## NCERT

## SOLUTIONS

## CLASS-6TH


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## Class: 6th

Subject : Maths
Chapter: 7
Chapter Name : FRACTIONS

## Exercise 7.1

Q1 Write the fraction representing the shaded portion.


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 parts 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 parts out of 2 equal parts.

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

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Q2 Colour the part according to the given fraction.


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

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

Answer.
(i)

(ii)

(iii)

(iv)

(v)


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Q3 Identify the error, if any.



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


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

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

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Q4 What fraction of a day is 8 hours?
Answer. There are 24 hours in a day. Therefore, 8 hours Of a day represent $\frac{8}{24}$

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Q5 What fraction of an hour is 40 minutes?

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

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Q6 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.

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Q7 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 $=\frac{20}{30}=\frac{2}{3}$

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Q8 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 $\frac{5}{11}$
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Q9 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 $\frac{4}{12}$

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Q10 What fraction of these circles have X's in them?

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

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Q11 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.

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## Exercise 7.2

Q1 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) $\frac{2}{5}, \frac{3}{5}, \frac{8}{5}, \frac{4}{5}$

## Answer.

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

(b)

(c)


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Q2 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) $\frac{20}{3}=\frac{18+2}{3}=\frac{18}{3}+\frac{2}{3}=6+\frac{2}{3}=6 \frac{2}{3}$
(b) $\frac{11}{5}=\frac{10+1}{5}=\frac{10}{5}+\frac{1}{5}=2+\frac{1}{5}=2 \frac{1}{5}$
(c) $\frac{17}{7}=\frac{14+3}{7}=\frac{14}{7}+\frac{3}{7}=2+\frac{3}{7}=2 \frac{3}{7}$
(d) $\frac{28}{5}=\frac{25+3}{5}=\frac{28}{5}+\frac{3}{5}=5+\frac{3}{5}=5 \frac{3}{5}$
(e) $\frac{19}{6}=\frac{18+1}{6}=\frac{18}{6}+\frac{1}{6}=3+\frac{1}{6}=3 \frac{19}{6}$
(f) $\frac{35}{9}=\frac{27+8}{9}=\frac{27}{9}+\frac{8}{9}=3+\frac{8}{9}=3 \frac{8}{9}$

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Q3 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) $7 \frac{3}{4}=\frac{(4 * 7)+3}{4}=\frac{31}{4}$
(b) $5 \frac{6}{7}=\frac{(7 * 5)+6}{7}=\frac{41}{7}$
(c) $2 \frac{5}{6}=\frac{(6 * 2)+5}{6}=\frac{17}{6}$
(d) $10 \frac{3}{5}=\frac{(5 * 10)+3}{5}=\frac{53}{5}$
(e) $9 \frac{3}{7}=\frac{(7 * 9)+3}{7}=\frac{66}{7}$
(f) $8 \frac{4}{9}=\frac{(8 * 9)+4}{9}=\frac{76}{9}$

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## Exercise 7.3

Q1 Write the fractions. Are all these fractions equivalent?
(a)

(b)


Answer. (a) In the given circles, 1 out of 2 , 2 out of 4,3 out of 6 , and 4 out of 8 equal pans are shaded respectively. Therefore, these circles represent

(b) In the given rectangles, 4 out of 12,3 out Of 9,2 out Of 6,1 out Of 3 , and 6 out Of 15 equal parts (i.e., circles) are shaded respectively. Therefore, these rectangles represent


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Q2 Write the fractions and pair up the equivalent fractions from each row.


Answer. (a) Here, 1 part is shaded out Of 2 equal parts (i.e., rectangle). Hence, this
figure represents a fraction $\frac{1}{2}$
(b) Here, 4 parts are shaded out of 6 equal parts (i.e., rectangle). Hence, this figure represents a traction $\frac{4}{6}=\frac{2}{3}$
(c) Here, 3 parts are shaded out ot 9 equal parts (i.e., squares). Hence, this figure represents a fraction $\frac{3}{9}=\frac{1}{3}$
(d) Here, 2 parts are shaded Out Of 8 equal parts (i.e., rectangle). Hence, this figure a fraction $\frac{2}{8}=\frac{1}{4}$
(e) Here, 3 parts are shaded out Of 4 equal parts (i.e., squares). Hence, this figure represents a fraction $\frac{3}{4}$
(i) Here, 6 parts are shaded out of 18 equal parts (i.e., triangles). Hence, this figure represents a fraction $\frac{6}{18}=\frac{1}{3}$
(ii) Here, 4 parts are shaded out of 8 equal parts (I.e., rectangles), Hence, this figure represents a fraction $\frac{4}{8}=\frac{1}{2}$
(iii) Here, 12 parts are shaded out of 16 equal parts (i.e., squares). Hence, this figure represents a fraction $\frac{12}{16}=\frac{3}{4}$
(iv) Here, 8 parts are shaded out of 12 equal parts (i.e., rectangles). Hence, this figure represents a fraction $\frac{8}{12}=\frac{2}{3}$
(v) Here, 4 parts are shaded out of 16 equal parts (i.e., triangles). Hence, this figure represents a fraction $\frac{4}{16}=\frac{1}{4}$
Now, these figures can be matched correctly as
(a) (ii), (b) (iv), (c) (i), (d) (v), (e) (iii)

