CD player for her birthday. She bought 3 CDs and received 5 others as gifts. What fraction of her total CDs did she buy and what fraction did she receive as gifts?
Solution:
Number of CDs bought by her from the market = 3
Number of CD's received as gifts = 5
∴ Total number of CDs = 3 + 5 = 8

∴ Fraction of CD (bought) = $\frac{3}{8}$ and the fraction of CDs (gifted) = $\frac{5}{8}$

Fractions Class 6 Ex 7.2

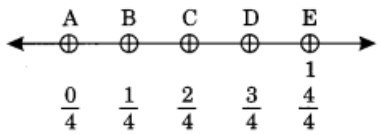
Ex 7.2 Class 6 Maths Question 1.
Draw number lines and locate the points on them.

(a) $\frac{1}{2}, \frac{1}{4}, \frac{3}{4}, \frac{4}{4}$ (b) $\frac{1}{8}, \frac{2}{8}, \frac{3}{8}, \frac{7}{8}$

(c) $\frac{2}{5}, \frac{3}{5}, \frac{8}{5}, \frac{4}{5}$

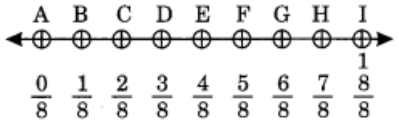
Solution:

(a) $\frac{1}{2}, \frac{1}{4}, \frac{3}{4}, \frac{4}{4}$



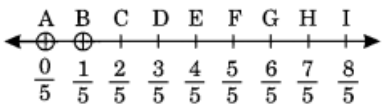
We have divided the number line from 0 to 1 into four equal parts.
C represents $\frac{2}{4}$ i,e., $\frac{1}{2}$
B represents $\frac{1}{4}$
D represents $\frac{3}{4}$
and E represents $\frac{4}{4}$, i.e., 1.

(b) $\frac{1}{8}, \frac{2}{8}, \frac{3}{8}, \frac{7}{8}$



We have divided the number line from 0 to 1 into eight equal parts.
B represents $\frac{1}{8}$
C represents $\frac{2}{8}$
D represents $\frac{3}{8}$
and H represents $\frac{7}{8}$

(c) $\frac{2}{5}, \frac{3}{5}, \frac{8}{5}, \frac{4}{5}$



From the above number line, we have
C represents $\frac{2}{5}$
D represents $\frac{3}{5}$
E represents $\frac{4}{5}$
and I represents $\frac{8}{5}$

Ex 7.2 Class 6 Maths Question 2.
Express the following as mixed fractions:

(a) $\frac{20}{3}$ (b) $\frac{11}{5}$ (c) $\frac{17}{7}$

(d) $\frac{28}{5}$ (e) $\frac{19}{6}$ (f) $\frac{35}{9}$

Solution:

(a) $\frac{20}{3}$

We have,

$$\begin{array}{r} 3\overline{)20}(6 \\ -18 \\ \hline 2 \end{array}$$

$\therefore \frac{20}{3} = 6\frac{2}{3}$

(b) $\frac{11}{5}$

We have,

$$\begin{array}{r} 5\overline{)11}(2 \\ -10 \\ \hline 1 \end{array}$$

$\therefore \frac{11}{5} = 2\frac{1}{5}$

(c) $\frac{17}{7}$

We have,

$$\begin{array}{r} 7\overline{)17}(2 \\ -14 \\ \hline 3 \end{array}$$

$\therefore \frac{17}{7} = 2\frac{3}{7}$

(d) $\frac{28}{5}$

We have,

$$\begin{array}{r} 5\overline{)28}(5 \\ -25 \\ \hline 3 \end{array}$$

$\therefore \frac{28}{5} = 5\frac{3}{5}$

(e) $\frac{19}{6}$

We have,

$$\begin{array}{r} 6\overline{)19}(3 \\ -18 \\ \hline 1 \end{array}$$

$\therefore \frac{19}{6} = 3\frac{1}{6}$

(f) $\frac{35}{9}$

We have,

$$\begin{array}{r} 9\overline{)35}(3 \\ -27 \\ \hline 8 \end{array}$$

$\therefore \frac{35}{9} = 3\frac{8}{9}$

Ex 7.2 Class 6 Maths Question 3.
Express the following as improper fractions:

(a) $7\frac{3}{4}$ (b) $5\frac{6}{7}$ (c) $2\frac{5}{6}$

(d) $10\frac{3}{5}$ (e) $9\frac{3}{7}$ (f) $8\frac{4}{9}$

Solution:

(a) $7\frac{3}{4} = \frac{7\times4+3}{4} = \frac{31}{4} \quad \therefore \quad 7\frac{3}{4} = \frac{31}{4}$

(b) $5\frac{6}{7} = \frac{5\times7+6}{7} = \frac{41}{7} \quad \therefore \quad 5\frac{6}{7} = \frac{41}{7}$

(c) $2\frac{5}{6} = \frac{2\times6+5}{6} = \frac{17}{6} \quad \therefore \quad 2\frac{5}{6} = \frac{17}{6}$

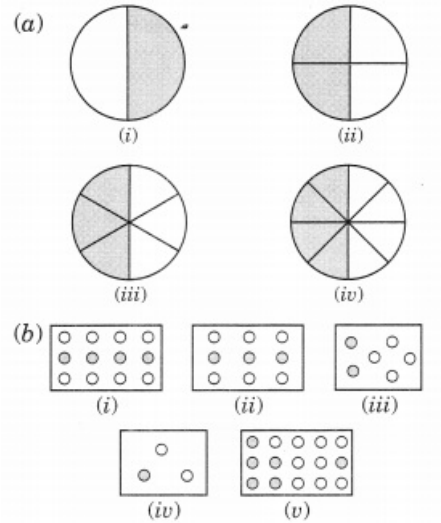
(d) $10\frac{3}{5} = \frac{10\times5+3}{5} = \frac{53}{5} \quad \therefore \quad 10\frac{3}{5} = \frac{53}{5}$

(e) $9\frac{3}{7} = \frac{9\times7+3}{7} = \frac{66}{7} \quad \therefore \quad 9\frac{3}{7} = \frac{66}{7}$

(f) $8\frac{4}{9} = \frac{8\times9+4}{9} = \frac{76}{9} \quad \therefore \quad 8\frac{4}{9} = \frac{76}{6}$

Fractions Class 6 Ex 7.3

Ex 7.3 Class 6 Maths Question 1.
Write the fractions. Are all these fractions equivalent?



Solution:

(a) (i) Shaded part $= \frac{1}{2}$

(ii) Shaded part $= \frac{2}{4} = \frac{2\div2}{4\div2} = \frac{1}{2}$

(iii) Shaded part $= \frac{3}{6} = \frac{3\div3}{6\div3} = \frac{1}{2}$

(iv) Shaded part $= \frac{4}{8} = \frac{4\div4}{8\div4} = \frac{1}{2}$

$\therefore$ All fractions are equivalent.

(b) (i) Shaded part $= \frac{4}{12} = \frac{4\div4}{12\div4} = \frac{1}{3}$

(ii) Shaded part $= \frac{3}{9} = \frac{3\div3}{9\div3} = \frac{1}{3}$

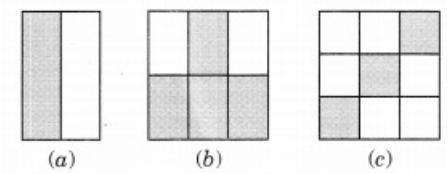
(iii) Shaded part $= \frac{2}{6} = \frac{2\div2}{6\div2} = \frac{1}{3}$

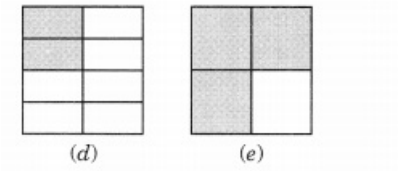
(iv) Shaded part $= \frac{1}{3}$

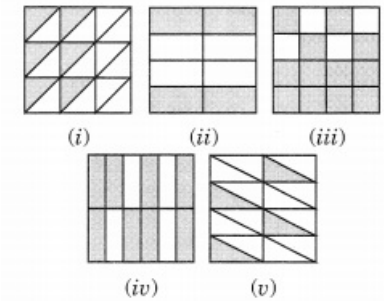
(v) Shaded part $= \frac{6}{15} = \frac{6\div3}{15\div3} = \frac{2}{5}$

Since all the fractions in their simplest form are not equal.
$\therefore$ They are not equivalent fractions.

Ex 7.3 Class 6 Maths Question 2.
Write the fractions and pair up the equivalent fractions from each row.







Solution:

(a) $\frac{1}{2}$ (b) $\frac{4}{6}=\frac{4\div 2}{6\div 2}=\frac{2}{3}$

(c) $\frac{3}{9}=\frac{3\div 3}{9\div 3}=\frac{1}{3}$ (d) $\frac{2}{8}=\frac{2\div 2}{8\div 2}=\frac{1}{4}$

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

(i) $\frac{6}{18}=\frac{6\div 6}{18\div 6}=\frac{1}{3}$ (ii) $\frac{4}{8}=\frac{4\div 4}{8\div 4}=\frac{1}{2}$

(iii) $\frac{12}{16}=\frac{12\div 4}{16\div 4}=\frac{3}{4}$ (iv) $\frac{8}{12}=\frac{8\div 4}{12\div 4}=\frac{2}{3}$

(v) $\frac{4}{16}=\frac{4\div 4}{16\div 4}=\frac{1}{4}$

The following pairs fractions:represent the equivalent fractions.

(a) and (ii) = $\frac{1}{2}$

(b) and (iv) = $\frac{2}{3}$

(c) and (i) = $\frac{1}{3}$

(d) and (v) = $\frac{1}{4}$

(e) and (iii) = $\frac{3}{4}$

Ex 7.3 Class 6 Maths Question 3.

