Chapter 4: Operations on Fractions

PRACTICE SET 9 [PAGE 22]

Practice Set 9 | Q 1.1 | Page 22

Convert into improper fraction.

$7\frac{2}{5}$

SOLUTION

$$7\frac{2}{5}$$
$$= \frac{5 \times 7 + 2}{5}$$
$$= \frac{37}{5}$$

Practice Set 9 | Q 1.2 | Page 22

Convert into improper fraction.

$5\frac{1}{6}$

SOLUTION

$$5\frac{1}{6}$$
$$= \frac{6 \times 5 + 1}{6}$$
$$= \frac{30 + 1}{6}$$
$$= \frac{31}{6}$$

Practice Set 9 | Q 1.3 | Page 22

Convert into improper fraction.

$4\frac{3}{4}$

SOLUTION

$$4\frac{3}{4}$$
$$= \frac{4 \times 4 + 3}{4}$$
$$= \frac{16 + 3}{4}$$
$$= \frac{19}{4}$$

Practice Set 9 | Q 1.4 | Page 22

Convert into improper fraction.

$2\frac{5}{9}$

SOLUTION

$$2\frac{5}{9}$$
$$= \frac{9 \times 2 + 5}{9}$$
$$= \frac{18 + 5}{9}$$
$$= \frac{23}{9}$$

Practice Set 9 | Q 1.5 | Page 22

Convert into improper fraction.

$1\frac{5}{7}$

SOLUTION

$$1\frac{5}{7}$$
$$= \frac{7 \times 1 + 5}{7}$$
$$= \frac{7 + 5}{7}$$
$$= \frac{12}{7}$$

Practice Set 9 | Q 2.1 | Page 22

Convert into a mixed number.

$\frac{30}{7}$

SOLUTION

$$\frac{30}{7}$$
$$= \frac{28 + 2}{7}$$
$$= \frac{28}{7} + \frac{2}{7}$$
$$= 4 + \frac{2}{7}$$
$$= 4\frac{2}{7}$$

Practice Set 9 | Q 2.2 | Page 22

Convert into a mixed number.

$\frac{7}{4}$

SOLUTION

$\frac{7}{4}$

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

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

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

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

Practice Set 9 | Q 2.3 | Page 22

Convert into a mixed number.

$\frac{15}{12}$

SOLUTION

$\frac{15}{12}$

$= \frac{12+3}{12}$

$= \frac{12}{12} + \frac{3}{12}$

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

$= 1\frac{3}{12}$ or $1\frac{1}{4}$

Practice Set 9 | Q 2.4 | Page 22

Convert into a mixed number.

$\frac{11}{8}$

SOLUTION

$\frac{11}{8}$

$= \frac{8+3}{8}$

$= \frac{8}{8} + \frac{3}{8}$

$= 1 + \frac{3}{8}$

$= 1\frac{3}{8}$

Practice Set 9 | Q 2.5 | Page 22

Convert into a mixed number.

$\frac{21}{4}$

SOLUTION

$\frac{21}{4}$

$= \frac{20+1}{4}$

$= \frac{20}{4} + \frac{1}{4}$

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

$= 5\frac{1}{4}$

Practice Set 9 | Q 2.6 | Page 22

Convert into a mixed number.

$\frac{20}{7}$

SOLUTION

$$\frac{20}{7}$$
$$= \frac{14+6}{7}$$
$$= \frac{14}{7} + \frac{6}{7}$$
$$= 2 + \frac{6}{7}$$
$$= 2\frac{6}{7}$$

Practice Set 9 | Q 3.1 | Page 22

Write the following example using fraction.
If 9 kg of rice is shared amongst 5 people, how many kilograms of rice does each person get?

SOLUTION

If 9 kg of rice is shared amongst 5 people, then each person will get 9/5 kilograms of rice.

Practice Set 9 | Q 3.2 | Page 22

Write the following example using fraction.
To make 5 shirts of the same size, 11 metres of cloth is needed. How much cloth is needed for one shirt?