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Q3 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) $\frac{18}{24}=\frac{\square}{4}$

Answer. (a) $\frac{2}{7}=\frac{8}{\square}$
$\frac{2}{7} * \frac{4}{4}=\frac{8}{28}$
Hence, $\& m n S q 2$ can be replaced by 28 .
(b) $\frac{5}{8}=\frac{10}{\square}$
$\frac{5}{8} * \frac{2}{2}=\frac{10}{16}$
Hence, \&mnSq2 can be replaced by 16.
(c) $\frac{3}{5}=\frac{\square}{20}$
$\frac{3}{5} * \frac{4}{4}=\frac{12}{20}$
Hence, $\& m n S q 2$ can be replaced by 12. '
(d) $\frac{45}{60}=\frac{15}{\square}$
$\frac{45}{60}=\frac{15}{20} * \frac{3}{3}$
Hence, $\& m n S q 2$ can be replaced by 20.
(e) $\frac{18}{24}=\frac{\square}{4}$
$\frac{18}{24}=\frac{3}{4} * \frac{6}{6}$
Hence, $\& m n S q 2$ can be replaced by 3 .

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Q4 Find the equivalent fraction of $\frac{3}{5}$ having
(a) denominator 20
(b) numerator 9
(c) denominator 30
(d) numerator 27

Answer. (a) $\frac{3}{5}=\frac{\square}{20}$
3 * $20=5$ *
3*2*2*5 = 5*
$12=$
Hence, the required fraction is $\frac{12}{20}$
(b) $\frac{3}{5}=\frac{9}{\square}$

3* $\square=5$ * 9
$3 * \square=5 * 3 * 3$
$\square=15$
Hence, the required fraction is $\frac{9}{15}$
(c) $\frac{3}{5}=\frac{\square}{30}$

3* $30=5$ *
3*2*3*5 = 5 *
18 =
Hence, the required fraction is $\frac{18}{30}$
(d) $\frac{3}{5}=\frac{27}{\square}$

3* $\square=5 * 27$
3* $\square=5$ * $3 * 3 * 3$
$\square=45$
Hence, the required fraction is $\frac{27}{45}$

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Q5 Find the equivalent fraction of $\frac{36}{48}$ with
(a) numerator 9
(b) denominator 4

Answer. (a) $\frac{36}{48}=\frac{9}{\square}$
36 * $\square=48$ * 9
$3 * 3 * 2 * 2 * \square=2 * 2 * 2 * 2 * 3 * 3 * 3$
$\square=12$
Hence, the required fraction is $\frac{9}{12}$
(b) $\frac{36}{48}=\frac{\square}{4}$

36 * $4=48$ *
$3 * 3 * 2 * 2 * 2 * 2=2 * 2 * 2 * 2 * 3 *$
3 =
Hence, the required fraction is $\frac{3}{4}$
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Q6 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) $\frac{5}{9}, \frac{30}{54}$
$\frac{30}{54}=\frac{5 * 6}{9 * 6}=\frac{5}{9}$
Clearly, both the fractions are equivalent.
(b) $\frac{3}{10}, \frac{12}{50}$
$\frac{3}{10}=\frac{3 * 2}{10 * 2}=\frac{6}{20}$
$\frac{12}{50}=\frac{6 * 2}{25 * 2}=\frac{6}{25}$
Clearly, both the fractions are not equivalent.
(c) $\frac{7}{13}, \frac{5}{11}$
$\frac{7}{13}=\frac{7 * 11}{13 * 11}=\frac{77}{143}$
$\frac{5}{11}=\frac{5 * 13}{11 * 13}=\frac{65}{143}$
Clearly, both the fractions are not equivalent.