Replace $\square$ in each of the following by the correct number:

(a) $\frac{2}{7}=\frac{8}{\square}$ (b) $\frac{5}{8}=\frac{10}{\square}$

(c) $\frac{3}{5}=\frac{\square}{20}$ (d) $\frac{45}{60}=\frac{15}{\square}$

(e) $\frac{18}{24}=\frac{\square}{4}$

Solution:

(a) Given that: $\frac{2}{7}=\frac{8}{\square}$

$\Rightarrow \quad 2 \times \square = 7 \times 8 \quad \Rightarrow \quad \square = \frac{7 \times 8}{2} = 28$

$\therefore \quad \frac{2}{7} = \frac{8}{\boxed{28}}$

(b) Given that: $\frac{5}{8} = \frac{10}{\square} \Rightarrow 5 \times \square = 8 \times 10$

$\Rightarrow \quad \square = \frac{8 \times 10}{5} = 16$

$\therefore \quad \frac{5}{8} = \frac{10}{\boxed{16}}$

(c) Given that: $\frac{3}{5} = \frac{\square}{20} \Rightarrow 5 \times \square = 3 \times 20$

$\Rightarrow \quad \square = \frac{3 \times 20}{5} = 12$

$\therefore \quad \frac{3}{5} = \frac{\boxed{12}}{20}$

(d) Given that: $\frac{45}{60} = \frac{15}{\square} \Rightarrow 45 \times \square = 15 \times 60$

$\Rightarrow \quad \square = \frac{15 \times 60}{45} = 20$

$\therefore \quad \frac{45}{60} = \frac{15}{\boxed{20}}$

(e) Given that: $\frac{18}{24} = \frac{\square}{4} \Rightarrow 24 \times \square = 18 \times 4$

$\Rightarrow \quad \square = \frac{18 \times 4}{24} = 3$

$\therefore \quad \frac{18}{24} = \frac{\boxed{3}}{4}$

Ex 7.3 Class 6 Maths Question 4.

Find the equivalent fraction of $\frac{3}{5}$ having

(a) denominator 20

(b) numerator 9

(c) denominator 30

(d) numerator 27

Solution:

(a) Here, we require denominator 20.

Let N be the numerator of the fractions.

$\therefore \quad \frac{N}{20} = \frac{3}{5} \quad \Rightarrow \quad 5 \times N = 20 \times 3$

$\Rightarrow \quad N = \frac{20 \times 3}{5} = 12$

$\therefore$ The required fraction is $\frac{12}{20}$

(b) Here, we required numerator 9.

Let D be the denominator of the fraction.

$\therefore \quad \frac{9}{D} = \frac{3}{5} \quad \Rightarrow \quad 3 \times D = 9 \times 5$

$\Rightarrow \quad D = \frac{9 \times 5}{3} = 15$

$\therefore$ The required fraction is $\frac{9}{15}$.

(c) Here, we required denominator 30.

Let N be the numerator of the fraction.

$\therefore \quad \frac{N}{30} = \frac{3}{5} \quad \Rightarrow \quad 5 \times N = 3 \times 30$

$\Rightarrow \quad N = \frac{3 \times 30}{5} = 18$

$\therefore$ The required fraction is $\frac{18}{30}$.

(d) Here, we required numerator 27.
Let D be the denominator of the fraction.

$$\therefore \quad \frac{27}{D} = \frac{3}{5} \quad \Rightarrow \quad 3 \times D = 5 \times 27$$

$$\Rightarrow \quad D = \frac{5 \times 27}{3} = 45$$

$\therefore$ The required fraction is $\frac{27}{45}$.

Ex 7.3 Class 6 Maths Question 5.
Find the equivalent fraction of $\frac{36}{48}$ with
(a) numerator 9
(b) denominator 4
Solution:
(a) Given that numerator = 9

$$\therefore \quad \frac{9}{D} = \frac{36}{48} \quad \Rightarrow \quad D \times 36 = 9 \times 48$$

$$\Rightarrow \quad D = \frac{9 \times 48}{36} = 12$$

So, the equivalent fraction is $\frac{9}{12}$.

(b) Given that denominator = 4
$\therefore \frac{N}{4} = \frac{36}{48} \Rightarrow$ N x 48 = 4 x 36
$\Rightarrow N = \frac{4x36}{48} = 3$
So, the equivalent fraction is $\frac{3}{4}$.

Ex 7.3 Class 6 Maths Question 6.
Check whether the given fractions are equivalent:

$$(a)\ \frac{5}{9}, \frac{30}{54} \qquad (b)\ \frac{3}{10}, \frac{12}{50} \qquad (c)\ \frac{7}{13}, \frac{5}{11}$$

Solution:
(a) $\frac{5}{9}$ and $\frac{30}{54}$
We have 5 x 54 = 270
and 9 x 30 = 270
Here 5 x 54 = 9 x 30
$\therefore$ $\frac{5}{9}$ and $\frac{30}{54}$ are equivalent fractions.

(b) $\frac{3}{10}$ and $\frac{12}{50}$
We have 3 x 50 = 150
and 10 x 12 = 120
Here 3 x 50 $\neq$ 10 x 12
$\therefore$ $\frac{3}{10}$ and $\frac{12}{50}$ are not equivalent fractions.

(c) $\frac{7}{13}$ and $\frac{5}{11}$
We have 7 x 11 = 77 and 5 x 13 = 65
Here 7 x 11 $\neq$ 5 x 13
$\therefore$ $\frac{7}{13}$ and $\frac{5}{11}$ are not equivalent fractions.

Ex 7.3 Class 6 Maths Question 7.
Reduce the following fractions to simplest form:

$$(a)\ \frac{48}{60} \qquad (b)\ \frac{150}{60} \qquad (c)\ \frac{84}{98}$$

$$(d)\ \frac{12}{52} \qquad (e)\ \frac{7}{28}$$

Solution:

(a) $\frac{48}{60}$

We have

48 = 1, 2, 3, 4, 6, 8, (12), 16, 24, 48

60 = 1, 2, 3, 4, 5, 6, 10, (12), 15, 20, 30, 60

$\therefore$ HCF = 12

So, $\frac{48 \div 12}{60 \div 12} = \frac{4}{5}$

Hence, $\frac{48}{60} = \frac{4}{5}$

(b) $\frac{150}{60}$

We have

150 = 1, 2, 3, 5, 6, 10, 15, 25, (30), 50, 75, 150

60 = 1, 2, 3, 4, 5, 6, 10, 12, 15, 20, (30), 60

$\therefore$ HCF = 30

So, $\frac{150 \div 30}{60 \div 30} = \frac{5}{2}$

Hence, $\frac{150}{60} = \frac{5}{2}$

(c) $\frac{84}{98}$

We have

84 = 1, 2, 3, 4, 6, 7, 12, (14), 21, 28, 42, 84

98 = 1, 2, 7, (14), 49, 98

$\therefore$ HCF = 14

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

Hence, $\frac{84}{98} = \frac{6}{7}$,

(d) $\frac{12}{52}$

We have 12 = 1, 2, 3, (4), 6, 12

52 = 1, 2, (4), 13, 26, 52

$\therefore$ HCF = 4

So, $\frac{12 \div 4}{52 \div 4} = \frac{3}{13}$

Hence, $\frac{12}{52} = \frac{3}{13}$

(e) $\frac{7}{28}$

We have 7 = 1, (7)

28 = 1, 2, 4, (7), 14, 28

$\therefore$ HCF = 7

So, $\frac{7 \div 7}{28 \div 7} = \frac{1}{4}$

Hence, $\frac{7}{28} = \frac{1}{4}$

Ex 7.3 Class 6 Maths Question 8.

Ramesh had 28 pencils, Sheelu had 50 pencils and Jamaal had 80 pencils. After 4 months, Ramesh used up 10 pencils, Sheelu used up 25 pencils and Jamaal used up 40 pencils. What fraction did each use up? Check if each has used up an equal fraction of her/his pencils.

Solution:

Ramesh used up 10 pencils out of 20 pencils.

$\therefore$ Fraction = $\frac{10}{20} = \frac{1}{2}$

Sheelu used up 25 pencils out of 50 pencils.

$\therefore$ Fraction = $\frac{25}{50} = \frac{25 \div 25}{50 \div 25} = \frac{1}{2}$

Jamaal used up 40 pencils out of 80 pencils.

$\therefore$ Fraction = $\frac{40}{80} = \frac{4}{8} = \frac{1}{2}$

Yes, each has used up an equal fractions, i.e., $\frac{1}{2}$.

Ex 7.3 Class 6 Maths Question 9.
Match the equivalent fractions and write two more for each.