SOLUTION

If 11 metres of cloth is needed to make 5 shirts of the same size, then one shirt will need 11/5 metres of cloth.

PRACTICE SET 10 [PAGE 23]

Practice Set 10 | Q 1.1 | Page 23

Add:

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

SOLUTION

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

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

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

$$= \frac{19}{3} + \frac{7}{3}$$

$$= \frac{19 + 7}{3}$$

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

$$= \frac{24 + 2}{3}$$

$$= \frac{24}{3} + \frac{2}{3}$$

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

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

Practice Set 10 | Q 1.2 | Page 23

Add:

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

SOLUTION

$$1\frac{1}{4}+3\frac{1}{2}$$
$$=\frac{1\times4+1}{4}+\frac{3\times2+1}{2}$$
$$=\frac{5}{4}+\frac{7}{2}$$
$$=\frac{5}{4}+\frac{7\times2}{2\times2}$$
$$=\frac{5}{4}+\frac{14}{4}$$
$$=\frac{5+14}{4}$$
$$=\frac{19}{4}$$
$$=\frac{16+3}{4}$$
$$=\frac{16}{4}+\frac{3}{4}$$
$$=4+\frac{3}{4}$$
$$=4\frac{3}{4}$$

Practice Set 10 | Q 1.3 | Page 23

Add:

$$5\frac{1}{5}+2\frac{1}{7}$$

SOLUTION

$$5\frac{1}{5}+2\frac{1}{7}$$

$$=\frac{5\times5+1}{5}+\frac{2\times7+1}{7}$$

$$=\frac{26}{5}+\frac{15}{7}$$

$$=\frac{26\times7}{5\times7}+\frac{15\times5}{7\times5}$$

$$=\frac{182}{35}+\frac{75}{35}$$

$$=\frac{182+75}{35}$$

$$=\frac{257}{35}$$

$$=\frac{245+12}{35}$$

$$=\frac{245}{35}+\frac{12}{35}$$

$$=7+\frac{12}{35}$$

$$=7\frac{12}{35}$$

Practice Set 10 | Q 1.4 | Page 23

Add:

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

SOLUTION

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

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

$$=\frac{16}{5}+\frac{7}{3}$$

$$=\frac{16\times3}{5\times3}+\frac{7\times5}{3\times5}$$

$$=\frac{48}{15}+\frac{35}{15}$$

$$=\frac{48+35}{15}$$

$$=\frac{83}{15}$$

$$=\frac{75+8}{15}$$

$$=\frac{75}{15}+\frac{8}{15}$$

$$=5+\frac{8}{15}$$

$$=5\frac{8}{15}$$

Practice Set 10 | Q 2.1 | Page 23

Subtract:

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

SOLUTION

$$3\frac{1}{3} - 1\frac{1}{4}$$
$$= \frac{10}{3} - \frac{5}{4}$$
$$= \frac{10 \times 4}{3 \times 4} - \frac{5 \times 3}{4 \times 3}$$
$$= \frac{40}{12} - \frac{15}{12}$$
$$= \frac{40 - 15}{12}$$
$$= \frac{25}{12}$$
$$= \frac{24 + 1}{12}$$
$$= \frac{24}{12} + \frac{1}{12}$$
$$= 2 + \frac{1}{12}$$
$$= 2\frac{1}{12}$$

Practice Set 10 | Q 2.2 | Page 23

Subtract:

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

SOLUTION

$$5\frac{1}{2} - 3\frac{1}{3}$$
$$= \frac{11}{2} - \frac{10}{3}$$

$$= \frac{11 \times 3}{2 \times 3} - \frac{10 \times 2}{3 \times 2}$$
$$= \frac{33}{6} - \frac{20}{6}$$
$$= \frac{33 - 20}{6}$$
$$= \frac{13}{6}$$
$$= 2\frac{1}{6}$$