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Q7 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) $\frac{48}{60}=\frac{12 * 4}{12 * 5}=\frac{4}{5}$
(b) $\frac{150}{60}=\frac{30 * 5}{30 * 2}=\frac{5}{2}$
(c) $\frac{84}{98}=\frac{14 * 6}{14 * 7}=\frac{6}{7}$
(d) $\frac{12}{52}=\frac{3 * 4}{13 * 4}=\frac{3}{13}$
(e) $\frac{7}{28}=\frac{7}{7 * 4}=\frac{1}{4}$

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Q8 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. Fraction used by Ramesh $=\frac{10}{20}=\frac{1}{2}$
Fraction used by Sheelu $=\frac{25}{50}=\frac{1}{2}$
Fraction used by Jamaal $=\frac{40}{80}=\frac{1}{2}$
Yes, all Of them used equal fraction Of pencils i.e., $\frac{1}{2}$.

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Q9 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) $\frac{250}{400}=\frac{5 * 50}{8 * 50}=\frac{5}{8}$
Two more fractions are $\frac{25}{40}, \frac{30}{48}$.
(ii) $\frac{180}{200}=\frac{9 * 20}{10 * 20}=\frac{9}{10}$

Two more fractions are $\frac{18}{20}, \frac{27}{30}$.
(iii) $\frac{660}{990}=\frac{2 * 330}{3 * 330}=\frac{2}{3}$

Two more fractions are $\frac{20}{30}, \frac{200}{300}$.
(iv) $\frac{180}{360}=\frac{1 * 180}{2 * 180}=\frac{1}{2}$

Two more fractions are $\frac{20}{40}, \frac{30}{60}$.
(v) $\frac{220}{550}=\frac{2 * 110}{5 * 110}=\frac{2}{5}$

Two more fractions are $\frac{20}{50}, \frac{40}{100}$.
Now, these can be matched as

$$
\text { (i) } \rightarrow \text { (d), (ii) } \rightarrow \text { (e), (iii) } \rightarrow \text { (a), (iv) } \rightarrow \text { (c), (v) } \rightarrow \text { (b) }
$$

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Exercise 7.4

Q1 Write shaded portion as fraction. Arrange them in ascending and descending order using correct sign '<', ' $=$ ', '>' between the fractions:
(b)

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


Answer. (a)
(i)


Here, 1 st circle represents 3 shaded parts out ot 8 equal parts. Therefore, it represents a fraction $\frac{3}{8}$.
(ii)


Here, 2nd circle represents 6 shaded parts out ot 8 equal parts. Therefore, it represents a fraction $\frac{6}{8}$.
(iii)


Here, 3rd circle represents 4 shaded parts out ot 8 equal parts. Therefore, it represents a fraction $\frac{4}{8}$.
(iv)


Here, 4th circle represents 1 shaded parts out ot 8 equal parts. Therefore, it represents a fraction $\frac{1}{8}$.
Now, these fractions may be arranged as
$\frac{1}{8}<\frac{3}{8}<\frac{4}{8}<\frac{6}{8}$
(b)
(i)


Here, 1st square represents 8 shaded parts out of 9 equal parts. Therefore, It represents a fraction $\frac{8}{9}$.
(ii)


Here, 2nd square represents 4 shaded parts out of 9 equal parts. Therefore, It represents a fraction $\frac{4}{9}$.
(iii)


Here, 3 rd square represents 3 shaded parts out of 9 equal parts. Therefore, It represents a fraction $\frac{3}{9}$.
(iv)


Here, 4th square represents 6 shaded parts out of 9 equal parts. Therefore, It represents a fraction $\frac{6}{9}$.
Now, these fractions may be arranged as
$\frac{3}{9}<\frac{4}{9}<\frac{6}{9}<\frac{8}{9}$
(c) To represent the given fractions $\frac{2}{6}, \frac{4}{6}, \frac{8}{6}$ and $\frac{6}{6}$ on number line, each unit length should be divided in 6 equal parts. Now, these fractions can be represented as

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

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Q2 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) $\frac{3}{6}<\frac{5}{6}$
Here, the denominators are same. Therefore, the fraction having the greater numerator will be greater.
(b) $\frac{1}{7}=\frac{1 * 4}{7 * 4}=\frac{4}{28}$
$\frac{1}{4}=\frac{1 * 7}{4 * 7}=\frac{7}{28}$
As $4<7$,
$\frac{1}{7}<\frac{1}{4}$
(c) $\frac{4}{5}<\frac{5}{5}$

Here, the denominators are same. Therefore, the fraction having the greater numerator will be greater.
(d) $\frac{3}{5}>\frac{3}{7}$

Here, the numerators are same. Therefore, the fraction having the greater denominator will be greater.