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

Solution:

$(i)\ \frac{250}{400}$

Factors of $250 = 2 \times 5 \times 5 \times 5$

Factors of $400 = 2 \times \boxed{2 \times 2 \times 2} \times 5 \times 5$

$HCF = 2 \times 5 \times 5 = 50$

$\therefore \quad \frac{250 \div 50}{400 \div 50} = \frac{5}{8}$

$\therefore \frac{250}{400} \leftrightarrow \frac{5}{8}$ or $(i) \leftrightarrow (d)$

Two additional examples of equivalent fractions are

$(a)\ \frac{5}{8} \times \frac{3}{3} = \frac{15}{24}$ $(b)\ \frac{5}{8} \times \frac{5}{5} = \frac{25}{40}$

$(ii)\ \frac{180}{200}$

Factors of $180 = \boxed{2} \times \boxed{2} \times 3 \times 3 \times \boxed{5}$

Factors of $200 = \boxed{2} \times \boxed{2} \times 2 \times 5 \times \boxed{5}$

$HCF = 2 \times 2 \times 5 = 20$

$\therefore \quad \frac{180 \div 20}{200 \div 20} = \frac{9}{10}$

$\therefore \frac{180}{200} \leftrightarrow \frac{9}{10}$ or $(ii) \leftrightarrow (e)$

Two additional examples of equivalent fractions are

$(a)\ \frac{9}{10} \times \frac{2}{2} = \frac{18}{20}$ $(b)\ \frac{9}{10} \times \frac{3}{3} = \frac{27}{30}$

$(iii)\ \frac{660}{990}$

$\frac{660 \div 10}{990 \div 10} = \frac{66}{99}$

Factors of $66 = 2 \times \boxed{3} \times 11$

Factors of $99 = 3 \times \boxed{3} \times 11$

$HCF = 3 \times 11 = 33$

$\therefore \quad \frac{66 \div 33}{99 \div 33} = \frac{2}{3}$

So, $\frac{660}{990} \leftrightarrow \frac{2}{3}$ or $(iii) \leftrightarrow (a)$

Two additional examples of equivalent fractions are

(a) $\frac{2}{3}\times\frac{2}{2}=\frac{4}{6}$ (b) $\frac{2}{3}\times\frac{3}{3}=\frac{6}{9}$

(iv) $\frac{180}{360}$

$\frac{180\div10}{360\div10}=\frac{18}{36}$

Factors of $18 = \boxed{2}\times\textcircled{3}\times\textcircled{3}$

Factors of $36 = \boxed{2}\times 2\times\textcircled{3}\times\textcircled{3}$

$\therefore$ HCF $= 2\times3\times3=18$

$\therefore \quad \frac{18\div18}{36\div18}=\frac{1}{2}$

So, $\frac{180}{360}\leftrightarrow\frac{1}{2}$ or $(iv)\leftrightarrow(c)$

Two additional examples of equivalent fractions are

(a) $\frac{1}{2}\times\frac{3}{3}=\frac{3}{6}$ (b) $\frac{1}{2}\times\frac{5}{5}=\frac{5}{10}$

(v) $\frac{220}{550}$

$\frac{220\div10}{550\div10}=\frac{22}{55}$

Factors of $22 = 2\times\boxed{11}$

Factors of $55 = 5\times\boxed{11}$

HCF $= 11$

$\therefore \quad \frac{22\div11}{55\div11}=\frac{2}{5}$

So, $\frac{220}{550}\leftrightarrow\frac{2}{5}$ or $(v)\leftrightarrow(b)$

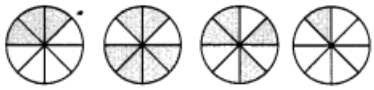
Two additional examples of equivalent fractions are

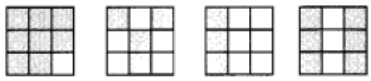
(a) $\frac{2}{5}\times\frac{2}{2}=\frac{4}{10}$ (b) $\frac{2}{5}\times\frac{3}{3}=\frac{6}{15}$

Fractions Class 6 Ex 7.4

Ex 7.4 Class 6 Maths Question 1.

Write shaded portion as fraction. Arrange them in ascending and descending order using correct sign '<', '=', '>' between the fractions.

(a) 

(b) 

(c) Show $\frac{2}{4}$, $\frac{4}{6}$, $\frac{8}{6}$ and $\frac{6}{6}$ on the number line. Put appropriate signs between the fractions given.

$\frac{5}{6}\square\frac{2}{6}$, $\frac{3}{6}\square 0$, $\frac{1}{6}\square\frac{6}{6}$, $\frac{8}{6}\square\frac{5}{6}$

Solution:

(a) Total number of divisions = 8

(i) Number of shaded parts = 3

$\therefore$ Fraction = $\frac{3}{8}$

(ii) Total number of divisions = 8

Number of shaded parts = 6

$\therefore$ Fraction = $\frac{6}{8}$

(iii) Total number of divisions = 8

Number of shaded parts = 4

$\therefore$ Fraction = $\frac{4}{8}$

(iv) Total number of divisions = 8

Number of shaded part = 1

$\therefore$ Fraction = $\frac{1}{8}$

Now the fractions are:

$\frac{3}{8}$, $\frac{6}{8}$, $\frac{4}{8}$ and $\frac{1}{8}$ with same denominator.

Ascending order: $\frac{1}{8} < \frac{3}{8} < \frac{4}{8} < \frac{6}{8}$

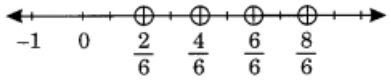
Descending order $\frac{6}{8} > \frac{4}{8} > \frac{3}{8} > \frac{1}{8}$

(b)(i) Total number of divisions = 9
Number of shaded parts = 8
∴ Fraction = $\frac{8}{9}$
(ii) Total number of divisions = 9
Number of shaded parts = 4
∴ Fraction = $\frac{4}{9}$
(iii) Total number of divisions = 9
Number of shaded parts = 3
∴ Fraction = $\frac{3}{9}$
(iv) Total number of divisions = 9
Number of shaded parts = 6
∴ Fraction = $\frac{6}{9}$
∴ Fractions are $\frac{8}{9}$, $\frac{4}{9}$, $\frac{3}{9}$, $\frac{6}{9}$ with same denominator.

Ascending order: $\frac{3}{9} < \frac{4}{9} < \frac{6}{9} < \frac{8}{9}$

Descending order $\frac{8}{9} > \frac{6}{9} > \frac{4}{9} > \frac{3}{9}$

(c) $\frac{2}{6}, \frac{4}{6}, \frac{8}{6}$ and $\frac{6}{6}$



Now $\frac{5}{6} \boxed{>} \frac{2}{6}, \frac{3}{6} \boxed{>} 0, \frac{1}{6} \boxed{<} \frac{6}{6}, \frac{8}{6} \boxed{>} \frac{5}{6}$

Ex 7.4 Class 6 Maths Question 2.
Compare the fractions and put an appropriate sign.

(a) $\frac{3}{6} \square \frac{5}{6}$ (b) $\frac{1}{7} \square \frac{1}{4}$

(c) $\frac{4}{5} \square \frac{5}{5}$ (d) $\frac{3}{5} \square \frac{3}{7}$

Solution:

(a) $\frac{3}{6} \square \frac{5}{6}$

Here, denominators of the two fractions are same and 3 < 5.

∴ $\frac{3}{6} \boxed{<} \frac{5}{6}$

(b) $\frac{1}{7} \square \frac{1}{4}$

Here, numerators of the fractions are same and 7 > 4.

∴ $\frac{1}{7} \boxed{<} \frac{1}{4}$

(c) $\frac{4}{5} \square \frac{5}{5}$

Here, denominators of the two fractions are same and 4 < 5.

∴ $\frac{4}{5} \boxed{<} \frac{5}{5}$

(d) $\frac{3}{5} \square \frac{3}{7}$

Here, numerators of the two fractions are same and 5 < 7.

∴ $\frac{3}{5} \boxed{>} \frac{3}{7}$

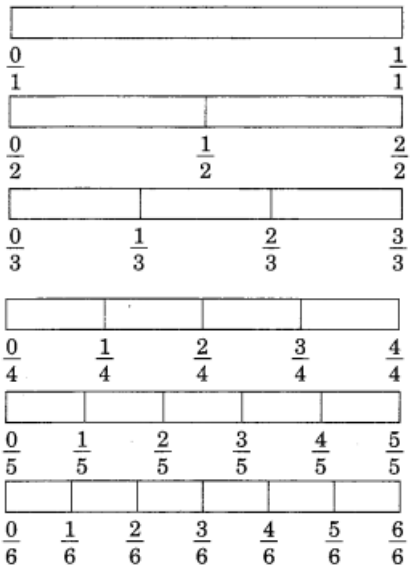
Ex 7.4 Class 6 Maths Question 3.
Make five more such pairs and put appropriate signs.
Solution:

(a) $\frac{2}{7} \boxed{>} \frac{2}{11}$ (b) $\frac{6}{8} \boxed{>} \frac{3}{8}$

(c) $\frac{4}{9} \boxed{>} \frac{3}{9}$ (d) $\frac{1}{9} \boxed{<} \frac{5}{9}$

(e) $\frac{4}{10} \boxed{<} \frac{6}{10}$

Ex 7.4 Class 6 Maths Question 4.
Look at the figures and write '<', or '>' '=' between the given pairs of fractions.



(a) $\frac{1}{6} \square \frac{1}{3}$ (b) $\frac{3}{4} \square \frac{2}{6}$

(c) $\frac{2}{3} \square \frac{2}{4}$ (d) $\frac{6}{6} \square \frac{3}{3}$

(e) $\frac{5}{6} \square \frac{5}{5}$

Make five more such problems and solve them with your friends
Solution:

(a) $\frac{1}{6} \boxed{<} \frac{1}{3}$ (b) $\frac{3}{4} \boxed{>} \frac{2}{6}$

(c) $\frac{2}{3} \boxed{>} \frac{2}{4}$ (d) $\frac{6}{6} \boxed{=} \frac{3}{3}$

(e) $\frac{5}{6} \boxed{<} \frac{5}{5}$

Make five more such problems yourself and solve them with your friends.

Ex 7.4 Class 6 Maths Question 5.
How quickly can you do this? Fill appropriate sign. '<', '=', '>'.

