Tender Heart High School, Sec-33B, Chandigarh
Class - V
Subject - Mathematics
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Exercise 4.2

A Divide the numerator and denominator by the given number.

1. $\frac{5 \div 5}{10 \div 5} = \frac{\boxed{1}}{\boxed{2}}$

2. $\frac{3 \div 3}{9 \div 3} = \frac{\boxed{1}}{\boxed{3}}$

3. $\frac{14 \div 7}{21 \div 7} = \frac{\boxed{2}}{\boxed{3}}$

4. $\frac{20 \div 10}{30 \div 10} = \frac{\boxed{2}}{\boxed{3}}$

B Reduce to the lowest term by dividing the numerator and denominator by their common factor.

1. $\frac{2 \div 2}{10 \div 2} = \frac{1}{5}$

2. $\frac{18 \div 3}{27 \div 3} = \frac{6 \div 3}{9 \div 3} = \frac{2}{3}$

3. $\frac{14 \div 7}{49 \div 7} = \frac{2}{7}$

4. $\frac{15 \div 5}{20 \div 5} = \frac{3}{4}$

5. $\frac{24 \div 2}{36 \div 2} = \frac{12 \div 2}{18 \div 2} = \frac{6 \div 3}{9 \div 3} = \frac{2}{3}$

C. Reduce to the lowest term by dividing the numerator and denominator by their HCF.

1. $\frac{42}{56}$

The HCF of 42 and 56 is 14

$\frac{42 \div 14}{56 \div 14} = \frac{3}{4}$

Ans $\frac{3}{4}$

2. $\frac{27}{36}$

The HCF of 27 and 36 is

$\frac{27 \div 9}{36 \div 9} = \frac{3}{4}$ Ans.

3. $\frac{25}{45}$

The HCF of 25 and 45 is

$\frac{25 \div 5}{45 \div 5} = \frac{5}{9}$ Ans

4. $\frac{18}{30}$

The HCF of 18 and 30 is

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

Ans $\frac{3}{5}$

Comparing and Ordering Fractions:→

Comparing like fractions:→

Compare the numerators of like fractions. The fraction with the greater numerator is greater.

Comparing unlike fractions.

(with the same numerator)

Compare the denominators of unlike fractions with the same numerator. The fraction with the smaller denominator is greater.

With different numerators

To compare unlike fractions with different numerators, first change the fractions into like fractions and then compare the numerators.

Exercise 4.3

A. Compare each pair of the following fractions by cross-multiplication.

1. $\frac{2}{3}, \frac{5}{8}$

Soln:- $\frac{2}{3} \times \frac{5}{8}$

$2 \times 8 = 16$

$5 \times 3 = 15$

$16 > 15$

So, $\frac{2}{3} > \frac{5}{8}$

Ans. $\frac{2}{3} > \frac{5}{8}$

2. $\frac{2}{7}, \frac{3}{13}$

Soln:- $\frac{2}{7} \times \frac{3}{13}$

$2 \times 13 = 26$

$3 \times 7 = 21$

$26 > 21$

So, $\frac{2}{7} > \frac{3}{13}$

Ans $\frac{2}{7} > \frac{3}{13}$

3. $3\frac{2}{5}, \frac{14}{9}$

$\frac{3 \times 5 + 2}{5}, \frac{14}{9}$

$\frac{17}{5}, \frac{14}{9}$

$\frac{17}{5} \times \frac{14}{9}$

$17 \times 9 = 153$

$14 \times 5 = 70$

$153 > 70$

So, $\frac{17}{5} > \frac{14}{9}$

or $3\frac{2}{5} > \frac{14}{9}$ Ans

4. $1\frac{5}{12}, \frac{21}{20}$

$\frac{1 \times 12 + 5}{12}, \frac{21}{20}$

$\frac{17}{12} \times \frac{21}{20}$

$17 \times 20 = 340$

$21 \times 12 = 252$

$340 > 252$

$\frac{17}{12} > \frac{21}{20}$

$1\frac{5}{12} > \frac{21}{20}$ Ans.

B. Rewrite the following fractions in ascending order.

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

Soln:→ The fractions $\frac{3}{5}, \frac{1}{5}, \frac{4}{5}, \frac{2}{5}$ are like fractions.

Let us compare their numerators

$1 < 2 < 3 < 4$

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

Ans, The ascending order of the fractions is

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

2. $\frac{3}{8}, \frac{3}{12}, \frac{3}{6}, \frac{3}{4}$

Soln:- The given fractions have the same numerator.

Compare their denominators.

Here, $12 > 8, 6 > 4$ or $4 < 6 < 8 < 12$

Therefore, $\frac{3}{12} < \frac{3}{8} < \frac{3}{6} < \frac{3}{4}$

Ans, The ascending order of the fractions is

$$\frac{3}{12} < \frac{3}{8} < \frac{3}{6} < \frac{3}{4}$$

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

Soln:- The LCM of the denominators. 5, 4, 2, 5 is

2	5 - 4 - 2 - 5
2	5 - 2 - 1 - 5
5	5 - 1 - 1 - 5
	1 - 1 - 1 - 1

LCM (5, 4, 2, 5) = 2 × 2 × 5

= 20

$\frac{2}{5} \times \frac{4}{4} = \frac{8}{20}$ $\quad$ $\frac{1}{2} \times \frac{10}{10} = \frac{10}{20}$

$\frac{3}{4} \times \frac{5}{5} = \frac{15}{20}$ $\quad$ $\frac{3}{5} \times \frac{4}{4} = \frac{12}{20}$