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Q3 Make five more such pairs and put appropriate signs.
Answer. (i) $\frac{6}{7}<\frac{8}{7}$
Here, the denominators are same. Therefore, the fraction having the greater numerator will be greater.
(ii) $\frac{5}{8}>\frac{3}{8}$

Here, the denominators are same. Therefore, the fraction having the greater numerator will be greater.
(iii) $\frac{6}{13}>\frac{6}{17}$

Here, the numerators are same. Therefore, the fraction having the lesser denominator will be greater.
(iv) $\frac{5}{22}>\frac{3}{22}$

Here, the denominators are same. Therefore, the fraction having the greater numerator will be greater.
(v) $\frac{9}{47}<\frac{9}{42}$

Here, the numerators are same. Therefore, the fraction having the lesser denominator will be greater.

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Q4 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)

(e)
$\frac{5}{6} \square \frac{5}{5}$
Make five more such problems and solve them with your friends.
Answer. (a) Here, the numerators are same, Therefore, the fraction having the lesser denominator will be greater.
Hence, $\frac{1}{6}<\frac{1}{3}$
(b)
$\frac{3}{4}=\frac{3 * 3}{4 * 3}=\frac{9}{12}$
$\frac{2}{6}=\frac{2 * 2}{6 * 2}=\frac{4}{12}$
As the denominators of $\frac{9}{12}, \frac{4}{12}$ are same, the fraction having the greater numerator will be greater.
Hence, $\frac{3}{4}>\frac{2}{6}$
(c)

Here, the numerators are same, Therefore, the fraction having the lesser denominator will be greater.
Hence, $\frac{2}{3}>\frac{2}{4}$
(d) As $\frac{6}{6}=1, \frac{3}{3}=1$
$\frac{6}{6}=\frac{3}{3}$
(e) Here, the numerators are same, Therefore, the fraction having the lesser denominator will be greater.
Hence, $\frac{5}{6}<\frac{5}{5}$
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Q5 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) Here, the numerators are same, Therefore, the fraction having the lesser denominator will be greater.
Hence, $\frac{1}{2}>\frac{1}{5}$
(b)
$\frac{2}{4}=\frac{1}{2}$ and $\frac{3}{6}=\frac{1}{2}$
Hence, $\frac{2}{4}=\frac{3}{6}$
(c) $\frac{3}{5}=\frac{3 * 3}{5 * 3}=\frac{9}{15}$
$\frac{2}{3}=\frac{2 * 5}{3 * 5}=\frac{10}{15}$
As the denominators of $\frac{9}{15}$ and $\frac{10}{15}$ are same, the fraction having the greater numerator will be greater.
Hence, $\frac{3}{5}<\frac{2}{3}$
(d) $\frac{2}{8}=\frac{1}{4}$

As the denominators of $\frac{3}{4}$ and $\frac{1}{4}$ are same, the fraction having the greater numerator Will be greater.
Hence, $\frac{3}{4}>\frac{2}{8}$
(e) Here, the denominators are same. Therefore, the fraction having the greater numerator will be greater.
Hence, $\frac{3}{5}<\frac{6}{5}$
(f) Here, the denominators are same. Therefore, the fraction having the greater numerator will be greater.
Hence, $\frac{7}{9}>\frac{3}{9}$
(g) $\frac{2}{8}=\frac{1}{4}$
$\frac{1}{4}=\frac{2}{8}$
(h) $\frac{6}{10}=\frac{3 * 2}{5 * 2}=\frac{3}{5}$

As the denominators of $\frac{3}{5}$ and $\frac{4}{5}$ are same, the fraction having the greater numerator Will be greater.
Hence, $\frac{6}{10}<\frac{4}{5}$
(i) $\frac{3}{4}=\frac{3 * 2}{4 * 2}=\frac{6}{8}$

As the denominators of $\frac{6}{8}$ and $\frac{7}{8}$ are same, the fraction having the greater numerator will be greater.
Hence, $\frac{3}{4}<\frac{7}{8}$
(j) $\frac{6}{10}=\frac{3 * 2}{5 * 2}=\frac{3}{5}$

As the denominators of $\frac{3}{5}$ and $\frac{4}{5}$ are same, the fraction having the greater numerator will be greater.
Hence, $\frac{6}{10}<\frac{4}{5}$
(k) $\frac{5}{7}=\frac{5 * 3}{7 * 3}=\frac{15}{21}$