(a) $\frac{1}{2} \square \frac{1}{5}$ (b) $\frac{2}{4} \square \frac{3}{6}$ (c) $\frac{3}{5} \square \frac{2}{3}$

(d) $\frac{3}{4} \square \frac{2}{8}$ (e) $\frac{3}{5} \square \frac{6}{5}$ (f) $\frac{7}{9} \square \frac{3}{9}$

(g) $\frac{1}{4} \square \frac{2}{8}$ (h) $\frac{6}{10} \square \frac{4}{5}$ (i) $\frac{3}{4} \square \frac{7}{8}$

(j) $\frac{5}{7} \square \frac{15}{21}$

Solution:

(a) $\frac{1}{2} \square \frac{1}{5}$

We have $1 \times 5 = 5$ and $1 \times 2 = 2$

Here, $2 < 5 \quad \therefore \quad \frac{1}{2} \boxed{>} \frac{1}{5}$

(b) $\frac{2}{4} \square \frac{3}{6}$

We have $2 \times 6 = 12$ and $3 \times 4 = 12$

Here, $12 = 12 \quad \therefore \quad \frac{2}{4} \boxed{=} \frac{3}{6}$

(c) $\frac{3}{5} \square \frac{2}{3}$

We have $3 \times 3 = 9$ and $2 \times 5 = 10$

Here, $9 < 10 \quad \therefore \quad \frac{3}{5} \boxed{<} \frac{2}{3}$

(d) $\frac{3}{4} \square \frac{2}{8}$

We have $3 \times 8 = 24$ and $2 \times 4 = 8$

Here, $24 < 8 \quad \therefore \quad \frac{3}{4} \boxed{>} \frac{2}{8}$

(e) $\frac{3}{5} \square \frac{6}{5}$

We have $3 \times 5 = 15$ and $5 \times 6 = 30$

Here, $15 < 30 \quad \therefore \quad \frac{3}{5} \boxed{<} \frac{6}{5}$

(f) $\frac{7}{9} \square \frac{3}{9}$

We have $7 \times 9 = 63$ and $3 \times 9 = 27$

Here, $63 < 27 \quad \therefore \quad \frac{7}{9} \boxed{>} \frac{3}{9}$

(g) $\frac{1}{4} \square \frac{2}{8}$

We have $1 \times 8 = 8$ and $2 \times 4 = 8$

Here, $8 < 8 \quad \therefore \quad \frac{1}{4} \boxed{=} \frac{2}{8}$

(h) $\frac{6}{10} \square \frac{4}{5}$

We have $6 \times 5 = 30$ and $10 \times 4 = 40$

Here, $30 < 42 \quad \therefore \quad \frac{6}{10} \boxed{<} \frac{4}{5}$

(i) $\frac{3}{4} \square \frac{7}{8}$

We have $3 \times 8 = 24$ and $4 \times 7 = 28$

Here, $24 < 28 \quad \therefore \quad \frac{3}{4} \boxed{<} \frac{7}{8}$

(j) $\frac{5}{7} \square \frac{15}{21}$

We have $5 \times 21 = 105$ and $7 \times 15 = 105$

Here, $105 < 105 \quad \therefore \quad \boxed{\frac{5}{7}} = \boxed{\frac{15}{21}}$

Ex 7.4 Class 6 Maths Question 6.

The following fractions represent just three different numbers. Separate them into three groups of equivalent fractions, by changing each one to its simplest form.

(a) $\frac{2}{12}$ (b) $\frac{3}{15}$ (c) $\frac{8}{50}$ (d) $\frac{16}{100}$

(e) $\frac{10}{60}$ (f) $\frac{15}{75}$ (g) $\frac{12}{60}$ (h) $\frac{16}{96}$

(i) $\frac{12}{75}$ (j) $\frac{12}{72}$ (k) $\frac{3}{18}$ (l) $\frac{4}{25}$

Solution:

(a) $\frac{2}{12} = \frac{2 \div 2}{12 \div 2} = \frac{1}{6}$ [∵ HCF of 2 and 12 is 2]

(b) $\frac{3}{15} = \frac{3 \div 3}{15 \div 3} = \frac{1}{5}$ [∵ HCF of 3 and 15 is 3]

(c) $\frac{8}{50} = \frac{8 \div 2}{50 \div 2} = \frac{4}{25}$ [∵ HCF of 8 and 50 is 2]

(d) $\frac{16}{100} = \frac{16 \div 4}{100 \div 4} = \frac{4}{25}$ [∵ HCF of 16 and 100 is 4]

(e) $\frac{10}{60} = \frac{10 \div 10}{60 \div 10} = \frac{1}{6}$ [∵ HCF of 10 and 60 is 10]

(f) $\frac{15}{75} = \frac{15 \div 15}{75 \div 15} = \frac{1}{5}$ [∵ HCF of 15 and 75 is 15]

(g) $\frac{12}{60} = \frac{12 \div 12}{60 \div 12} = \frac{1}{5}$ [∵ HCF of 12 and 60 is 12]

(h) $\frac{16}{96} = \frac{16 \div 16}{96 \div 16} = \frac{1}{6}$ [∵ HCF of 16 and 96 is 16]

(i) $\frac{12}{75} = \frac{12 \div 3}{75 \div 3} = \frac{4}{25}$ [∵ HCF of 12 and 75 is 3]

(j) $\frac{12}{72} = \frac{12 \div 12}{72 \div 12} = \frac{1}{6}$ [∵ HCF of 12 and 72 is 12]

(k) $\frac{3}{18} = \frac{3 \div 3}{18 \div 3} = \frac{1}{6}$ [∵ HCF of 3 and 18 is 3]

(l) $\frac{4}{25} = \frac{4 \div 1}{25 \div 1} = \frac{4}{25}$ [∵ HCF of 4 and 25 is 1]

Now grouping the above fractions into equivalent fractions, we have

(i) $\frac{2}{12} = \frac{10}{60} = \frac{16}{96} = \frac{12}{72} = \frac{3}{18}$ $\left[\text{each } \frac{1}{6}\right]$

(ii) $\frac{3}{15} = \frac{15}{75} = \frac{12}{60}$ $\left[\text{each } \frac{1}{5}\right]$

(iii) $\frac{8}{50} = \frac{16}{100} = \frac{12}{75} = \frac{4}{25}$ $\left[\text{each } \frac{4}{25}\right]$

Ex 7.4 Class 6 Maths Question 7.

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

(a) Is $\frac{5}{9}$ equal to $\frac{4}{5}$?

(b) Is $\frac{9}{16}$ equal to $\frac{5}{9}$?

(c) Is $\frac{4}{5}$ equal to $\frac{16}{20}$?

(d) Is $\frac{1}{15}$ equal to $\frac{4}{30}$?

Solution:

(a) $\frac{5}{9}$ and $\frac{4}{5}$

By cross-multiplying, we get

5 x 5 = 25 and 4 x 9 = 36

Since $25 \neq 36$

$\therefore \frac{5}{9}$ is not equal to $\frac{4}{5}$.

(b) $\frac{9}{16}$ and $\frac{5}{9}$

By cross-multiplying, we get

9 x 9 = 81 and 16 x 5 =80

Since $81 \neq 80$

$\therefore \frac{9}{16}$ is not equal to $\frac{5}{9}$.

(c) $\frac{4}{5}$ and $\frac{16}{20}$

By cross-multiplying, we get
4 x 20 = 80 and 5 x 16 = 80
Since 80 = 80

$\therefore \frac{4}{5}$ is equal to $\frac{16}{20}$.

(d) $\frac{1}{15}$ and $\frac{4}{30}$

By cross-multiplying, we get
1 x 30 = 30 and 4 x 15 = 60

$\therefore \frac{1}{15}$ is not equal to $\frac{4}{30}$.

Ex 7.4 Class 6 Maths Question 8.
Ila read 25 pages of a book containing 100 pages.
Lalita read $\frac{2}{5}$ of the same book. Who read less?
Solution:
Ila reads 25 pages out of 100 pages.

$\therefore$ Fractions = $\frac{25}{100} = \frac{25 \div 25}{100 \div 25} = \frac{1}{4}$

Lalita reads $\frac{2}{5}$ of the same book.
Comparing $\frac{1}{4}$ and $\frac{2}{5}$, we get
1 x 5 = 5 and 2 x 4 = 8
Since 5 < 8
$\therefore \frac{1}{4} < \frac{2}{5}$
Hence Ila reads less pages.

Ex 7.4 Class 6 Maths Question 9.
Rafiq exercised for $\frac{3}{6}$ of an hour, while Rohit exercised for $\frac{3}{4}$ of an hour. Who exercised for a longer time?
Solution:
Rafiq exercised for $\frac{3}{6}$ of an hour.
Rohit exercised for $\frac{3}{4}$ of an hour.
Comparing $\frac{3}{6}$ and $\frac{3}{4}$, we get
3 x 4 = 12 and 3 x 6 = 18
Since 12 < 18
$\therefore \frac{3}{4} > \frac{3}{6}$
Hence Rohit exercised for longer time.

Ex 7.4 Class 6 Maths Question 10.
In a class A of 25 students, 20 passed in first class, in another class B of 30 students, 24 passed in first class. In which class was a greater fraction of students getting first class?
Solution:
In class A, 20 students passed in first class out of 25 students.
$\therefore$ Fraction of students getting first class

$= \frac{20}{25} = \frac{20 \div 5}{25 \div 5} = \frac{4}{5}$

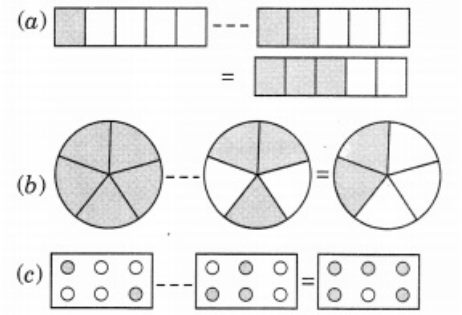
In class B, 24 students passed in first class out of 30 students.
$\therefore$ Fraction of students getting first class

$= \frac{24}{30} = \frac{24 \div 6}{30 \div 6} = \frac{4}{5}$

Comparing the two fractions, we get $\frac{4}{5} = \frac{4}{5}$
Hence, both the class A and B have the same fractions.

Fractions Class 6 Ex 7.5

Ex 7.5 Class 6 Maths Question 1.
Write these fractions appropriately as additions or subtractions.