Practice Set 10 | Q 2.3 | Page 23

Subtract:

$$7\frac{1}{8} - 6\frac{1}{10}$$

SOLUTION

$$7\frac{1}{8} - 6\frac{1}{10}$$
$$= \frac{57}{8} - \frac{61}{10}$$
$$= \frac{57 \times 5}{8 \times 5} - \frac{61 \times 4}{10 \times 4}$$
$$= \frac{285}{40} - \frac{244}{40}$$
$$= \frac{285 - 244}{40}$$
$$= \frac{41}{40}$$
$$= 1\frac{1}{40}$$

Practice Set 10 | Q 2.4 | Page 23

Subtract:

$7\frac{1}{2} - 3\frac{1}{5}$

SOLUTION

$7\frac{1}{2} - 3\frac{1}{5}$

$= \frac{15}{2} - \frac{16}{5}$

$= \frac{15 \times 5}{2 \times 5} - \frac{16 \times 2}{5 \times 2}$

$= \frac{75}{10} - \frac{32}{10}$

$= \frac{75 - 32}{10}$

$= \frac{43}{10}$

$= 4\frac{3}{10}$

Practice Set 10 | Q 3.1 | Page 23

Solve:

Suyash bought $2\frac{1}{2}$ kg of sugar and Ashish bought $3\frac{1}{2}$ kg. How much sugar did they buy altogether? If sugar costs 32 rupees per kg, how much did they spend on the sugar they bought?

SOLUTION

The amount of sugar they bought altogether = $2\frac{1}{2} + 3\frac{1}{2}$

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

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

$$= \frac{12}{2}$$

= 6 kg

Now, the cost of 1 kg of sugar = Rs 32

Therefore, the cost of 6 kg of sugar is = 6 × 32

= Rs 192

Hence, they spend Rs 192 on the sugar they bought.

Practice Set 10 | Q 3.2 | Page 23

Solve:
Aradhana grows potatoes in 2/5 part of her garden, greens in 1/3 part, and brinjals in the remaining part. On how much of her plot did she plant brinjals?

SOLUTION

The part of the garden in which Aradhana grew brinjals is given by $= 1 - \frac{2}{5} - \frac{1}{3}$

$$= \frac{1 \times 15}{1 \times 15} - \frac{2 \times 3}{5 \times 3} - \frac{1 \times 5}{3 \times 5}$$

$$= \frac{15}{15} - \frac{6}{15} - \frac{5}{15}$$

$$= \frac{15 - 6 - 5}{15}$$

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

Hence, Aradhana grew brinjals in $\frac{4}{15}$ part of her garden.

Practice Set 10 | Q 3.3 | Page 23

Solve:
Sandeep filled water in 4/7 of an empty tank. After that, Ramakant filled 1/4 part more of the same tank. Then Umesh used 3/14 part of the tank to water the garden. If the tank has a maximum capacity of 560 litres, how many litres of water will be left in the tank?

SOLUTION

The amount of water will be left in the tank is given by

$$= \frac{4}{7}(560) + \frac{1}{4}(560) - \frac{3}{14}(560)$$

= 320 + 140 − 120

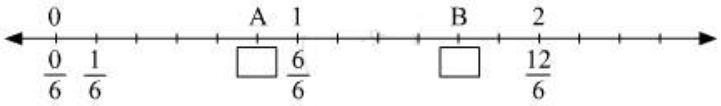
= 340 l

Hence, 340 l of water will be left in the tank.

PRACTICE SET 11 [PAGES 24 - 25]

Practice Set 11 | Q 1.1 | Page 24

What fractions do the points A and B show on the number line below?

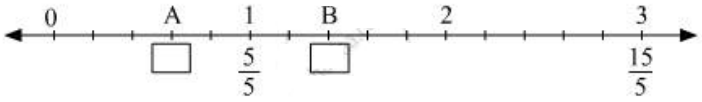


SOLUTION

$$A = \frac{5}{6} \text{ and } B = \frac{10}{6}$$

Practice Set 11 | Q 1.2 | Page 24

What fractions do the points A and B show on the number line below?

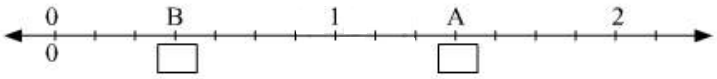


SOLUTION

$$A = \frac{3}{5} \text{ and } B = \frac{7}{5}$$

Practice Set 11 | Q 1.3 | Page 24

What fractions do the points A and B show on the number line below?