Hence, $\frac{5}{7}=\frac{15}{21}$

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Q6 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)
$\frac{2}{12}=\frac{1 * 2}{6 * 2}=\frac{1}{6}$
(b)
$\frac{3}{15}=\frac{1 * 3}{5 * 3}=\frac{1}{5}$
(c)
$\frac{8}{50}=\frac{4 * 2}{25 * 2}=\frac{4}{25}$
(d)
$\frac{16}{100}=\frac{4 * 4}{25 * 4}=\frac{4}{25}$
(e)
$\frac{10}{60}=\frac{1 * 10}{6 * 10}=\frac{1}{6}$
(f)
$\frac{15}{75}=\frac{1 * 15}{5 * 15}=\frac{1}{5}$
(g)
$\frac{12}{60}=\frac{1 * 12}{5 * 12}=\frac{1}{5}$
(h)
$\frac{16}{96}=\frac{1 * 16}{6 * 16}=\frac{1}{6}$
(i)
$\frac{12}{75}=\frac{4 * 3}{25 * 3}=\frac{4}{25}$
(j)
$\frac{12}{72}=\frac{1 * 12}{6 * 12}=\frac{1}{6}$
(k)
$\frac{3}{18}=\frac{1 * 3}{6 * 3}=\frac{1}{6}$
(1)
$\frac{4}{25}$
There are 3 groups of equivalent fractions
$\frac{1}{6}-->(\mathrm{a}),(\mathrm{e}),(\mathrm{h}),(\mathrm{j}),(\mathrm{k})$
$\frac{1}{5}-->$ (b), (f), (g)
$\frac{4}{25}-->$ (c), (d), (i), (l)

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Q7 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) $\frac{5}{9}, \frac{4}{5}$
Converting these into like fractions,
$\frac{5}{9}=\frac{5}{9} * \frac{5}{5}=\frac{25}{45}$
$\frac{4}{5}=\frac{4}{5} * \frac{9}{9}=\frac{36}{45}$
As, $\frac{36}{45} \neq \frac{25}{45}$,
Therefore, $\frac{5}{9}$ is not equal to $\frac{4}{5}$.
(b) $\frac{9}{16}, \frac{5}{9}$

Converting these into like fractions,
$\frac{9}{16}=\frac{9}{16} * \frac{9}{9}=\frac{81}{144}$
$\frac{5}{9}=\frac{5}{9} * \frac{16}{16}=\frac{80}{144}$
As, $\frac{81}{144} \neq \frac{80}{144}$.
Therefore, $\frac{81}{144}$ is not equal to $\frac{80}{144}$.
(c) $\frac{4}{5}, \frac{16}{20}$
$\frac{16}{20}=\frac{4 * 4}{5 * 4}=\frac{4}{5}$
Therefore, $\frac{4}{5}=\frac{16}{20}$
(d) $\frac{1}{15}, \frac{4}{30}$
$\frac{4}{30}=\frac{2 * 2}{15 * 2}=\frac{2}{15}$
Therefore, $\frac{1}{15}$ is not equal to $\frac{4}{30}$
Page : 154 , Block Name : Exercise 7.4
Q8 Ila read 25 pages of a book containing 100 pages. Lalita read $\frac{2}{5}$ of the same book. Who read less?

Answer. Numbers of pages read bv Lalita $=\frac{2}{5} * 100=40$
Number of pages read by Ila $=25$
Hence, Ila has read less number of pages.

Page : 154 , Block Name : Exercise 7.4
Q9 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. Ratiq exercised for $\frac{3}{6} \mathrm{hr}$ and Rohit exercised for $\frac{3}{4} \mathrm{hr}$. Converting these into like fractions,
$\frac{3}{6}=\frac{3 * 2}{6 * 2}=\frac{6}{12}$
$\frac{3}{4}=\frac{3 * 3}{4 * 3}=\frac{9}{12}$
$\frac{9}{12}>\frac{6}{12} \Rightarrow \frac{3}{4}>\frac{3}{6}$
Hence, Rohit exercised for a longer time.

Page : 154 , Block Name : Exercise 7.4

Q10 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. Fraction of students of class A who passed in 1st class $=\frac{20}{25}=\frac{4}{5}$
Fraction of students of class B who passed in 1st class $=\frac{24}{30}=\frac{4}{5}$
From both classes, an equal fraction of students passed in first class.

