

EXERCISE 7.1

1. What fraction of a day is 8 hours?

Ans. A day = 24 hours.

$\frac{8}{24}$ of a day is 8 hours.

2. What fraction of an hour is 40 minutes?

Ans. An hour = 60 minutes

$\frac{40}{60}$ Of an hour is 40 minutes.

3. 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 into three equal parts, and given one part of each sandwich to each of them.

b) $\frac{1}{3}$

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

Answer:

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

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

Answer:

2, 3, 4, 5, 6, 7, 8, 9, 10, 11

Among these 11 natural numbers, 2, 3, 5, 7, 11 are prime numbers.

So $\frac{5}{11}$ are prime numbers.

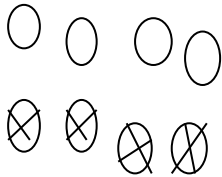
9. Write the natural numbers from 102 to 113. What fraction of them are prime numbers?

Answer:

102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113.

So $\frac{4}{12}$ are prime numbers.

10. What fraction of these circles have X's in them?



Answer: $\frac{4}{8}$

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 number of CDs = $3+5 = 8$

Out of 8 CDs, she bought 3 CDs and she got 5 CDs as gifts.

Therefore, she bought and received CDs as gifts are $\frac{3}{8}$ and $\frac{5}{8}$

EXERCISE 7.2

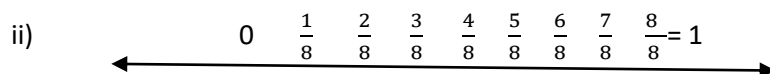
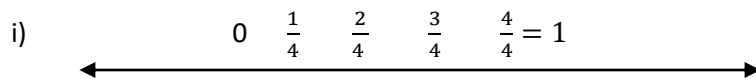
1. Draw number lines and locate the points on them:

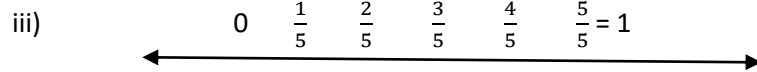
i) $\frac{1}{2}, \frac{1}{4}, \frac{3}{4}, \frac{4}{4}$

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

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

Answer:





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) $\frac{35}{9}$

Answer:

a) When we divide 20 by 3, we get quotient as 6 and remainder as 2.

Mixed fraction will be written as $6\frac{2}{3}$.

b) When we divide 11 by 5, we get quotient as 2 and remainder as 1.

Mixed fraction will be written as $2\frac{1}{5}$.

c) When we divide 17 by 7, we get quotient as 2 and remainder as 3.

Mixed fraction will be written as $2\frac{3}{7}$.

d) When we divide 28 by 5, we get quotient as 5 and remainder as 3.

Mixed fraction will be written as $5\frac{3}{5}$.

e) When we divide 19 by 6, we get quotient as 3 and remainder as 1.

Mixed fraction will be written as $3\frac{1}{6}$.

f) When we divide 35 by 9, we get quotient as 3 and remainder as 8.

Mixed fraction will be written as $3\frac{8}{9}$.

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) $8\frac{4}{9}$

Answer:

a) $7\frac{3}{4} = \frac{7 \times 4 + 3}{4} = \frac{31}{4}$

b) $5\frac{6}{7} = \frac{5 \times 7 + 6}{7} = \frac{41}{7}$

c) $2\frac{5}{6} = \frac{2 \times 6 + 5}{6} = \frac{17}{6}$

d) $10\frac{3}{5} = \frac{10 \times 5 + 3}{5} = \frac{53}{5}$

e) $9\frac{3}{7} = \frac{9 \times 7 + 3}{7} = \frac{66}{7}$

f) $8\frac{4}{9} = \frac{8 \times 9 + 4}{9} = \frac{76}{9}$

EXERCISE 7.3

1. Replace Δ in each of the following by the correct number:

a) $\frac{2}{7} = \frac{8}{\Delta}$

b) $\frac{5}{8} = \frac{10}{\Delta}$

c) $\frac{3}{5} = \frac{\Delta}{20}$

d) $\frac{45}{60} = \frac{15}{\Delta}$

e) $\frac{18}{24} = \frac{\Delta}{4}$

Answer:

a) 28

$$\frac{2 \times 4}{7 \times 4} = \frac{8}{28}$$

b) 16

$$\frac{5 \times 2}{8 \times 2} = \frac{10}{16}$$

c) 12

$$\frac{3 \times 4}{5 \times 4} = \frac{12}{20}$$

d) 20

$$\frac{45 \div 3}{60 \div 3} = \frac{15}{20}$$

e) 3

$$\frac{18 \div 6}{24 \div 6} = \frac{3}{4}$$

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

a) denominator 20

b) Numerator 9

c) Denominator 30

d) Numerator 27

Answer:

a) $\frac{12}{20}$

$$\frac{3 \times 4}{5 \times 4} = \frac{12}{20}$$

b) $\frac{9}{15}$

$$\frac{3 \times 3}{5 \times 3} = \frac{9}{15}$$

c) $\frac{18}{30}$

$$\frac{3 \times 6}{5 \times 6} = \frac{18}{30}$$

d) $\frac{27}{45}$

$$\frac{3 \times 9}{5 \times 9} = \frac{27}{45}$$

3. Find the equivalent fraction of $\frac{36}{48}$ with

a) numerator 9

b) denominator 4

Answer:

a) $\frac{9}{12}$

$$\frac{36 \div 4}{48 \div 4} = \frac{9}{12}$$

b) $\frac{3}{4}$

$$\frac{36 \div 12}{48 \div 12} = \frac{3}{4}$$

4. Check whether the given fractions are equivalent:

a) $\frac{5}{9}, \frac{30}{54}$

b) $\frac{3}{10}, \frac{12}{50}$

c) $\frac{7}{13}, \frac{5}{11}$

Answer:

a) The given fractions are equivalent. Because $\frac{5 \times 6}{9 \times 6} = \frac{30}{54}$

b) The given fractions are not equivalent.

c) The given fractions are not equivalent.

5. Reduce the following fractions to simplest form:

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

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

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

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

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

Answer:

a) $\frac{48 \div 12}{60 \div 12} = \frac{4}{5}$

b) $\frac{150 \div 30}{60 \div 30} = \frac{5}{2}$

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

d) $\frac{12 \div 4}{52 \div 4} = \frac{3}{13}$

e) $\frac{7 \div 7}{28 \div 7} = \frac{1}{4}$

6. Ramesh had 20 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?

Answer:

Pencil used by Ramesh = $\frac{10}{20} = \frac{1}{2}$

Pencil used by Sheelu = $\frac{25}{50} = \frac{1}{2}$

Pencil used by Jamaal = $\frac{40}{80} = \frac{1}{2}$

Yes, all of them used equal fraction of pencils, $\frac{1}{2}$.

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) $\frac{9}{10}$

Answer:

(i) (d)

(ii) (e)

(iii) (a)

(iv) (c)

(v) (b)

EXERCISE 7.4

1. 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) $\frac{3}{5} \square \frac{3}{7}$

Answer:

a) $\frac{3}{6} < \frac{5}{6}$, the denominators are same. Therefore, the fraction with the greater numerator will be greater.

b) $\frac{1}{7} < \frac{1}{4}$, convert into like fractions. So we get $\frac{1 \times 4}{7 \times 4} = \frac{4}{28}$ and $\frac{1 \times 7}{4 \times 7} = \frac{7}{28}$. Therefore $\frac{4}{28} < \frac{7}{28}$.

c) $\frac{4}{5} < \frac{5}{5}$, the denominators are same. Therefore, the fraction with the greater numerator will be greater..

d) $\frac{3}{5} > \frac{3}{7}$, convert into like fractions. So we get $\frac{3 \times 7}{5 \times 7} = \frac{21}{35}$ and $\frac{3 \times 5}{7 \times 5} = \frac{15}{35}$. Therefore $\frac{21}{35} > \frac{15}{35}$.

2. 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) $\frac{7}{9} \square \frac{3}{9}$