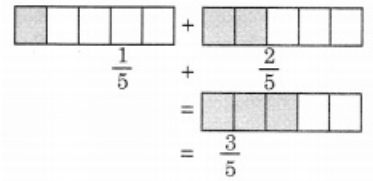


Solution:

(a) The given figure represents the addition of $\frac{1}{5}$ and $\frac{2}{5}$.

i.e., $\frac{1}{5}+\frac{2}{5}=\frac{1+2}{5}=\frac{3}{5}$

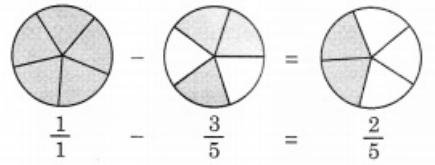
Thus the given diagrams can be represented as



(b) The given figure represents the difference between 1 and $\frac{3}{5}$.

i.e., $1-\frac{3}{5}=\frac{1}{1}-\frac{3}{5}=\frac{1\times5-3\times1}{5}=\frac{5-3}{5}=\frac{2}{5}$

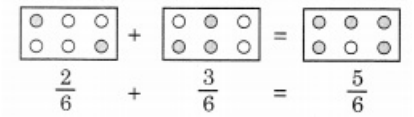
Thus, the given diagrams can be represented as



(c) The given figure represents addition of $\frac{2}{6}$ and $\frac{3}{6}$.

i.e., $\frac{2}{6}+\frac{3}{6}=\frac{2+3}{6}=\frac{5}{6}$

Thus, the given diagrams can be represented as



Ex 7.5 Class 6 Maths Question 2.

Solve:

(a) $\frac{1}{18}+\frac{1}{18}$ (b) $\frac{8}{15}+\frac{3}{15}$

(c) $\frac{7}{7}-\frac{5}{7}$ (d) $\frac{1}{22}+\frac{21}{22}$

(e) $\frac{12}{15}-\frac{7}{15}$ (f) $\frac{5}{8}+\frac{3}{8}$

(g) $1-\frac{2}{3}\left(1=\frac{3}{3}\right)$ (h) $\frac{1}{4}+\frac{0}{4}$

(i) $3-\frac{12}{5}$

Solution:

(a) $\frac{1}{18}+\frac{1}{18}=\frac{1+1}{18}=\frac{2}{18}=\frac{2\div 2}{18\div 2}=\frac{1}{9}$

(b) $\frac{8}{15}+\frac{3}{15}=\frac{8+3}{15}=\frac{11}{15}$

(c) $\frac{7}{7}-\frac{5}{7}=\frac{7-5}{7}=\frac{2}{7}$

(d) $\frac{1}{22}+\frac{21}{22}=\frac{1+21}{22}=\frac{22}{22}=1$

(e) $\frac{12}{15}-\frac{7}{15}=\frac{12-7}{15}=\frac{5}{15}=\frac{5\div 5}{15\div 5}=\frac{1}{3}$

(f) $\frac{5}{8}+\frac{3}{8}=\frac{5+3}{8}=\frac{8}{8}=1$

(g) $1-\frac{2}{3}\left(1=\frac{3}{3}\right)=\frac{3}{3}-\frac{2}{3}=\frac{3-2}{3}=\frac{1}{3}$

(h) $\frac{1}{4}+\frac{0}{4}=\frac{1+0}{4}=\frac{1}{4}$

(i) $3-\frac{12}{5}=\frac{3}{1}-\frac{12}{5}=\frac{3\times 5-12\times 1}{5}=\frac{15-12}{5}=\frac{3}{5}$

Ex 7.5 Class 6 Maths Question 3.

Shubham painted $\frac{2}{3}$ of the wall space in his room. His sister Madhavi helped and painted $\frac{1}{3}$ of the wall space. How much did they paint together?

Solution:

Fraction of wall painted by Shubham = $\frac{2}{3}$

Fraction of wall painted by Madhavi = $\frac{1}{3}$

Fraction of wall painted by Shubham and Madhavi

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

Thus the fraction of wall painted by both = 1

Ex 7.5 Class 6 Maths Question 4.

Fill in the missing fractions.

(a) $\frac{7}{10}-\square=\frac{3}{10}$ (b) $\square-\frac{3}{21}=\frac{5}{21}$

(c) $\square-\frac{3}{6}=\frac{3}{6}$ (d) $\square+\frac{5}{27}=\frac{12}{27}$

Solution:

(a) The difference between $\frac{7}{10}$ and $\square$ is $\frac{3}{10}$.

$\therefore$ Missing fraction

$=\frac{7}{10}-\frac{3}{10}=\frac{7-3}{10}=\frac{4}{10}=\frac{4\div 2}{10\div 2}=\frac{2}{5}$

Thus, $\square=\frac{2}{5}$

(b) The difference between $\square$ and $\frac{3}{21}$ is $\frac{5}{21}$.

$\therefore$ Missing fraction $=\frac{5}{21}+\frac{3}{21}=\frac{5+3}{21}=\frac{8}{21}$

Thus, $\square=\frac{8}{21}$

(c) The difference between $\square$ and $\frac{3}{6}$ is $\frac{3}{6}$.

$\therefore$ Missing fraction $=\frac{3}{6}+\frac{3}{6}=\frac{3+3}{6}=\frac{6}{6}=1$

Thus, $\square=1$

(d) Sum of $\square$ and $\frac{5}{27}$ is $\frac{12}{27}$.

$\therefore$ Missing fraction $=\frac{12}{27}-\frac{5}{27}=\frac{12-5}{27}=\frac{7}{27}$

Thus, $\square=\frac{7}{27}$

Ex 7.5 Class 6 Maths Question 5.

Javed was given $\frac{5}{7}$ of a basket of oranges. What fraction of oranges was left in the basket?

Solution:

Fraction of basket of oranges = $\frac{5}{7}$

Fraction of basket as a whole can be taken as 1.

∴ Fraction of basket of oranges left

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

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

Thus, the required fraction = $\frac{2}{7}$.

Fractions Class 6 Ex 7.6

Ex 7.6 Class 6 Maths Question 1.

Solve

(a) $\frac{2}{3}+\frac{1}{7}$ (b) $\frac{3}{10}+\frac{7}{15}$ (c) $\frac{4}{9}+\frac{2}{7}$

(d) $\frac{5}{7}+\frac{1}{3}$ (e) $\frac{2}{5}+\frac{1}{6}$ (f) $\frac{4}{5}+\frac{2}{3}$

(g) $\frac{3}{4}-\frac{1}{3}$ (h) $\frac{5}{6}-\frac{1}{3}$ (i) $\frac{2}{3}+\frac{3}{4}+\frac{1}{2}$

(j) $\frac{1}{2}+\frac{1}{3}+\frac{1}{6}$ (k) $1\frac{1}{3}+3\frac{2}{3}$ (l) $4\frac{2}{3}+3\frac{1}{4}$

(m) $\frac{16}{5}-\frac{7}{5}$ (n) $\frac{4}{3}-\frac{1}{2}$

Solution:

(a) $\frac{2}{3}+\frac{1}{7} = \frac{2\times 7+1\times 3}{21} = \frac{14+3}{21} = \frac{17}{21}$

Hence, $\frac{2}{3}+\frac{1}{7} = \frac{17}{21}$

(b) $\frac{3}{10}+\frac{7}{15}$

LCM of 10 and 15 = 30

$\therefore \frac{3}{10}+\frac{7}{15} = \frac{3\times 3}{10\times 3}+\frac{7\times 2}{15\times 2} = \frac{9}{30}+\frac{14}{30} = \frac{23}{30}$

Hence, $\frac{3}{10}+\frac{7}{15} = \frac{23}{30}$

(c) $\frac{4}{9}+\frac{2}{7} = \frac{4\times 7}{9\times 7}+\frac{2\times 9}{7\times 9}$

$$= \frac{28}{63}+\frac{18}{63} = \frac{28+18}{63} = \frac{46}{63}$$

Hence, $\frac{4}{9}+\frac{2}{7} = \frac{46}{63}$

(d) $\frac{5}{7}+\frac{1}{3} = \frac{5\times 3}{7\times 3}+\frac{1\times 7}{3\times 7} = \frac{15}{21}+\frac{7}{21} = \frac{15+7}{21} = \frac{22}{21}$

Hence, $\frac{5}{7}+\frac{1}{3} = \frac{22}{21}$

(e) $\frac{2}{5}+\frac{1}{6} = \frac{2\times 6}{5\times 6}+\frac{1\times 5}{6\times 5}$

$$= \frac{12}{30}+\frac{5}{30} = \frac{12+5}{30} = \frac{17}{30}$$

Hence, $\frac{2}{5}+\frac{1}{6} = \frac{17}{30}$

(f) $\frac{4}{5}+\frac{2}{3} = \frac{4\times 3}{5\times 3}+\frac{2\times 5}{3\times 5}$

$$= \frac{12}{15}+\frac{10}{15} = \frac{12+10}{15} = \frac{22}{15}$$

Hence, $\frac{4}{5}+\frac{2}{3}=\frac{22}{15}$

(g) $\frac{3}{4}-\frac{1}{3}=\frac{3\times3}{4\times3}-\frac{1\times4}{3\times4}-\frac{9}{12}+\frac{4}{12}=\frac{9-4}{12}=\frac{5}{12}$

Hence, $\frac{3}{4}-\frac{1}{3}=\frac{5}{12}$

(h) $\frac{5}{6}-\frac{1}{3}$

LCM of 6 and 3 = 6

$\therefore \frac{5}{6}-\frac{1}{3}=\frac{5\times1}{6\times1}-\frac{1\times2}{3\times2}$

$=\frac{5}{6}-\frac{2}{6}=\frac{5-2}{6}=\frac{3}{6}=\frac{1}{2}$

Hence, $\frac{5}{6}-\frac{1}{3}=\frac{1}{2}$

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

LCM of 3, 4 and 2 = 12

$\therefore \frac{2}{3}+\frac{3}{4}+\frac{1}{2}=\frac{2\times4}{3\times4}+\frac{3\times3}{4\times3}+\frac{1\times6}{2\times6}$