$8 < 10 < 12 < 15$

So, $\frac{8}{20} < \frac{10}{20} < \frac{12}{20} < \frac{15}{20}$

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

C. Rewrite the following fractions in descending order

1. $\frac{8}{10}, \frac{8}{9}, \frac{8}{5}, \frac{8}{7}$

Ans:- $\frac{8}{5} > \frac{8}{7} > \frac{8}{9} > \frac{8}{10}$

2. $\frac{5}{4}, \frac{3}{12}, \frac{1}{3}, \frac{4}{15}$

soln:- The LCM of the denominators 4, 12, 3, 15 is

2	4 - 12 - 3 - 15
2	2 - 6 - 3 - 15
3	1 - 3 - 3 - 15
5	1 - 1 - 1 - 5
	1 - 1 - 1 - 1

LCM (4, 12, 3, 15) = 2 × 2 × 3 × 5
= 60

$\frac{5}{4} \times \frac{15}{15} = \frac{75}{60}$

$\frac{3}{12} \times \frac{5}{5} = \frac{15}{60}$

$\frac{1}{3} \times \frac{20}{20} = \frac{20}{60}$

$\frac{4}{15} \times \frac{4}{4} = \frac{16}{60}$

$\frac{75}{60} > \frac{20}{60} > \frac{16}{60} > \frac{15}{60}$

$\frac{5}{4} > \frac{1}{3} > \frac{4}{15} > \frac{3}{12}$ Ans.

Addition of Fractions.

Adding like fractions: To add like fractions, add the numerators and keep the denominator the same.

Adding unlike fractions: Convert unlike fractions to like fractions and then add them.

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Adding mixed numbers:→

Change mixed numbers to improper fractions, ~~that~~ is
Then convert unlike fractions to like fractions and then add them.

Exercise 4.4

Solve the sums.

1. $\frac{2}{9} + \frac{4}{9}$

$= \frac{2+4}{9} = \frac{6 \div 3}{9 \div 3} = \frac{2}{3}$ Ans.

2. $\frac{6}{7} + \frac{5}{7}$

$= \frac{6+5}{7} = \frac{11}{7} = 1\frac{4}{7}$ Ans

3. $\frac{5}{8} + \frac{5}{6}$

LCM of 8 and 6 $= 2 \times 2 \times 2 \times 3$
$= 24$

2	8-6
2	4-3
2	2-3
3	1-3
	1-1

$= \frac{5}{8} \times \frac{3}{3} + \frac{5}{6} \times \frac{4}{4}$

$= \frac{15}{24} + \frac{20}{24}$

$= \frac{15+20}{24} = \frac{35}{24} = 1\frac{11}{24}$ Ans

4. $\frac{3}{5} + \frac{7}{10}$

Soln:- $\frac{3}{5} + \frac{7}{10}$

The LCM of the denominators (5, 10) = 10

2	5 - 10
5	5 - 5
	1 - 1

$\frac{3}{5} \times \frac{2}{2} = \frac{6}{10}$

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

Now, $\frac{6}{10} + \frac{7}{10} = \frac{6+7}{10} = \frac{13}{10} = 1\frac{3}{10}$ Ans.

5. $\frac{1}{3} + 3 + \frac{3}{4}$

Soln:- $\frac{1}{3} + \frac{3}{1} + \frac{3}{4}$

The LCM of the denominators (3, 1, 4) = 2 x 2 x 3
= 12

2	3 - 4
2	3 - 2
3	3 - 1
	1 - 1

$\frac{1}{3} \times \frac{4}{4} = \frac{4}{12}$, $\frac{3}{4} \times \frac{3}{3} = \frac{9}{12}$

$\frac{3}{1} \times \frac{12}{12} = \frac{36}{12}$

$= \frac{4}{12} + \frac{36}{12} + \frac{9}{12}$

$= \frac{4+36+9}{12} = \frac{49}{12} = 4\frac{1}{12}$ Ans

6. $2\frac{3}{4} + 4\frac{2}{3} + 1$

Soln:- $2\frac{3}{4} + 4\frac{2}{3} + 1$

$= \frac{4\times2+3}{4} + \frac{4\times3+2}{3} + 1$

$= \frac{11}{4} + \frac{14}{3} + 1$

$= \frac{11}{4} + \frac{14}{3} + \frac{1}{1}$

The LCM of the denominators (4, 3) = 12

$\therefore \frac{11}{4} \times \frac{3}{3} = \frac{33}{12}$

$\frac{14}{3} \times \frac{4}{4} = \frac{56}{12}$

$\frac{1}{1} \times \frac{12}{12} = \frac{12}{12}$

Now, $\frac{33}{12} + \frac{56}{12} + \frac{12}{12} = \frac{33+56+12}{12} = \frac{101}{12} = 8\frac{5}{12}$

7. $4\frac{1}{6} + 2\frac{1}{2} + 1\frac{1}{3}$

Soln:- $4\frac{1}{6} + 2\frac{1}{2} + 1\frac{1}{3}$

$\frac{25}{6} + \frac{5}{2} + \frac{4}{3}$

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The LCM of the denominators 6, 2, 3 is = 2×3 = 6

2	6 - 2 - 3
3	3 - 1 - 3
	1 - 1 - 1

$\frac{25}{6} \times \frac{1}{1} = \frac{25}{6}$

$\frac{5}{2} \times \frac{3}{3} = \frac{15}{6}$

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

Now, $\frac{25}{6} + \frac{15}{6} + \frac{8}{6} = \frac{25+15+8}{6} = \frac{48}{6} = 8$ Ans