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

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

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

$$j) \frac{6}{10} \square \frac{3}{5}$$

$$k) \frac{5}{7} \square \frac{15}{21}$$

Answer:

$$a) \frac{1}{2} > \frac{1}{5}$$

$$b) \frac{2}{4} = \frac{3}{6}$$

$$c) \frac{3}{5} < \frac{2}{3}$$

$$d) \frac{3}{4} > \frac{2}{8}$$

$$e) \frac{3}{5} < \frac{6}{5}$$

$$f) \frac{7}{9} > \frac{3}{9}$$

$$g) \frac{1}{4} = \frac{2}{8}$$

$$h) \frac{6}{10} < \frac{4}{5}$$

$$i) \frac{3}{4} < \frac{7}{8}$$

$$j) \frac{6}{10} = \frac{3}{5}$$

$$k) \frac{5}{7} = \frac{15}{21}$$

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

Answer:

a) The simplest form of $\frac{2}{12}$ is $\frac{1}{6}$

b) The simplest form of $\frac{3}{15}$ is $\frac{1}{5}$

c) The simplest form of $\frac{8}{50}$ is $\frac{4}{25}$

d) The simplest form of $\frac{16}{100}$ is $\frac{4}{25}$

e) The simplest form of $\frac{10}{60}$ is $\frac{1}{6}$

f) The simplest form of $\frac{15}{75}$ is $\frac{1}{5}$

g) The simplest form of $\frac{12}{60}$ is $\frac{1}{5}$

h) The simplest form of $\frac{16}{96}$ is $\frac{1}{6}$

i) The simplest form of $\frac{12}{75}$ is $\frac{4}{25}$

j) The simplest form of $\frac{12}{72}$ is $\frac{1}{6}$

k) The simplest form of $\frac{3}{18}$ is $\frac{1}{6}$

l) The simplest form of $\frac{4}{25}$ is $\frac{4}{25}$

a), e), h), j), k) forms one group. Each fraction represents $\frac{1}{6}$

b), f), g) forms one group. Each fraction represents $\frac{1}{5}$

c), d), i), l) forms one group. Each fraction represents $\frac{4}{25}$

4. 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 $\frac{4}{30}$?

Answer:

a) No, because equivalent fractions of $\frac{5}{9}$ are $\frac{25}{45}$ and $\frac{4}{5}$ are $\frac{36}{45}$. Both are not equal.

b) No, because equivalent fractions of $\frac{9}{16}$ are $\frac{81}{144}$ and $\frac{5}{9}$ are $\frac{80}{144}$. Both are not equal.

c) Yes, because equivalent fractions of $\frac{4}{5}$ are $\frac{16}{20}$. So these fractions are equal.

d) No, because equivalent fractions of $\frac{1}{15}$ are $\frac{2}{30}$ and $\frac{2}{30} \neq \frac{4}{30}$. So these fractions are not equal.

5. Ila read 25 pages of a book containing 100 pages. Lalita read $\frac{2}{5}$ of the same book. Who read less?

Answer:

Ila has read less.

25 pages of a book containing 100 pages = $\frac{25}{100}$

$\frac{2}{5}$ of a book containing 100 pages = $\frac{2}{5} \times 100 = 40$ pages = $\frac{40}{100}$

Since $\frac{25}{100} < \frac{40}{100}$, Ila read less.

6. 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?

Answer:

$$\frac{3}{6} \text{ of an hour} = \frac{3}{6} \times 60 = 30 \text{ minutes}$$

$$\frac{3}{4} \text{ of an hour} = \frac{3}{4} \times 60 = 45 \text{ minutes}$$

Therefore, Rohit exercised for a longer time.

7. In a class A of 25 students, 20 passed with 60% or more marks; in another class B of 30 students, 24 passed with 60% or more marks. In which class was a greater fraction of students getting with 60% or more marks?

Answer:

Same fraction ($\frac{4}{5}$) of students got first class in both the classes.

Class A: The number of students who got 60% or more mark = $\frac{20}{25}$

Class B: The number of students who got 60% or more mark = $\frac{24}{30}$

The equivalent fraction of $\frac{20}{25}$ is $\frac{20 \div 5}{25 \div 5} = \frac{4}{5}$

The equivalent fraction of $\frac{24}{30}$ is $\frac{24 \div 6}{30 \div 6} = \frac{4}{5}$

Both are equal.

EXERCISE 7.5

1. 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) $1 - \frac{2}{3}$ ($1 = \frac{3}{3}$)

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

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

Answer:

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

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

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

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

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

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

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

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

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

2. 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?

Answer:

The complete wall they painted together.