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

Hence, $\frac{2}{3}+\frac{3}{4}+\frac{1}{2}=\frac{23}{12}$

(j) $\frac{1}{2}+\frac{1}{3}+\frac{1}{6}$

LCM of 2, 3 and 6 = 6

$\therefore \frac{1\times3}{2\times3}+\frac{1\times2}{3\times2}+\frac{1\times1}{1\times6}=\frac{3}{6}+\frac{2}{6}+\frac{1}{6}$

$=\frac{3+2+1}{6}=\frac{6}{6}=1$

Hence, $\frac{1}{2}+\frac{1}{3}+\frac{1}{6}=1$

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

$=4+\frac{1+2}{3}=4+\frac{3}{3}=4+1=5$

Hence, $1\frac{1}{3}+3\frac{2}{3}=5$

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

$=7+\frac{2\times4}{3\times4}+\frac{1\times3}{4\times3}=7+\frac{8}{12}+\frac{3}{12}$

$=7+\frac{8+3}{12}=7+\frac{11}{12}=\frac{7}{1}+\frac{11}{12}$

$=\frac{7\times12+1\times11}{12}=\frac{84+11}{12}=\frac{95}{12}$

Hence, $4\frac{2}{3}+3\frac{1}{4}=\frac{95}{12}$

(m) $\frac{16}{5}-\frac{7}{5}=\frac{16-7}{5}=\frac{9}{5}$

Hence, $\frac{16}{5}-\frac{7}{5}=\frac{9}{5}$

(n) $\frac{4}{3}-\frac{1}{2}=\frac{4\times2}{3\times2}-\frac{1\times3}{2\times3}=\frac{8}{6}-\frac{3}{6}=\frac{8-3}{6}=\frac{5}{6}$

Hence, $\frac{4}{3}-\frac{1}{2}=\frac{5}{6}$.

Ex 7.6 Class 6 Maths Question 2.

Sarita bought $\frac{2}{5}$ metre of ribbon and Lalita $\frac{3}{4}$ metre of ribbon. What is the total length of the ribbon they bought?

Solution:

Length of ribbon bought by Sarita = $\frac{2}{5}$ metre

Length of ribbon bought by Lalita = $\frac{3}{4}$ metre

$\therefore$ Length of ribbon bought by Sarita and Lalita

$$= \frac{2}{5}\text{ metre} + \frac{3}{4}\text{ metre} = \left(\frac{2}{5}+\frac{3}{4}\right)\text{metre}$$

$$= \left(\frac{2\times4}{5\times4}+\frac{3\times5}{4\times5}\right)\text{metre} = \left(\frac{8}{20}+\frac{15}{20}\right)\text{metre}$$

$$= \left(\frac{8+15}{20}\right)\text{metre} = \frac{23}{20}\text{ metre}$$

Hence, the required length = $\frac{23}{20}$ metre

Ex 7.6 Class 6 Maths Question 3.

Naina was given $1\frac{1}{2}$ piece of cake and Najma was given $1\frac{1}{3}$ piece of cake. Find the total amount of cake was given to both of them.

Solution:

Piece of cake given to Naina = $1\frac{1}{1}2$

Piece of cake given to Najma = $1\frac{1}{1}3$

Piece of cake given to Naina and Najma

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

$$= 2+\frac{1\times3}{2\times3}+\frac{1\times2}{3\times2} = 2+\frac{3}{6}+\frac{2}{6} = 2+\frac{5}{6}$$

$$= 2\frac{5}{6}$$

Hence the total amount of piece given to both = $2\frac{5}{6}$.

Ex 7.6 Class 6 Maths Question 4.

Fill in the boxes:

(a) $\square - \frac{5}{8} = \frac{1}{4}$ (b) $\square - \frac{1}{5} = \frac{1}{2}$

(c) $\frac{1}{2} - \square = \frac{1}{6}$

Solution:

(a) $\square - \frac{5}{8} = \frac{1}{4}$

Here, missing number is $\frac{1}{4}$ more than $\frac{5}{8}$.

$$\therefore \quad \square = \frac{5}{8}+\frac{1}{4}$$

$$\Rightarrow \quad \square = \frac{5\times1+1\times2}{8}$$

$$\Rightarrow \quad \square = \frac{5+2}{8}$$

$$\Rightarrow \quad \square = \frac{7}{8}$$

$$\text{Hence} \quad \square = \frac{7}{8}$$

(b) $\square - \frac{1}{5} = \frac{1}{2}$

Here, missing number is $\frac{1}{2}$ more than $\frac{1}{5}$.

$\therefore \quad \square = \frac{1}{5} + \frac{1}{2}$

$\Rightarrow \quad \square = \frac{1\times 2}{5\times 2} + \frac{1\times 5}{2\times 5}$

$\Rightarrow \quad \square = \frac{2}{10} + \frac{5}{10}$

$\Rightarrow \quad \square = \frac{2+5}{10} = \frac{7}{10}$

Hence $\square = \frac{7}{10}$

(c) $\frac{1}{2} - \square = \frac{1}{6}$

Here, missing number is $\frac{1}{6}$ less than $\frac{1}{2}$.

$\therefore \quad \square = \frac{1}{2} - \frac{1}{6}$

$\Rightarrow \quad \square = \frac{1\times 3}{2\times 3} - \frac{1\times 1}{6\times 1}$

$\Rightarrow \quad \square = \frac{3}{6} - \frac{1}{6}$

$\Rightarrow \quad \square = \frac{3-1}{6} = \frac{2}{6}$

$\Rightarrow \quad \square = \frac{1}{3}$

Hence $\square = \frac{1}{3}$

Ex 7.6 Class 6 Maths Question 5.
Complete the addition-subtraction box.

(a)

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

(b)

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

Solution:

(a) **Addition: I Row** $\frac{2}{3} + \frac{4}{3} = \frac{2+4}{3}$

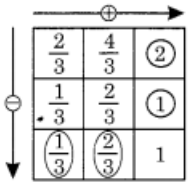
$= \frac{6}{3} = \frac{6\div 3}{3\div 3} = \frac{2}{1} = 2$

II Row $\frac{1}{3} + \frac{2}{3} = \frac{1+2}{3} = \frac{3}{3} = 1$

Subtraction: I Column: $\frac{2}{3} - \frac{1}{3} = \frac{2-1}{3} = \frac{1}{3}$

II Column: $\frac{4}{3} - \frac{2}{3} = \frac{4-2}{3} = \frac{2}{3}$

Thus the box may be completed as follows:



(*b*) **Addition: I Row**:

$$\frac{1}{2}+\frac{1}{3}=\frac{1\times3+1\times2}{6}=\frac{3+2}{6}=\frac{5}{6}$$

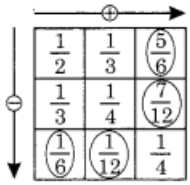
II Row: $\frac{1}{3}+\frac{1}{4}=\frac{1\times4+1\times3}{12}=\frac{4+3}{12}=\frac{7}{12}$

Subtraction: I Column:

$$\frac{1}{2}-\frac{1}{3}=\frac{1\times3-1\times2}{6}=\frac{3-2}{6}=\frac{1}{6}$$

II Column: $\frac{1}{3}-\frac{1}{4}=\frac{1\times4-1\times3}{12}=\frac{4-3}{12}=\frac{1}{12}$

Thus, the box may be completed as follows:



Ex 7.6 Class 6 Maths Question 6.

A piece of wire $\frac{7}{8}$ metre long broke into two pieces. One piece was $\frac{1}{4}$ metre long. How long is the other piece?

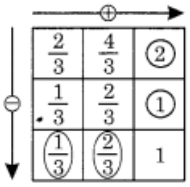
Solution:

Total length of the wire = $\frac{7}{8}$ metre

Length of one piece of wire = $\frac{1}{4}$ metre

∴ Length of the other piece = $\frac{7}{8}-\frac{1}{4}$

LCM of 8 and 4 = 8



Hence, the length of the other piece = $\frac{5}{8}$ metre.

Ex 7.6 Class 6 Maths Question 7.

Nandini's house is $\frac{9}{10}$ km from her school. She walked some distance and then took a bus for $\frac{1}{2}$km to reach the school. How far did she walk?

Solution:

Total distance from house to school = $\frac{9}{10}$ km.

Distance travelled by Nandini by bus = $\frac{1}{2}$ km

∴ Distance travelled by her on foot

$$=\frac{9}{10}\text{ km}-\frac{1}{2}\text{ km}=\left(\frac{9}{10}-\frac{1}{2}\right)\text{km}$$

LCM of 10 and 2 = 10

$$\therefore\ \left(\frac{9}{10}-\frac{1}{2}\right)\text{km}=\left(\frac{9\times1}{10\times1}-\frac{1\times5}{2\times5}\right)\text{km}$$

$$=\left(\frac{9}{10}-\frac{5}{10}\right)\text{km}=\left(\frac{9-5}{10}\right)\text{km}$$

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

Hence, the distance travelled by her on foot = $\frac{2}{5}$km.

Ex 7.6 Class 6 Maths Question 8.

Asha and Samuel have bookshelves of the same size partly filled with books. Asha's shelf is $\frac{5}{6}$ th full and Samuel's shelf is $\frac{2}{5}$ th full. Whose bookshelf is more full? By what fraction?

Solution:

Asha's shelf is $\frac{5}{6}$ th full

and Samuel's shelf is $\frac{2}{5}$ th full

Comparing $\frac{5}{6}$ and $\frac{2}{5}$

LCM of 6 and 5 = 30

$\therefore \frac{5\times5}{6\times5} = \frac{25}{30}$ and $\frac{2\times6}{5\times6} = \frac{12}{30}$

Hence, 25 > 12, So $\frac{5}{6}$ is more than $\frac{2}{5}$.

Hence, Asha's shelf is full more than Samuel's shelf.

Now, $\frac{5}{6} - \frac{2}{5} = \frac{25}{30} - \frac{12}{30} = \frac{25-12}{30} = \frac{13}{30}$

Hence, $\frac{13}{30}$ th fraction is more full of Asha's shelf.