SOLUTION

$A = \frac{3}{7}$ and $B = \frac{10}{7}$

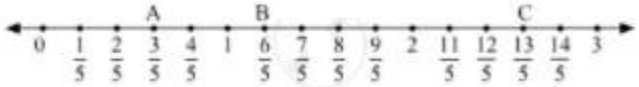
Practice Set 11 | Q 2.1 | Page 25

Show the following fractions on the number line:

$\frac{3}{5}, \frac{6}{5}, 2\frac{3}{5}$

SOLUTION

$\frac{3}{5}, \frac{6}{5}, 2\frac{3}{5}$ or $\frac{13}{5}$



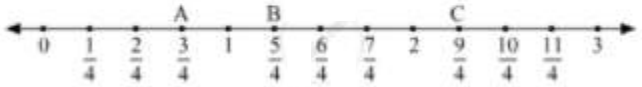
Practice Set 11 | Q 2.2 | Page 25

Show the following fractions on the number line:

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

SOLUTION

$\frac{3}{4}, \frac{5}{4}, 2\frac{1}{4}$ or $\frac{9}{4}$



PRACTICE SET 12 [PAGE 26]

Practice Set 12 | Q 1.1 | Page 26

Multiply:

$$\frac{7}{5} \times \frac{1}{4}$$

SOLUTION

$$\frac{7}{5} \times \frac{1}{4}$$
$$= \frac{7 \times 1}{5 \times 4}$$
$$= \frac{7}{20}$$

Practice Set 12 | Q 1.2 | Page 26

Multiply:

$$\frac{6}{7} \times \frac{2}{5}$$

SOLUTION

$$\frac{6}{7} \times \frac{2}{5}$$
$$= \frac{6 \times 2}{7 \times 5}$$
$$= \frac{12}{35}$$

Practice Set 12 | Q 1.3 | Page 26

Multiply:

$$\frac{5}{9} \times \frac{4}{9}$$

SOLUTION

$$\frac{5}{9} \times \frac{4}{9}$$
$$= \frac{5 \times 4}{9 \times 9}$$
$$= \frac{20}{81}$$

Practice Set 12 | Q 1.4 | Page 26

Multiply:

$$\frac{4}{11} \times \frac{2}{7}$$

SOLUTION

$$\frac{4}{11} \times \frac{2}{7}$$
$$= \frac{4 \times 2}{11 \times 7}$$
$$= \frac{8}{77}$$

Practice Set 12 | Q 1.5 | Page 26

Multiply:

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

SOLUTION

$$\frac{1}{5} \times \frac{7}{2}$$
$$= \frac{1 \times 7}{5 \times 2}$$
$$= \frac{7}{10}$$

Practice Set 12 | Q 1.6 | Page 26

Multiply:

$$\frac{9}{7} \times \frac{7}{8}$$

SOLUTION

$$\frac{9}{7} \times \frac{7}{8}$$

$$= \frac{9}{7} \times \frac{7}{8}$$

$$= \frac{9}{8}$$

Practice Set 12 | Q 1.7 | Page 26

Multiply:

$$\frac{5}{6} \times \frac{6}{5}$$

SOLUTION

$$\frac{5}{6} \times \frac{6}{5}$$

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

$$= 1$$

Practice Set 12 | Q 1.8 | Page 26

Multiply:

$$\frac{6}{17} \times \frac{3}{2}$$

SOLUTION

$$\frac{6}{17} \times \frac{3}{2}$$
$$= \frac{3}{17} \times \frac{3}{1}$$
$$= \frac{3 \times 3}{17}$$
$$= \frac{9}{17}$$

Practice Set 12 | Q 2 | Page 26

Ashok Rao planted bananas on 2/7 of his field of 21 acres. What is the area of the banana plantation?

SOLUTION

Ashok Rao planted bananas on $\frac{2}{7}$ of his field of 21 acres.