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

3. Fill in the missing fractions.

$$a) \frac{7}{10} - \square = \frac{3}{10}$$

$$b) \square - \frac{3}{21} = \frac{5}{21}$$

$$c) \square - \frac{3}{6} = \frac{3}{6}$$

$$d) \square + \frac{5}{27} = \frac{12}{27}$$

Answer:

a) $\frac{4}{10}$

b) $\frac{8}{21}$

c) $\frac{6}{6}$

d) $\frac{7}{27}$

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

Answer:

The fraction of oranges left in the basket = $\frac{7}{7} - \frac{5}{7} = \frac{2}{7}$

EXERCISE 7.6

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

$$m) \frac{16}{5} - \frac{7}{5}$$

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

Answer:

$$a) \frac{2}{3} + \frac{1}{7}$$

These fractions are unlike. So first of all we want to convert these into like fractions by finding the equivalent fractions.

Equivalent fractions of $\frac{2}{3}$ are $\frac{2}{3}, \frac{4}{6}, \frac{6}{9}, \frac{8}{12}, \frac{10}{15}, \frac{12}{18}, \frac{14}{21}, \dots$

Equivalent fractions of $\frac{1}{7}$ are $\frac{1}{7}, \frac{2}{14}, \frac{3}{21}, \frac{4}{28}, \dots$

The like fractions are $\frac{14}{21}$ and $\frac{3}{21}$.

$$\text{Therefore, } \frac{2}{3} + \frac{1}{7} = \frac{14}{21} + \frac{3}{21} = \frac{17}{21}$$

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

Equivalent fractions of $\frac{3}{10}$ are $\frac{3}{10}, \frac{6}{20}, \frac{9}{30}, \frac{12}{40}, \dots$

Equivalent fractions of $\frac{7}{15}$ are $\frac{7}{15}, \frac{14}{30}, \frac{21}{45}, \frac{28}{60}, \dots$

The like fractions are $\frac{9}{30}$ and $\frac{14}{30}$.

$$\text{Therefore, } \frac{3}{10} + \frac{7}{15} = \frac{9}{30} + \frac{14}{30} = \frac{23}{30}$$

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

Equivalent fractions of $\frac{4}{9}$ are $\frac{4}{9}, \frac{8}{18}, \frac{12}{27}, \frac{16}{36}, \frac{20}{45}, \frac{24}{54}, \frac{28}{63}, \dots$

Equivalent fractions of $\frac{2}{7}$ are $\frac{2}{7}, \frac{4}{14}, \frac{6}{21}, \frac{8}{28}, \frac{10}{35}, \frac{12}{42}, \frac{14}{49}, \frac{16}{56}, \frac{18}{63}, \dots$

The like fractions are $\frac{28}{63}$ and $\frac{18}{63}$.

$$\text{Therefore, } \frac{4}{9} + \frac{2}{7} = \frac{28}{63} + \frac{18}{63} = \frac{46}{63}$$

$$d) \frac{5}{7} + \frac{1}{3}$$

Equivalent fractions of $\frac{5}{7}$ are $\frac{5}{7}, \frac{10}{14}, \frac{15}{21}, \frac{20}{28}, \dots$

Equivalent fractions of $\frac{1}{3}$ are $\frac{1}{3}, \frac{2}{6}, \frac{3}{9}, \frac{4}{12}, \frac{5}{15}, \frac{6}{18}, \frac{7}{21}, \dots$

The like fractions are $\frac{15}{21}$ and $\frac{7}{21}$

Therefore, $\frac{5}{7} + \frac{1}{3} = \frac{15}{21} + \frac{7}{21} = \frac{22}{21}$

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

Equivalent fractions of $\frac{2}{5}$ are $\frac{2}{5}, \frac{4}{10}, \frac{6}{15}, \frac{8}{20}, \frac{10}{25}, \frac{12}{30}, \dots$

Equivalent fractions of $\frac{1}{6}$ are $\frac{1}{6}, \frac{2}{12}, \frac{3}{18}, \frac{4}{24}, \frac{5}{30}, \dots$

The like fractions are $\frac{12}{30}$ and $\frac{5}{30}$

Therefore, $\frac{2}{5} + \frac{1}{6} = \frac{12}{30} + \frac{5}{30} = \frac{17}{30}$

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

Equivalent fractions of $\frac{4}{5}$ are $\frac{4}{5}, \frac{8}{10}, \frac{12}{15}, \frac{16}{20}, \dots$

Equivalent fractions of $\frac{2}{3}$ are $\frac{2}{3}, \frac{4}{6}, \frac{6}{9}, \frac{8}{12}, \frac{10}{15}, \dots$