Ex 7.6 Class 6 Maths Question 9.

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

Solution:

Jaidev takes $2\frac{1}{5}$ minutes 5

Rahul takes $2\frac{7}{4}$ minutes

Comparing $2\frac{1}{5}$ minutes and $\frac{7}{4}$ minutes

$2\frac{1}{5} = 2+\frac{1}{5} = \frac{2}{1}+\frac{1}{5} = \frac{2\times5}{1\times5}+\frac{1\times1}{5\times1} = \frac{10}{5}+\frac{1}{5}$

$= \frac{10+1}{5} = \frac{11}{5}$

Now, the given fractions are $\frac{11}{5}$ and $\frac{7}{4}$

$\frac{11}{5}\times\frac{4}{4} = \frac{44}{20}$ and $\frac{7}{4}\times\frac{5}{5} = \frac{35}{20}$

Here, $35 < 44 \quad \therefore \quad \frac{7}{4} < \frac{11}{5}$.

So, the time take to cover the same distance by Rahul is less than that of Jaidev.

$\frac{11}{5} - \frac{7}{4} = \frac{44}{20} - \frac{35}{20} = \frac{44-35}{20} = \frac{9}{20}$ minutes

Hence, Rahul takes $\frac{9}{20}$ minutes less to across the school ground.

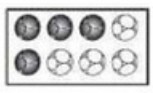
Exercise 7.1

Question 1:

Write the fraction representing the shaded portion.

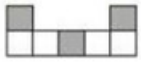
(i)

(ii)

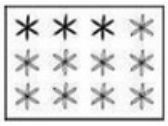


(iii)

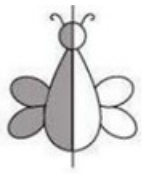
(iv)



(v)



(vi)



(x)

Answer:

(i) The given figure represents 2 shaded parts out of 4 equal parts.

Hence, $\frac{2}{4}$

(ii) The given figure represents 8 shaded parts out of 9 equal parts.

Hence, $\frac{8}{9}$

(iii) The given figure represents 4 shaded parts out of 8 equal parts.

Hence, $\frac{4}{8}$

(iv) The given figure represents 1 shaded part out of 4 equal parts.

Hence, $\frac{1}{4}$

(v) The given figure represents 3 shaded parts out of 7 equal parts.

Hence, $\frac{3}{7}$

(vi) The given figure represents 3 shaded parts out of 12 equal parts.

Hence, $\frac{3}{12}$

(vii) The given figure represents 10 shaded parts out of 10 equal parts.

Hence, $\frac{10}{10}$

(viii) The given figure represents 4 shaded parts out of 9 equal parts.

Hence, $\frac{4}{9}$

(ix) The given figure represents 4 shaded parts out of 8 equal parts.

Hence, $\frac{4}{8}$

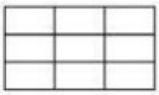
(x) The given figure represents 1 shaded part out of 2 equal parts.

Hence, $\frac{1}{2}$

Question 2:

Colour the part according to the given fraction.

(i) (ii) $\frac{1}{4}$ (iii) $\frac{1}{3}$

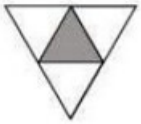


(iv) $\frac{3}{4}$ (v) $\frac{4}{9}$

Answer:

(i)

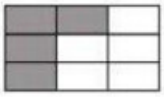
(ii)



(iii)

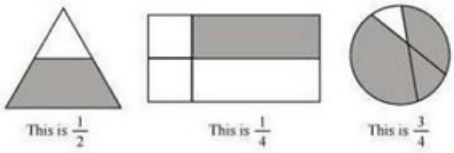
(iv)

(v)



Question 3:

Identify the error if any.



Answer:

The given figures do not represent the fractions as here each shape is not divided in equal parts.

Question 4:

What fraction of a day is 8 hours?

Answer:

There are 24 hours in a day. Therefore, 8 hours of a day represent $\frac{8}{24}$.

Question 5:

What fraction of an hour is 40 minutes?

Answer:

There are 60 minutes in an hour. Therefore, 40 minutes of an hour represent $\frac{40}{60}$.

Question 6:

Arya, Abhimanyu, and Vivek shared lunch. Arya has brought two sandwiches, one made of vegetable and one of jam. The other two boys forgot to bring their lunch. Arya agreed to share his sandwiches so that each person will have an equal share of each sandwich.

(a) How can Arya divide his sandwiches so that each person has an equal share?

(b) What part of a sandwich will each boy receive?

Answer:

(a) Arya will divide each sandwich in three equal parts. Then, he will give one part of each sandwich to each one of them.

(b) Each boy will receive $\frac{1}{3}$ part of each sandwich.

Question 7:

Kanchan dyes dresses. She had to dye 30 dresses. She has so far finished 20 dresses. What fraction of dresses has she finished?

Answer:

Dress dyed so far = 20

Total dresses = 30

Fraction = $\frac{20}{30}=\frac{2}{3}$

Question 8:

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

Answer:

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

Prime numbers among these are 2, 3, 5, 7, and 11.

Therefore, out of 11 numbers, 5 are prime numbers. It represents a fraction $\frac{5}{11}$.

Question 9:

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

Answer:

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

Among these numbers, the prime numbers are 103, 107, 109, and 113.

Therefore, out of 12 numbers, 4 are prime numbers. It represents a fraction $\frac{4}{12}$.

Question 10:

What fractions of these circles have X's in them?

Answer:

Thereare 4 circles, out of 8, having X's in them. Therefore, it represents a fraction $\frac{4}{8}$.

Question 11:

Kristin received a CD player for her birthday. She bought 3 CDs and received 5 others as gifts. What fraction of her total CDs did she buy and what fraction did she receive as gifts?

Answer:

Total CDs Kristin had on her birthday = 3 + 5 = 8

Out of 8 CDs, she bought 3 CDs and also got 5 CDs as gifts. Therefore, she bought and received CDs as gifts in a fraction of $\frac{3}{8}$ and $\frac{5}{8}$ respectively.

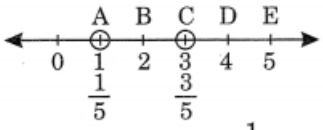
Extra Questions for Class 6 Maths Chapter 7 Fractions

Fractions Class 6 Extra Questions Very Short Answer Type

Question 1.
Represent the following fractions on number line.

$(a)\ \frac{1}{5}$ $(b)\ \frac{3}{5}$

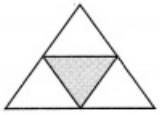
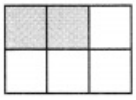
Solution:



Point A represents $\frac{1}{5}$

Point C represents $\frac{3}{5}$

Question 2.
Write the fractions showing the shaded portions:

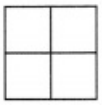
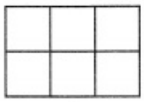
(a)  (b) 

Solution:

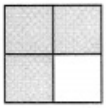
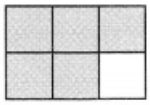
(a) Shaded portion represents $\frac{1}{4}$

Shaded portion represents $\frac{2}{6}$

Question 3.
Colour the part according to the fraction given:

$(a)\ \frac{3}{4}$  $(b)\ \frac{5}{6}$ 

Solution:

$(a)\ \frac{3}{4}$  $(b)\ \frac{5}{6}$ 

Question 4.
Identify the proper and improper fractions:

$\frac{5}{6}, \frac{7}{2}, \frac{1}{2}, \frac{3}{4}, \frac{11}{5}, \frac{6}{5}$

Solution:

Proper fractions are: $\frac{5}{6}$, $\frac{1}{2}$ and $\frac{3}{4}$

Improper fractions are: $\frac{7}{2}$, $\frac{11}{5}$ and $\frac{6}{5}$

Question 5.
What fraction of these circles have 'x' in them?

Solution:

Fraction of the circles with 'x' in the given figure = $\frac{5}{8}$.

Question 6.
Write all the natural numbers from 1 to 15. What fraction of them are prime numbers?
Solution:
Natural numbers from 1 to 15 are 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14 and 15 Prime numbers from 1 to 15 are 2, 3, 5, 7, 11, 13, i.e., 6 prime numbers.
$\therefore$ Fraction of prime numbers = $\frac{6}{15}$

Question 7.
Identify the like fractions from the following:
$\frac{2}{3}, \frac{1}{3}, \frac{5}{6}, \frac{3}{4}, \frac{6}{5}$
Solution:
$\frac{2}{3}$ and $\frac{1}{3}$ have the same denominator.
$\therefore$ $\frac{2}{3}$ and $\frac{1}{3}$ are the like fractions.

Question 8.
Identify the unlike fractions from the following:
$\frac{2}{5}, \frac{2}{7}, \frac{1}{6}, \frac{3}{7}, \frac{5}{7}$
Solution:
$\frac{2}{5}$, $\frac{2}{7}$ and $\frac{1}{6}$ have different denominators.
$\therefore$ $\frac{2}{5}$, $\frac{2}{7}$ and $\frac{1}{6}$ are unlike fractions.