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## Exercise 7.5

Q1 Write these fractions appropriately as additions or subtractions :


Answer. (a) Here, it can be Observed that 1st, 2nd, and 3rd rectangles are representing 1, 2 , and 3 shaded parts out of 5 equal parts respectively. Clearly, the fraction represented by 3 rd rectangle is the sum of the fractions represented by 1 st and 2 nd rectangles.
Hence, $\frac{1}{5}+\frac{2}{5}=\frac{3}{5}$
(b) Here, it can be observed that 1 st, 2 nd, and $3 r d$ circles are representing 5, 3, and 2 shaded parts out of 5 equal parts respectively. Clearly, the fraction represented by 3rd circle is the difference between the fractions represented by 1st and 2nd circles.
Hence, $\frac{5}{5}-\frac{3}{5}=\frac{2}{5}$
(c) Here, it can be observed that 1st, 2nd, and 3rd rectangles are representing 2, 3, and 5 shaded parts out of 6 equal parts respectively. Clearly, the fraction represented by 3rd rectangle is the sum of the fractions represented by 1 st and 2 nd rectangles.
Hence, $\frac{2}{6}+\frac{3}{6}=\frac{5}{6}$

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Q2 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) $3-\frac{12}{5}$

Answer. (a) $\frac{1}{18}+\frac{1}{18}=\frac{1+1}{18}=\frac{2}{18}=\frac{1}{9}$
(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) $\frac{12}{15}-\frac{7}{15}=\frac{12-7}{15}=\frac{5}{15}=\frac{1}{3}$
(f) $\frac{5}{8}+\frac{3}{8}=\frac{5+3}{8}=\frac{8}{8}=1$
(g) $1-\frac{2}{3}=\frac{3}{3}-\frac{2}{3}=\frac{3-2}{3}=\frac{1}{3}$
(h) $\frac{1}{4}+\frac{0}{4}=\frac{1}{4}+0=\frac{1}{4}$
(i) $3-\frac{12}{5}=\frac{15}{5}-\frac{12}{5}=\frac{15-12}{5}=\frac{3}{5}$

Page : 158 , Block Name : Exercise 7.5
Q3 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. Space painted by Shubham $=\frac{2}{3}$ of the room
Space painted by Madhavi $=\frac{1}{3}$ of the room
Hence, together they painted $=\left(\frac{2}{3}+\frac{1}{3}\right)$ of the room $=1=$ the complete wall

Page : 158 , Block Name : Exercise 7.5

Q4 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) $\frac{7}{10}-\square=\frac{3}{10}$
$\square=\frac{7}{10}-\frac{3}{10}=\frac{7-3}{10}=\frac{4}{10}=\frac{2}{5}$
(b)
$\square-\frac{3}{21}=\frac{5}{21}$
$\square==\frac{5}{21}+=\frac{3}{21}==\frac{5+3}{21}==\frac{8}{21}$
(c)
$\square-\frac{3}{6}=\frac{3}{6}$
$\square=\frac{3}{6}+\frac{3}{6}=\frac{3+3}{6}=\frac{6}{6}=1$
(d) $\square+\frac{5}{27}=\frac{12}{27}$
$\square=\frac{12}{27}-\frac{5}{27}=\frac{12-5}{27}=\frac{7}{27}$
Page : 158 , Block Name : Exercise 7.5
Q5 . Javed was given $\frac{5}{7}$ of a basket of oranges. What fraction of oranges was left in the basket?

Answer. Fractions given to Javed $=\frac{5}{7}$
Fraction left in the basket $=1-\frac{5}{7}=\frac{7}{7}-\frac{5}{7}=\frac{7-5}{7}=\frac{2}{7}$

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## Q1 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) $\frac{2}{3}+\frac{1}{7}$
$\frac{(2 * 7)+(1 * 3)}{21}$ (Taking LCM as 21)
$\frac{14+3}{21}$
$\frac{17}{21}$
(b) $\frac{3}{10}+\frac{7}{15}$
$\frac{(3 * 3)+(7 * 2)}{30}$ (Taking 30 as LCM)
$\frac{9+14}{30}$
$\frac{23}{30}$
$(c)^{\frac{4}{9}+\frac{2}{7}}$
$=\frac{(4 \times 7)+(2 \times 9)}{63}$
$=\frac{28+18}{63}=\frac{46}{63}$
(d) ${ }^{\frac{5}{7}+\frac{1}{3}}$
$=\frac{(5 \times 3)+(1 \times 7)}{21}$
$=\frac{15+7}{21}=\frac{22}{21}$
(e) $\frac{2}{5}+\frac{1}{6}$
$=\frac{(2 \times 6)+(1 \times 5)}{30}=\frac{17}{30}$
(f) $\frac{4}{5}+\frac{2}{3}$
$=\frac{(4 \times 3)+(2 \times 5)}{15}=\frac{22}{15}$
(g) $\frac{3}{4}-\frac{1}{3}$
$=\frac{(3 \times 3)-(1 \times 4)}{12}$
$=\frac{9-4}{12}=\frac{5}{12}$
$(h)^{\frac{5}{6}-\frac{1}{3}}$
$=\frac{5-(1 \times 2)}{6}$
$=\frac{5-2}{6}=\frac{3}{6}=\frac{1}{2}$