The like fractions are $\frac{12}{15}$ and $\frac{10}{15}$

Therefore, $\frac{4}{5} + \frac{2}{3} = \frac{12}{15} + \frac{10}{15} = \frac{22}{15}$

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

Equivalent fractions of $\frac{3}{4}$ are $\frac{3}{4}, \frac{6}{8}, \frac{9}{12}, \frac{12}{16}, \dots$

Equivalent fractions of $\frac{1}{3}$ are $\frac{1}{3}, \frac{2}{6}, \frac{3}{9}, \frac{4}{12}, \dots$

The like fractions are $\frac{9}{12}$ and $\frac{4}{12}$

Therefore, $\frac{3}{4} - \frac{1}{3} = \frac{9}{12} - \frac{4}{12} = \frac{5}{12}$

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

Equivalent fractions of $\frac{5}{6}$ are $\frac{5}{6}, \frac{10}{12}, \frac{15}{18}, \frac{20}{24}, \dots$

Equivalent fractions of $\frac{1}{3}$ are $\frac{1}{3}, \frac{2}{6}, \frac{3}{9}, \frac{4}{12}, \frac{5}{15}, \dots$

The like fractions are $\frac{5}{6}$ and $\frac{2}{6}$

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

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

Equivalent fractions of $\frac{2}{3}$ are $\frac{2}{3}, \frac{4}{6}, \frac{6}{9}, \frac{8}{12}$

Equivalent fractions of $\frac{3}{4}$ are $\frac{3}{4}, \frac{6}{8}, \frac{9}{12}, \frac{12}{16}$

Equivalent fractions of $\frac{1}{2}$ are $\frac{1}{2}, \frac{2}{4}, \frac{3}{6}, \frac{4}{8}, \frac{5}{10}, \frac{6}{12}$

The like fractions are $\frac{8}{12}, \frac{9}{12}, \frac{6}{12}$

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

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

Equivalent fractions of $\frac{1}{2}$ are $\frac{1}{2}, \frac{2}{4}, \frac{3}{6}, \frac{4}{8}, \frac{5}{10}$

Equivalent fractions of $\frac{1}{3}$ are $\frac{1}{3}, \frac{2}{6}, \frac{3}{9}, \frac{4}{12}, \frac{5}{15}$

Equivalent fractions of $\frac{1}{6}$ are $\frac{1}{6}, \frac{2}{12}, \frac{3}{18}, \frac{4}{24}$

The like fractions are $\frac{3}{6}, \frac{2}{6}, \frac{1}{6}$

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

k) $1\frac{1}{3} + 3\frac{2}{3}$

First convert mixed fraction into improper fractions.

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

$$3\frac{2}{3} = \frac{3 \times 3 + 2}{3} = \frac{11}{3}$$

$$1\frac{1}{3} + 3\frac{2}{3} = \frac{4}{3} + \frac{11}{3} = \frac{15}{3} = 5$$

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

Convert mixed fraction into improper fractions.

$$4\frac{2}{3} = \frac{4 \times 3 + 2}{3} = \frac{14}{3}$$

$$3\frac{1}{4} = \frac{3 \times 4 + 1}{4} = \frac{13}{4}$$

$$4\frac{2}{3} + 3\frac{1}{4} = \frac{14}{3} + \frac{13}{4}$$

Equivalent fractions of $\frac{14}{3}$ are $\frac{14}{3}, \frac{28}{6}, \frac{42}{9}, \frac{56}{12}$

Equivalent fractions of $\frac{13}{4}$ are $\frac{13}{4}, \frac{26}{8}, \frac{39}{12}$

The like fractions are $\frac{56}{12}$ and $\frac{39}{12}$

Therefore, $4\frac{2}{3} + 3\frac{1}{4} = \frac{56}{12} + \frac{39}{12} = \frac{95}{12}$

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

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

Convert into like fractions.

Equivalent fractions of $\frac{4}{3}$ are $\frac{4}{3}, \frac{8}{6}, \dots$

Equivalent fractions of $\frac{1}{2}$ are $\frac{1}{2}, \frac{2}{4}, \frac{3}{6}, \dots$

Like fractions are $\frac{8}{6}$ and $\frac{3}{6}$

Therefore, $\frac{4}{3} - \frac{1}{2} = \frac{8}{6} - \frac{3}{6} = \frac{5}{6}$

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?