Question 9.
Convert the following improper fractions into mixed fraction.
$(a)\ \frac{37}{6}$ $(b)\ \frac{13}{2}$
Solution:
$(a)\ \frac{37}{6}$

$$6\overline{)37}(6$$
$$-36$$
$$\overline{1}$$

$\therefore\ \frac{37}{6} = 6\frac{1}{6}$ (mixed fraction)

$(b)\ \frac{13}{2}$

$$2\overline{)13}(6$$
$$-12$$
$$\overline{1}$$

$\therefore\ \frac{13}{2} = 6\frac{1}{2}$ (mixed fraction)

Question 10.
Convert the following mixed fractions into improper fractions:
$(a)\ 5\frac{2}{3}$ $(b)\ 6\frac{5}{6}$
Solution:
$(a)\ 5\frac{2}{3} = 5+\frac{2}{3}=\frac{5}{1}+\frac{2}{3}=\frac{5\times3}{1\times3}+\frac{2\times1}{3\times1}$

$$= \frac{15}{3}+\frac{2}{3} = \frac{15+2}{3} = \frac{17}{3}$$

$\therefore\ 5\frac{2}{3} = \frac{17}{3}$ (improper fraction)

$(b)\ 6\frac{5}{6} = 6+\frac{5}{6}=\frac{6}{1}+\frac{5}{6}=\frac{6\times6}{1\times6}+\frac{5\times1}{6\times1}$

$$= \frac{36}{6}+\frac{5}{6} = \frac{36+5}{6} = \frac{41}{6}$$

$\therefore\ 6\frac{5}{6} = \frac{41}{6}$ (improper fraction)

Question 11.
Write the following fractions in ascending order:

$\frac{2}{3}, \frac{2}{7}, \frac{2}{11}, \frac{2}{5}$ and $\frac{2}{9}$

Solution:
Here, the numerators of all the fractions are same.

$\therefore$ Ascending order is $\frac{2}{11}, \frac{2}{9}, \frac{2}{7}, \frac{2}{5}, \frac{2}{3}$

Question 12.
Write any
(a) three proper and three improper fractions with denominator 7.
(b) two proper and two improper fractions with numerator 9.
Solution:

(a) Proper fractions with denominator 7 are: $\frac{2}{7}$, $\frac{3}{7}$ and $\frac{5}{7}$

Improper fractions with denominator 7 are: $\frac{9}{7}$, $\frac{11}{7}$ and $\frac{13}{6}$

(b) Proper fractions with numerator 9 are:

$\frac{9}{11}$ and $\frac{9}{17}$

Improper fractions with numerator 9 are:

$\frac{9}{2}$ and $\frac{9}{5}$

Question 13.
Compare the following fractions:

$(a)\ \frac{4}{5}$ and $\frac{5}{6}$ $\quad (b)\ \frac{3}{4}$ and $\frac{2}{5}$

Solution:

$(a)\ \frac{4}{5}$ and $\frac{5}{6}$

LCM of 5 and 6 = 30

$\therefore \quad \frac{4}{5} = \frac{4\times6}{5\times6} = \frac{24}{30}$

and $\quad \frac{5}{6} = \frac{5\times5}{6\times5} = \frac{25}{30}$

Here, $\quad 24 < 25 \Rightarrow \frac{24}{30} < \frac{25}{30}$

$\therefore \quad \frac{4}{5} < \frac{5}{6}$

$(b)\ \frac{3}{4}$ and $\frac{2}{5}$

LCM of 4 and 5 = 20

$\therefore \quad \frac{3}{4} = \frac{3\times5}{4\times5} = \frac{15}{20}$

and $\quad \frac{2}{5} = \frac{2\times4}{5\times4} = \frac{8}{20}$

Here, $\quad 15 > 8 \Rightarrow \frac{15}{20} > \frac{8}{20}$

$\therefore \quad \frac{3}{4} > \frac{2}{5}$

Question 14.
Add $\frac{7}{12}, \frac{5}{16}$ and $\frac{9}{24}$.

Solution:
LCM of 12, 16 and 24 is 48

$$\begin{array}{r|l} 2 & 12, 16, 24 \\ \hline 2 & 6, \ 8, 12 \\ \hline 2 & 3, \ 4, \ 6 \\ \hline 2 & 3, \ 2, \ 3 \\ \hline 3 & 3, \ 1, \ 3 \\ \hline & 1, \ 1, \ 1 \end{array}$$

$\therefore$ LCM $= 2 \times 2 \times 2 \times 2 \times 3 = 48$

$\therefore \quad \frac{7}{12} = \frac{7 \times 4}{12 \times 4} = \frac{28}{48} \quad (\because 48 \div 12 = 4)$

$\frac{5}{16} = \frac{5 \times 3}{16 \times 3} = \frac{15}{48} \quad (\because 48 \div 16 = 3)$

$\frac{9}{24} = \frac{9 \times 2}{24 \times 2} = \frac{18}{48} \quad (\because 48 \div 24 = 2)$

$\therefore \quad \frac{7}{12} + \frac{5}{16} + \frac{9}{24} = \frac{28}{48} + \frac{15}{48} + \frac{18}{48}$

$$\begin{array}{r} 1 \\ 48 \overline{)61(} \\ -48 \\ \hline 13 \end{array} \qquad = \frac{28 + 15 + 18}{48}$$

$= \frac{61}{48} = 1\frac{13}{48}$

Question 15.

Find the sum of $1\frac{2}{3}$ and $3\frac{2}{5}$.

Solution:

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

$$= 4 + \left(\frac{2 \times 5}{3 \times 5} + \frac{2 \times 3}{5 \times 3}\right) = 4 + \left(\frac{10}{15} + \frac{6}{15}\right)$$

$$= 4 + \frac{(10 + 6)}{15} = 4 + \frac{16}{15} = 4 + 1 + \frac{1}{15}$$

$$= 5 + \frac{1}{15} = 5\frac{1}{15}$$

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

Question 16.

Subtract $2\frac{3}{4}$ from $4\frac{1}{8}$.

Solution:

$$4\frac{1}{8} - 2\frac{3}{4} = \frac{(4 \times 8) + 1}{8} - \frac{(2 \times 4) + 3}{4} = \frac{32 + 1}{8} - \frac{8 + 3}{4}$$

$$= \frac{33}{8} - \frac{11}{4}$$

LCM of 8 and 4 is 8

$\therefore \quad \frac{33 \times 1}{8 \times 1} - \frac{11 \times 2}{4 \times 2} = \frac{33}{8} - \frac{22}{8}$

$= \frac{33 - 22}{8} = \frac{11}{8} = 1\frac{3}{8}$

Hence, $4\frac{1}{8} - 2\frac{3}{4} = 1\frac{3}{8}$

Question 17.

Insert > or < to make each of the following true.

(a) $\frac{6}{7} \square \frac{5}{7}$ (b) $\frac{10}{21} \square \frac{10}{12}$ (c) $\frac{3}{7} \square \frac{3}{8}$

Solution:

(a) $\frac{6}{7} \square \frac{5}{7}$

Here, denominators are same, i.e., 7 and $6 > 5$

$\therefore \quad \frac{6}{7} \boxed{>} \frac{5}{7}$

(b) $\frac{10}{21} \square \frac{10}{12}$

Here, numerators are same, i.e., 10 and $21 > 12$

$\therefore \quad \frac{10}{21} \boxed{<} \frac{10}{12}$

(c) $\frac{3}{7} \square \frac{3}{8}$

Here, numerators are same, i.e., 3 and $7 < 8$

$\therefore \quad \frac{3}{7} \boxed{>} \frac{3}{8}$

Question 18.
Find the difference between the greatest and the smallest fractions.

$3\frac{3}{5}, 2\frac{4}{7}, \frac{19}{6}, \frac{18}{8}$

Solution:

We have $3\frac{3}{5}, 2\frac{4}{7}, \frac{19}{6}, \frac{18}{8}$

$3\frac{3}{5} = \frac{(3\times5)+3}{5} = \frac{15+3}{5} = \frac{18}{5}$

$2\frac{4}{7} = \frac{(2\times7)+4}{7} = \frac{14+4}{7} = \frac{18}{7}$

Improper form of all the fractions are

$\frac{18}{5}, \frac{18}{7}, \frac{19}{6}$ and $\frac{18}{8}$

2	5, 7, 6, 8
2	5, 7, 3, 4
2	5, 7, 3, 2
3	5, 7, 1, 1
5	1, 7, 1, 1
7	1, 1, 1, 1
	1, 1, 1, 1,

LCM $= 2 \times 2 \times 2 \times 3 \times 5 \times 7 = 840$

LCM of 5, 7, 6 and 8 = 840

Making the denominators same, we have

$\frac{18}{5} = \frac{18\times168}{5\times168} = \frac{3024}{840}$ [$\because$ 840 ÷ 5 = 168]

$\frac{18}{7} = \frac{18\times120}{7\times120} = \frac{2160}{840}$ [$\because$ 840 ÷ 7 = 120]

$\frac{19}{6} = \frac{19\times140}{6\times140} = \frac{2660}{840}$ [$\because$ 840 ÷ 6 = 140]

$\frac{18}{8} = \frac{18\times105}{5\times105} = \frac{1890}{840}$ [$\because$ 840 ÷ 8 = 105]

Here $\frac{3024}{840}$ or $\frac{18}{5}$ is the greatest fraction and

$\frac{1890}{840}$ or $\frac{18}{8}$ is the smallest fraction.

Difference

$$= \frac{18}{5} - \frac{18}{8} = \frac{18\times8}{5\times8} - \frac{18\times5}{8\times5} = \frac{144}{40} - \frac{90}{40}$$

$$= \frac{54}{40} = \frac{27}{20}$$

Hence the required difference = $\frac{27}{20}$ or $1\frac{7}{20}$

Question 19.

Simran painted $\frac{2}{3}$ of the wall space in her room. Her brother Rahul helped and painted $\frac{1}{5}$ of the wall space. How much did they paint together? What part of the whole space is left unpainted?

Solution:

Space of the wall painted by Simran = $\frac{2}{3}$

Space of the wall painted by Rahul = $\frac{1}{5}$

Total space painted by both = $\frac{2}{3} + \frac{1}{5}$

$$= \frac{2\times5}{3\times5} + \frac{1\times3}{5\times3} = \frac{10}{15} + \frac{3}{15} = \frac{10+3}{15} = \frac{13}{15}$$

Unpainted space of the wall = $1 - \frac{13}{15}$

$$= \frac{1}{1} - \frac{13}{15} = \frac{1\times15}{1\times15} - \frac{13\times1}{15\times1}$$

$$= \frac{15}{15} - \frac{13}{15} = \frac{15-13}{15} = \frac{2}{15}$$

Hence $\frac{2}{15}$ th of the wall space is unpainted.