CHAPTER TWO
FRACTIONS

ADDITION:

Evaluate the following fractions:

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

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

5. $1\frac{1}{2}+\frac{1}{4}=$ 6. $2^{2}/_{3}+1^{1}/_{3}=$

7. $3\frac{1}{2}+1^{1}/_{3}=$ 8. $4\frac{1}{2}+1^{1}/_{4}=$

Soln.

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

$\frac{2+1}{4}=\frac{3}{4}\frac{4+3}{6}=\frac{7}{6}=1^{1}/_{6}$

3. $\frac{3}{4}+\frac{2}{3}$ 4. $\frac{3}{5}+\frac{2}{3}$

$\frac{9+8}{12}=\frac{17}{12}=1^{5}/_{12}\frac{9+10}{15}=\frac{19}{15}=1^{4}/_{15}$

5. $1\frac{1}{2}+\frac{1}{4}$ 6. $2^{2}/_{3}+1^{1}/_{3}$ ‘

$=\frac{3}{2}+\frac{1}{4}$ $=\frac{8}{3}+\frac{4}{3}$

$\frac{6+1}{4}=\frac{7}{4}=1^{3}/_{4}$ $\frac{8+4}{3}=\frac{12}{3}=4$

7. $3\frac{1}{2}+1^{1}/_{3}=\frac{7}{2}+\frac{4}{3}$ 8. $4\frac{1}{2}+1\frac{1}{4}=\frac{9}{2}+\frac{5}{4}$

$\frac{21+8}{6} = \frac{29}{6} = 4^{5}/_{6}\frac{18+5}{4} = \frac{23}{4} = 5^{3}/_{4}$

Q2. Evaluate the following fractions:

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

3. $\frac{2}{3}+\frac{1}{6}+\frac{3}{4}$ 4. $1½ + 2^{2}/_{3}+^{1}/_{6}$

5. $2½ +1^{1}/_{3}+1^{3}/_{4}$ 6. $1¼ + 1^{1}/_{5} + 1^{2}/_{10}$

7. $1^{1}/_{5} +3^{2}/_{3}+2^{1}/_{2}$ 8. $3¼+2^{1}/_{2} +1^{1}/_{8}$

Soln.

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

$\frac{10+15+12}{30} = \frac{37}{30} = 1^{7}/_{3}\frac{5+10+8}{20} = \frac{23}{20} = 1^{3}/_{20}$

3. $\frac{2}{3}+\frac{1}{6}+\frac{3}{4}$ 4. $1½ +2^{2}/_{3}+\frac{1}{6}$

$\frac{8+2+9}{12} = \frac{19}{12} = 1^{7}/_{12}\frac{3}{2}+\frac{8}{3}+\frac{1}{6} = \frac{9+16+1}{6} = \frac{26}{6} = 4^{2}/_{6} = 4^{1}/_{3}$

5. $2½+1^{1}/_{3}+1^{3}/_{4}$ 6. $1¼ +2^{1}/_{5} +1^{1}/_{10}$

$= \frac{5}{2}+\frac{4}{3}+\frac{7}{4}$ $= \frac{5}{4}+\frac{11}{5}+\frac{12}{10}$

$\frac{30+16+21}{12} = \frac{67}{12} = 5^{7}/_{12} = \frac{93}{20}$

$= 4^{13}/_{20}$

7. $1^{1}/_{5} +3^{2}/_{3} +2^{1}/_{2}$ 8. $3¼ + 2½ + 1^{1}/_{8}$

$= \frac{6}{5}+\frac{11}{3}+\frac{5}{2} = \frac{13}{4}+\frac{5}{2}+\frac{9}{8}$

$= \frac{36+110+75}{30} = \frac{221}{30} = 7\frac{11}{30}$ $= \frac{26+20+9}{8} = \frac{55}{8} = 6\frac{7}{8}$

SUBTRACTION:

Q1. Evaluate the following:

1. $\frac{1}{2} - \frac{1}{4} =$ 2. $\frac{2}{3} - \frac{1}{2} =$

2. $\frac{3}{4} - \frac{2}{3} =$ 4. $\frac{2}{3} - \frac{3}{5} =$

5. $2^2/_3 - 1^1/_3 =$ 6. $3^1/_2 - 3^1/_3$

7. 4½ - 1¼ = 8. 1¾ - $1^2/_3$ =

Soln.