The area of the banana plantation = $\frac{2}{7} \times 21$

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

= 6 acres

Hence, the area of the banana plantation is 6 acres.

Practice Set 12 | Q 3 | Page 26

Of the total number of soldiers in our army, 4/9 are posted on the northern border and one-third of them on the northeastern border. If the number of soldiers in the north is 540000, how many are posted in the northeast?

SOLUTION

Let the total number of the soldiers be x.

Number of soldiers posted on the northern border = 5,40,000

$\Rightarrow \frac{4}{9}x = 5,40,000$

$\Rightarrow x = \frac{5,40,000 \times 9}{4}$

x = 12,15,000

Now, the number of soldiers posted on the northern border = $\frac{1}{3} \times 12,15,000$

= 4,05,000

Hence, 4,05,000 soldiers are posted in the north - east.

PRACTICE SET 13 [PAGE 28]

Practice Set 13 | Q 1.1 | Page 28

Write the reciprocal of the following number.
7

SOLUTION

The reciprocal of 7 is 1/7.

Practice Set 13 | Q 1.2 | Page 28

Write the reciprocal of the following number.

11/3

SOLUTION

The reciprocal of $\frac{11}{3}$ is $\frac{3}{11}$.

Practice Set 13 | Q 1.3 | Page 28

Write the reciprocal of the following number.

$\frac{5}{13}$

SOLUTION

The reciprocal of $\frac{5}{13}$ is $\frac{13}{5}$.

Practice Set 13 | Q 1.4 | Page 28

Write the reciprocal of the following number.

2

SOLUTION

The reciprocal of 2 is 1/2.

Practice Set 13 | Q 1.5 | Page 28

Write the reciprocal of the following number.

$\frac{6}{7}$

SOLUTION

The reciprocal of $\frac{6}{7}$ is $\frac{7}{6}$.

Practice Set 13 | Q 2.1 | Page 28

Carry out the following division.

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

SOLUTION

$$\frac{2}{3} \div \frac{1}{4}$$
$$= \frac{2}{3} \times \frac{4}{1}$$
$$= \frac{2 \times 4}{3 \times 1}$$
$$= \frac{8}{3}$$

Practice Set 13 | Q 2.2 | Page 28

Carry out the following division.

$$\frac{5}{9} \div \frac{3}{2}$$

SOLUTION

$$\frac{5}{9} \div \frac{3}{2}$$

$$= \frac{5}{9} \times \frac{2}{3}$$

$$= \frac{5 \times 2}{9 \times 3}$$

$$= \frac{10}{27}$$

Practice Set 13 | Q 2.3 | Page 28

Carry out the following division.

$$\frac{3}{7} \div \frac{5}{11}$$

SOLUTION

$$\frac{3}{7} \div \frac{5}{11}$$

$$= \frac{3}{7} \times \frac{11}{5}$$

$$= \frac{3 \times 11}{7 \times 5}$$

$$= \frac{33}{35}$$

Practice Set 13 | Q 2.4 | Page 28

Carry out the following division.

$$\frac{11}{12} \div \frac{4}{7}$$

SOLUTION

$$\frac{11}{12} \div \frac{4}{7}$$

$$= \frac{11}{12} \times \frac{7}{4}$$

$$= \frac{11 \times 7}{12 \times 4}$$

$$= \frac{77}{48}$$

Practice Set 13 | Q 3 | Page 28

There were 420 students participating in the Swachh Bharat campaign. They cleaned 42/75 part of the town, Sevagram. What part of Sevagram did each student clean if the work was equally shared by all?

SOLUTION

420 students cleaned $\frac{42}{75}$ part of the Sevagram town.

1 student cleaned the part of the Sevagram town equal to $\frac{42}{75} \div 420$

$$= \frac{42}{75} \times \frac{1}{420}$$

$$= \frac{42}{75 \times 420}$$

$$= \frac{1}{75 \times 10}$$

$$= \frac{1}{750}$$

Hence, each student cleaned $\frac{1}{750}$ part of the Sevagram town.