Basic Fractions

| 1 |  |  |  |  | whole |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $\frac{1}{2}$ |  |  | $\frac{1}{2}$ |  |  |  |
| $\frac{1}{3}$ |  | $\frac{1}{3}$ |  | $\frac{1}{3}$ |  |  |
| $\frac{1}{6}$ | $\frac{1}{6}$ | $\frac{1}{6}$ | $\frac{1}{6}$ | $\frac{1}{6}$ | $\frac{1}{6}$ |  |

Addition $\frac{1}{2}+\frac{1}{3}=\frac{3}{6}+\frac{2}{6}=\frac{5}{6}$
or $\frac{1}{2}+\frac{1}{3}=\frac{3+2}{6}=\frac{5}{6}$
Subtraction $\frac{1}{2}-\frac{1}{3}=\frac{3-2}{6}=\frac{1}{6}$

Equivalent Fractions

$$
\frac{1}{2}=\frac{2}{4}=\frac{3}{6}=\frac{4}{8}=\frac{5}{10} \cdots \frac{50}{100} \cdots \frac{1000}{2000}
$$

Multiplying or Dividing the numerator and denominator of a fraction by the same number does not alter the value of the fraction


$$
\frac{3}{4} \xrightarrow{x 5}=\frac{15}{20}
$$

ITRACTIONS-EQUIVALENCE, ADDITION AND SUbTRACTION EXERCISE EXERCISE A

Complete the following pairs of equivalent fractions:

1. $\frac{3}{4}=\frac{12}{16}$
2. $\frac{18}{21}=\frac{6}{\square}$
3. $\frac{7}{9}=\frac{14}{18}$
4. $\frac{20}{45}=\frac{4}{9}$
5. $\frac{5}{8}=\frac{15}{24}$
6. $\quad \frac{12}{20}=\frac{3}{5}$
7. $\frac{3}{5}=\frac{15}{25}$
8. $\frac{25}{40}=\frac{15}{8}$
9. $\frac{6}{7}=\frac{24}{28}$
10. $\frac{28}{40}=\frac{14}{20}$

Addition and
Examples

1) $\frac{1}{4}+\frac{3}{5}=\frac{5+12}{20}=\frac{17}{20}$
2) $\frac{3}{7}+\frac{4}{5}=\frac{15+28}{35}=\frac{43}{35}=1 \frac{8}{35}$
3) $\frac{5}{8}-\frac{1}{3}=\frac{15-8}{24}=\frac{7}{24}$
4) $\frac{5}{6}-\frac{3}{8}=\frac{40-18}{48}=\frac{22}{48}=\frac{11}{24}$

$$
\text { or }=\frac{20-9}{24}=\frac{11}{24}
$$

EXERCISE B

1. $\frac{2}{5}+\frac{1}{3}$
2. $\frac{5}{8}-\frac{1}{3}$
3. $\frac{4}{7}+\frac{1}{4}$
4. $\frac{3}{4}-\frac{2}{5}$
5. $\frac{5}{6}+\frac{3}{5}$
6. $\frac{8}{9}-\frac{1}{2}$
7. $\frac{2}{3}+\frac{5}{6}$
8. $\frac{7}{9}-\frac{1}{3}$
9. $\frac{3}{4}+\frac{5}{9}$
10. $\frac{7}{10}-\frac{1}{4}$
1) $\frac{2}{5}+\frac{1}{3}=\frac{6+5}{15}=\frac{11}{15}$
2) $\frac{4}{7}+\frac{1}{4}=\frac{16+7}{28}=\frac{23}{28}$
3) $\frac{5}{6}+\frac{3}{5}=\frac{25+18}{30}=\frac{43}{30}=1 \frac{13}{30}$
4) $\frac{2}{3}+\frac{5}{6}=\frac{4+5}{6}=\frac{9}{6}=1 \frac{3}{6}=1 \frac{1}{2}$
5) $\frac{3}{4}+\frac{5}{9}=\frac{27+20}{36}=\frac{47}{36}=1 \frac{11}{36}$
6) $\frac{5}{8}-\frac{1}{3}=\frac{15-8}{24}=\frac{7}{24}$
7) $\frac{3}{4}-\frac{2}{5}=\frac{15-8}{20}=\frac{7}{20}$
8) $\frac{8}{9}-\frac{1}{2}=\frac{16-9}{18}=\frac{7}{18}$
9) $\frac{7}{9}-\frac{1}{3}=\frac{7-3}{9}=\frac{4}{9}$
10) $\frac{7}{10}-\frac{1}{4}=\frac{14-5}{20}=\frac{9}{20}$

Multiplication and Division
Examples
i)

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

or $\frac{1}{2} \times \frac{2^{1}}{3}=\frac{1 \times 1}{1 \times 3}=\frac{1}{3}$
2) $\frac{2}{\frac{10}{12}} \times \frac{8^{2}}{183}=\frac{2 \times 2}{3 \times 3}=\frac{4}{9}$
3) $\frac{5}{6} \times \frac{1}{3}=\frac{5 \times 1}{6 \times 3}=\frac{5}{18}$

Exercise
6) $\frac{14}{5} \times \frac{3}{82}=\frac{1 \times 3}{5 \times 2}=\frac{3}{10}$
7) $\frac{36}{7} \times \frac{74}{8}{ }_{4}=\frac{3 \times 1}{1 \times 4}=\frac{3}{4}$
8) $\frac{39}{10_{2}} \times \frac{5}{b^{1}}=\frac{3 \times 1}{2 \times 2}=\frac{3}{4}$
9) $\frac{3}{4} \times \frac{5}{7}=\frac{3 \times 5}{4 \times 7}=\frac{15}{28}$
10) $\frac{2}{3} \times \frac{6^{2}}{7}=\frac{2 \times 2}{1 \times 7}=\frac{4}{7}$

Division
Examples

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

To divide by a fraction we turn it upside down and multiply. No cancelling can take place when there is a division sign. Only when fare is a multiplication sign.
4) $\frac{5}{8} \div \frac{15}{16}=\frac{1}{\frac{5}{3}} \times \frac{16^{2}}{153}=\frac{1 \times 2}{1 \times 3}=\frac{2}{3}$
5) $\frac{3}{4} \div \frac{5}{6}=\frac{3}{4} \times \frac{6^{3}}{5}=\frac{3 \times 3}{2 \times 5}=\frac{9}{10}$

Exercise
11) $\frac{4}{5} \div \frac{2}{3}=\frac{2}{5} \times \frac{3}{z_{1}}=\frac{6}{5}=1 \frac{1}{5}$
12). $\frac{7}{8} \div \frac{5}{8}=\frac{7}{8} \times \frac{7}{5}=\frac{7}{5}=1 \frac{2}{5}$
13) $\frac{2}{9} \div \frac{4}{5}=\frac{12}{9} \times \frac{5}{42}=\frac{5}{18}$
14) $\frac{9}{10} \div \frac{4}{5}=\frac{9}{\frac{9}{2}} \times \frac{5^{1}}{4}=\frac{9}{8}=1 \frac{1}{8}$
15) $\frac{5}{12} \div \frac{3}{4}=\frac{5}{\frac{12}{3}} \times \frac{7^{\prime}}{3}=\frac{5}{9}$