$$
\begin{aligned}
& (i)^{\frac{2}{3}+\frac{3}{4}+\frac{1}{2}} \\
= & \frac{(2 \times 4)+(3 \times 3)+(1 \times 6)}{12} \\
= & \frac{8+9+6}{12}=\frac{23}{12}
\end{aligned}
$$

(j) $\frac{1}{2}+\frac{1}{3}+\frac{1}{6}$
$=\frac{(1 \times 3)+(1 \times 2)+(1 \times 1)}{6}$
$=\frac{3+2+1}{6}=\frac{6}{6}=1$
$(\mathrm{k})^{1 \frac{1}{3}+3 \frac{2}{3}}$
$=\frac{(3 \times 1)+1}{3}+\frac{(3 \times 3)+2}{3}$
$=\frac{4}{3}+\frac{11}{3}=\frac{15}{3}=5$

$$
\begin{aligned}
& 4 \frac{2}{3}+3 \frac{1}{4} \\
& =\frac{(3 \times 4)+2}{3}+\frac{(3 \times 4)+1}{4} \\
& =\frac{14}{3}+\frac{13}{4} \\
& =\frac{(14 \times 4)+(13 \times 3)}{12}=\frac{56+39}{12}=\frac{95}{12}
\end{aligned}
$$

$(\mathrm{m}) \frac{16}{5}-\frac{7}{5}=\frac{16-7}{5}=\frac{9}{5}$
(n) $\frac{4}{3}-\frac{1}{2}$
$=\frac{(4 \times 2)-(1 \times 3)}{6}=\frac{8-3}{6}=\frac{5}{6}$

Page : 160 , Block Name : Exercise 7.6
Q2 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. Length of ribbon bought by Savita $=\frac{2}{5} \mathrm{~m}$
Length of ribbon bought by Lalita $=\frac{3}{4}$
Total length of ribbon bought by them $=\frac{2}{5}+\frac{3}{4}=\frac{(2 * 4)+(3 * 5)}{20}=\frac{8+15}{20}=\frac{23}{20} \mathrm{~m}$

Page : 160 , Block Name : Exercise 7.6
Q3 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. Fraction Naina got $=1 \frac{1}{2}=\frac{3}{2}$
Fraction Najma got $=1 \frac{1}{3}=\frac{4}{3}$
Total amount of cake given to them $: \frac{3}{2}+\frac{4}{3}=\frac{3 * 3+4 * 2}{6}=\frac{9+8}{6}=\frac{17}{6}=2 \frac{5}{6}$

Page : 160 , Block Name : Exercise 7.6
Q4 Fill in the boxes :
(a)$-\frac{5}{8}=\frac{1}{4}$
(b)$-\frac{1}{5}=\frac{1}{2}$
(c) $\frac{1}{2}-\square=\frac{1}{6}$

Answer. (a) $\square-\frac{5}{8}=\frac{1}{4}$
$\square=\frac{1}{4}+\frac{5}{8}=\frac{1 * 2+5}{8}=\frac{2+5}{8}=\frac{7}{8}$
(b) $\square-\frac{1}{5}=\frac{1}{2}$
$\square=\frac{1}{2}+\frac{1}{5}=\frac{(1 * 5)+(1 * 2)}{10}=\frac{5+2}{10}=\frac{7}{10}$
(c) $\frac{1}{2}$ $\square=\frac{1}{6}$
$\square=\frac{1}{2}-\frac{1}{6}=\frac{(1 * 3)-1}{6}=\frac{3-1}{6}=\frac{2}{6}=\frac{1}{3}$
Page : 161 , Block Name : Exercise 7.6

Q5 Complete the addition-subtraction box.
(a)

(b)