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

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

3. $\frac{3}{4} - \frac{2}{3}$ 4. $\frac{2}{3} - \frac{3}{5}$

. $\frac{9-8}{12} = \frac{1}{12}$ $\frac{10-9}{15} = \frac{1}{15}$

5. $2^2/_3 - 1^1/_3$ 6. $3^1/2 - 3\,^1/_2$

$= \frac{8}{3} - \frac{4}{3} = \frac{8-4}{3} = \frac{4}{3} = 1\frac{1}{3}$ $\frac{7}{2} - \frac{10}{3} = \frac{21-20}{6} = \frac{1}{6}$

7. 4½ - 1¼ 8. 1¾ - $1^2/_3$

$= \frac{9}{2} - \frac{5}{4}$ $= \frac{7}{4} - \frac{5}{3}$

$\frac{18-5}{4} = \frac{13}{4} = 3\frac{1}{4}$ $= \frac{21-20}{12} = \frac{1}{12}$

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Q2. Find the values of the following fractions:

1. $\frac{1}{2} - \frac{1}{3} - \frac{2}{15}$ 2. $\frac{1}{2} - \frac{1}{4} - \frac{1}{10}$

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

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

Soln.

1. $\frac{1}{2} - \frac{1}{3} - \frac{2}{15}$

$\frac{15-10-4}{30} = \frac{1}{30}$

2. $\frac{1}{2} - \frac{1}{4} - \frac{1}{10}$

$\frac{10-5-2}{20} = \frac{3}{20}$

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

$\frac{18-3-4}{12} = \frac{11}{12}$

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

$\frac{7}{3} - \frac{4}{3} - \frac{3}{2} = \frac{14-8-9}{6}$

$$= \frac{6-9}{6} = -\frac{3}{6} = -\frac{1}{2}$$

5. $\frac{1}{2} - \frac{1}{12} - \frac{1}{3}$

$\frac{6-1-4}{12} = \frac{1}{12}$

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

$\frac{7}{2} - \frac{5}{4} - \frac{3}{2} = \frac{14-5-6}{4} = \frac{3}{4}$

MULTIPLICATION OF FRACTIONS:

N/B: In fraction multiplication, the top numbers are multiplied together, and the downward ones are also multiplied together.

Q1.Evaluate the following:

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

3. $\frac{2}{4} \times \frac{3}{5}$ 4. $\frac{4}{6} \times \frac{3}{4}$

5. $\frac{5}{6} \times \frac{4}{6}$ 6. $\frac{5}{8} \times \frac{3}{10}$

7. $\frac{2}{3} \times \frac{1}{4} \times \frac{1}{2}$ 8. $\frac{1}{2} \times \frac{1}{3} \times \frac{1}{4}$

9. $\frac{2}{3} \times \frac{2}{4} \times \frac{5}{6}$ 10. $\frac{3}{2} \times \frac{4}{5} \times \frac{2}{3}$

Soln.

1. $\frac{1}{3} \times \frac{1}{2} = \frac{1}{6}$ 2. $\frac{2}{3} \times \frac{1}{4} = \frac{2}{12} = \frac{1}{6}$

3. $\frac{2}{4} \times \frac{3}{5} = \frac{6}{20}$ 4. $\frac{4}{6} \times \frac{3}{4} = \frac{12}{24}$

$= \frac{3}{10}$ $= \frac{1}{2}$

5. $\frac{5}{6} \times \frac{4}{6} = \frac{20}{36} = \frac{10}{18}$ 6. $\frac{5}{8} \times \frac{3}{10} = \frac{15}{80} = \frac{3}{16}$

7. $\frac{2}{3} \times \frac{1}{4} \times \frac{1}{2}$ 8. $\frac{1}{2} \times \frac{1}{3} \times \frac{1}{4} = \frac{1}{24}$

$= \frac{2}{24} = \frac{1}{12}$

9. $\frac{2}{3} \times \frac{2}{4} \times \frac{5}{6}$ 10. $\frac{3}{2} \times \frac{4}{5} \times \frac{2}{3}$

$= \frac{20}{72} = \frac{5}{18}$ $= \frac{24}{30} = \frac{12}{15}$

Q2. Evaluate the following fractions:

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

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

5. $1\frac{1}{2} \times 2\frac{1}{2} \times 1\frac{2}{3}$ 6. $2\frac{1}{4} \times 1\frac{1}{3} \times 2\frac{2}{3}$

Soln.

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

$= \frac{3}{2} \times \frac{7}{4} = \frac{21}{8} = 2\frac{5}{8}$

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

$= \frac{7}{3} \times \frac{5}{3} = \frac{35}{9} = 3\frac{8}{9}$

3. $2\frac{1}{3} \times 1\frac{2}{5} = \frac{7}{3} \times \frac{7}{5}$

$= \frac{49}{15} = 3\frac{4}{5}$

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

$= \frac{5}{4} \times \frac{8}{3} \times \frac{2}{3} = \frac{80}{36}$

$= \frac{20}{9} = 2\frac{2}{9}$

5. $1\frac{1}{2} \times 2\frac{1}{2} \times 1\frac{2}{3}$

$= \frac{3}{2} \times \frac{5}{2} \times \frac{5}{3} = \frac{75}{12}$

$= 6\frac{3}{12} = 6\frac{1}{4}$

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

$= \frac{9}{4} \times \frac{4}{3} \times \frac{3}{2} = 4\frac{1}{2}$