Answer:

The length of the ribbon bought by Sarita = $\frac{2}{5}$ metre

The length of the ribbon bought by Lalita = $\frac{3}{4}$ metre

Total length of the ribbon = $\frac{2}{5} + \frac{3}{4}$

Equivalent fractions of $\frac{2}{5}$ are $\frac{2}{5}, \frac{4}{10}, \frac{6}{15}, \frac{8}{20}, \dots$

Equivalent fractions of $\frac{3}{4}$ are $\frac{3}{4}, \frac{6}{8}, \frac{9}{12}, \frac{12}{16}, \frac{15}{20}, \dots$

The like fractions are $\frac{8}{20}$ and $\frac{15}{20}$

Therefore, $\frac{2}{5} + \frac{3}{4} = \frac{8}{20} + \frac{15}{20} = \frac{23}{20}$ metre

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.

Answer:

The number of piece of cake given to Naina = $1\frac{1}{2}$

The number of piece of cake given to Najma = $1\frac{1}{3}$

Total amount of cake given to both of them = $1\frac{1}{2} + 1\frac{1}{3}$

Convert mixed fraction to improper fractions

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

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

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

Now equivalent fractions of $\frac{3}{2}$ are $\frac{3}{2}, \frac{6}{4}, \frac{9}{6}, \frac{12}{8}, \dots$

Equivalent fractions of $\frac{4}{3}$ are $\frac{4}{3}, \frac{8}{6}, \frac{12}{9}, \frac{16}{12}, \dots$

The like fractions are $\frac{9}{6}$ and $\frac{8}{6}$

Therefore, $\frac{3}{2} + \frac{4}{3} = \frac{9}{6} + \frac{8}{6} = \frac{17}{6} = 2\frac{5}{6}$

4. Fill in the boxes:

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

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

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

Answer:

a) $\frac{7}{8} - \frac{5}{8} = \frac{1}{4}$

$$b) \frac{7}{10} - \frac{1}{5} = \frac{1}{2}$$

$$c) \frac{1}{2} - \frac{1}{3} = \frac{1}{6}$$

5. Complete the addition- subtraction box.

a)

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

b)

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

Answer:

a)

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

b)

$\frac{1}{2}$	$\frac{1}{3}$	$\frac{5}{6}$
$\frac{1}{3}$	$\frac{1}{4}$	$\frac{7}{12}$
$\frac{1}{6}$	$\frac{1}{12}$	$\frac{1}{4}$

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?

Answer:

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

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

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

Equivalent fractions of $\frac{1}{4}$ are $\frac{2}{8}$

Therefore, $\frac{7}{8} - \frac{1}{4} = \frac{7}{8} - \frac{2}{8} = \frac{5}{8}$ metre.

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?

Answer:

Distance between school and house = $\frac{9}{10}$ km

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

Distance she walked = $\frac{9}{10} - \frac{1}{2}$

Equivalent fraction of $\frac{1}{2}$ is $\frac{5}{10}$

Therefore, $\frac{9}{10} - \frac{5}{10} = \frac{4}{10}$ km

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?

Answer:

Equivalent fractions of $\frac{5}{6}$ are $\frac{5}{6}, \frac{10}{12}, \frac{15}{18}, \frac{20}{24}, \frac{25}{30}$

Equivalent fractions of $\frac{2}{5}$ are $\frac{2}{5}, \frac{4}{10}, \frac{6}{15}, \frac{8}{20}, \frac{10}{25}, \frac{12}{30}$

The like fractions are $\frac{25}{30}$ and $\frac{12}{30}$

Since $\frac{25}{30} > \frac{12}{30}$, Asha's book shelf is more full.

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

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?

Answer:

First convert mixed to improper fractions

$2\frac{1}{5} = \frac{2 \times 5 + 1}{5} = \frac{11}{5}$

Now find the equivalent fractions of these fractions.

Equivalent fraction of $\frac{11}{5}$ are $\frac{11}{5}, \frac{22}{10}, \frac{33}{15}, \frac{44}{20}$

Equivalent fractions of $\frac{7}{4}$ are $\frac{7}{4}, \frac{14}{8}, \frac{21}{12}, \frac{28}{16}, \frac{35}{20}$

The like fractions are $\frac{44}{20}$ and $\frac{35}{20}$

Since $\frac{44}{20} > \frac{35}{20}$, Rahul takes less time.

$$\text{Difference} = \frac{44}{20} - \frac{35}{20} = \frac{9}{20} \text{ minutes.}$$