Answer. (a)
(a) $\frac{2}{3}+\frac{4}{3}=\frac{2+4}{3}=\frac{6}{3}=2$
$\frac{1}{3}+\frac{2}{3}=\frac{1+2}{3}=\frac{3}{3}=1$
$\frac{2}{3}-\frac{1}{3}=\frac{2-1}{3}=\frac{1}{3}$
$\frac{4}{3}-\frac{2}{3}=\frac{4-2}{3}=\frac{2}{3}$
$\frac{1}{3}+\frac{2}{3}=\frac{3}{3}=1$
Hence, the given box can be completed as

$\rightarrow$| $\frac{2}{3}$ | $\frac{4}{3}$ | 2 |
| :---: | :---: | :---: |
| $\frac{1}{3}$ | $\frac{2}{3}$ | 1 |
| $\frac{1}{3}$ | $\frac{2}{3}$ | 1 |

(b)
(b) $\frac{1}{2}+\frac{1}{3}=\frac{(1 \times 3)+(1 \times 2)}{6}=\frac{3+2}{6}=\frac{5}{6}$
$\frac{1}{3}+\frac{1}{4}=\frac{(1 \times 4)+(1 \times 3)}{12}=\frac{4+3}{12}=\frac{7}{12}$
$\frac{1}{2}-\frac{1}{3}=\frac{(1 \times 3)-(1 \times 2)}{6}=\frac{3-2}{6}=\frac{1}{6}$
$\frac{1}{3}-\frac{1}{4}=\frac{(1 \times 4)-(1 \times 3)}{12}=\frac{4-3}{12}=\frac{1}{12}$
$\frac{1}{6}+\frac{1}{12}=\frac{(1 \times 2)+1}{12}=\frac{2+1}{12}=\frac{3}{12}=\frac{1}{4}$
Hence, the given box can be completed as

$\stackrel{|c| c|c|}{|c|}$| $\frac{1}{2}$ | $\frac{1}{3}$ | $\frac{5}{6}$ |
| :---: | :---: | :---: |
| $\frac{1}{3}$ | $\frac{1}{4}$ | $\frac{7}{12}$ |
| $\frac{1}{6}$ | $\frac{1}{12}$ | $\frac{1}{4}$ |

Page : 161 , Block Name : Exercise 7.6
Q6 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 one piece $=\frac{1}{4}$
The length of the other piece of wire will be the difference of the lengths of the original wire and this piece of wire,
Hence, length of the other piece of wire $=\frac{7}{8}-\frac{1}{4}=\frac{7-(1 * 2)}{8}=\frac{7-2}{8}=\frac{5}{8} \mathrm{~m}$

Page : 161, Block Name : Exercise 7.6
Q7 Nandini's house is $\frac{9}{10} \mathrm{~km}$ from her school. She walked some distance and then took a bus for $\frac{1}{2} \mathrm{~km}$ to reach the school. How far did she walk?

Answer. Distance walked by Nandini = Total distance - Distance for which she took the bus
$\frac{9}{10}-\frac{1}{2}=\frac{9-5}{10}=\frac{4}{10}=\frac{2}{5} \mathrm{~km}$

## Page : 161 , Block Name : Exercise 7.6

Q8 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. Fraction Of Asha's shelf $=\frac{5}{6}$
Fraction of Samuel's shelf $=\frac{2}{5}$
Converting these into like fractions,

$$
\begin{aligned}
& \frac{5}{6}=\frac{5}{6} \times \frac{5}{5}=\frac{25}{30} \\
& \frac{2}{5}=\frac{2}{5} \times \frac{6}{6}=\frac{12}{30} \\
& \frac{25}{30}>\frac{12}{30}
\end{aligned}
$$

Clearly, Asha's bookshelf is more full.
Difference $=\frac{5}{6}-\frac{2}{5}=\frac{25}{30}-\frac{12}{30}=\frac{13}{30}$
Page : 161 , Block Name : Exercise 7.6
Q9 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. Time taken by Jaidev $=2 \frac{1}{5}=\frac{11}{5} \mathrm{~min}$.
Time taken by Rahul $=\frac{7}{4} \mathrm{~min}$.
Converting these into like fractions,

$$
\begin{aligned}
& \frac{11}{5}=\frac{11}{5} \times \frac{4}{4}=\frac{44}{20} \\
& \frac{7}{4}=\frac{7}{4} \times \frac{5}{5}=\frac{35}{20} \\
& \text { As } 44>35, \\
& \frac{11}{5}>\frac{7}{4}
\end{aligned}
$$

Hence, Rahul takes lesser time.
Difference $=\frac{11}{5}-\frac{7}{4}=\frac{44}{20}-\frac{35}{20}=\frac{9}{20} \mathrm{~min}$.

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