

Mixed Number Multiplication and Division

Multiplication

$$\begin{aligned}\text{Ex 1} \quad & 2\frac{1}{2} \times 2\frac{1}{2} \\ &= \frac{5}{2} \times \frac{5}{2} \\ &= \frac{5 \times 5}{2 \times 2} \\ &= \frac{25}{4} \\ &= 6\frac{1}{4}\end{aligned}$$

$$\begin{aligned}\text{Ex 2} \quad & 3\frac{1}{3} \times 1\frac{2}{5} \\ &= \frac{\overset{2}{\cancel{10}}}{3} \times \frac{\overset{2}{\cancel{7}}}{\cancel{5}_1} \\ &= \frac{2 \times 7}{3 \times 1} \\ &= \frac{14}{3} \\ &= 4\frac{2}{3}\end{aligned}$$

$$\begin{aligned}\text{Ex 3} \quad & 2\frac{1}{4} \times 1\frac{5}{6} \\ &= \frac{\overset{3}{\cancel{9}}}{4} \times \frac{\cancel{11}}{\cancel{6}_2} \\ &= \frac{3 \times 11}{4 \times 2} \\ &= \frac{33}{8} \\ &= 4\frac{1}{8}\end{aligned}$$

$$\begin{aligned}\text{Ex 4} \quad & 5\frac{1}{4} \times 1\frac{2}{7} \\ &= \frac{\overset{3}{\cancel{21}}}{4} \times \frac{\cancel{9}}{\cancel{7}_1} \\ &= \frac{3 \times 9}{4 \times 1} \\ &= \frac{27}{4} \\ &= 6\frac{3}{4}\end{aligned}$$

Exercise

$$\begin{aligned}
 1) \quad & 1\frac{1}{2} \times 1\frac{1}{5} \\
 &= \frac{3}{2} \times \frac{6}{5} \\
 &= \frac{3 \times 3}{1 \times 5} \\
 &= \frac{9}{5} = 1\frac{4}{5}
 \end{aligned}$$

$$\begin{aligned}
 2) \quad & 2\frac{2}{3} \times 1\frac{1}{4} \\
 &= \frac{8}{3} \times \frac{5}{4} \\
 &= \frac{2 \times 5}{3 \times 1} \\
 &= \frac{10}{3} = 3\frac{1}{3}
 \end{aligned}$$

$$\begin{aligned}
 3) \quad & 5\frac{1}{3} \times 1\frac{3}{4} \\
 &= \frac{16}{3} \times \frac{7}{4} \\
 &= \frac{4 \times 7}{3 \times 1} \\
 &= \frac{28}{3} = 9\frac{1}{3}
 \end{aligned}$$

$$\begin{aligned}
 4) \quad & 3\frac{1}{3} \times 1\frac{2}{5} \\
 &= \frac{10}{3} \times \frac{7}{5} \\
 &= \frac{2 \times 7}{3 \times 1} \\
 &= \frac{14}{3} = 4\frac{2}{3}
 \end{aligned}$$

Division

$$\begin{aligned}
 \text{Ex1} \quad & 6\frac{1}{4} \div 2\frac{1}{2} \\
 &= \frac{25}{4} \div \frac{5}{2} \\
 &= \frac{5}{2} \times \frac{2}{1} \\
 &= \frac{5 \times 1}{2 \times 1} \\
 &= \frac{5}{2} = 2\frac{1}{2}
 \end{aligned}$$

$$\begin{aligned}
 \text{Ex2} \quad & 3\frac{1}{3} \div 1\frac{1}{4} \\
 &= \frac{10}{3} \div \frac{5}{4} \\
 &= \frac{8}{3} \times \frac{4}{5} \\
 &= \frac{2 \times 4}{3 \times 1} \\
 &= \frac{8}{3} = 2\frac{2}{3}
 \end{aligned}$$

Exercise

$$\begin{aligned} 1) \quad & 5\frac{1}{4} \div 3\frac{1}{2} \\ &= \frac{21}{4} \div \frac{7}{2} \\ &= \frac{\overset{3}{\cancel{21}}}{\underset{2}{\cancel{4}}} \times \frac{\overset{2}{\cancel{2}}}{\underset{1}{\cancel{7}}} \\ &= \frac{3 \times 1}{2 \times 1} = \frac{3}{2} = 1\frac{1}{2} \end{aligned}$$

$$\begin{aligned} 2) \quad & 7\frac{1}{2} \div 1\frac{2}{3} \\ &= \frac{15}{2} \div \frac{5}{3} \\ &= \frac{\overset{3}{\cancel{15}}}{2} \times \frac{\overset{3}{\cancel{3}}}{\underset{1}{\cancel{5}}} \\ &= \frac{3 \times 3}{2 \times 1} = \frac{9}{2} = 4\frac{1}{2} \end{aligned}$$

$$\begin{aligned} 3) \quad & 6\frac{3}{4} \div 1\frac{4}{5} \\ &= \frac{27}{4} \div \frac{9}{5} \\ &= \frac{\overset{3}{\cancel{27}}}{4} \times \frac{\overset{5}{\cancel{5}}}{\underset{1}{\cancel{9}}} \\ &= \frac{3 \times 5}{4 \times 1} = \frac{15}{4} = 3\frac{3}{4} \end{aligned}$$

$$\begin{aligned} 4) \quad & 3\frac{3}{4} \div 1\frac{2}{3} \\ &= \frac{15}{4} \div \frac{5}{3} \\ &= \frac{\overset{3}{\cancel{15}}}{4} \times \frac{\overset{3}{\cancel{3}}}{\underset{1}{\cancel{5}}} \\ &= \frac{3 \times 3}{4 \times 1} = \frac{9}{4} = 2\frac{1}{4} \end{aligned}$$

$$\begin{aligned} 5) \quad & 4\frac{2}{3} \div 1\frac{1}{6} \\ &= \frac{14}{3} \div \frac{7}{6} \\ &= \frac{\overset{2}{\cancel{14}}}{3} \times \frac{\overset{6}{\cancel{6}}}{\underset{1}{\cancel{7}}} \\ &= \frac{2 \times 2}{1 \times 1} = \frac{4}{1} = 4 \end{aligned}$$

$$\begin{aligned} 6) \quad & 8\frac{1}{3} \div 2\frac{1}{7} \\ &= \frac{25}{3} \div \frac{15}{7} \\ &= \frac{\overset{5}{\cancel{25}}}{3} \times \frac{\overset{7}{\cancel{7}}}{\underset{3}{\cancel{15}}} \\ &= \frac{3 \times 5}{9} = 3\frac{5}{9} \end{aligned}$$

$$\begin{aligned} 7) \quad & 3\frac{3}{4} \div 1\frac{1}{2} \\ &= \frac{15}{4} \div \frac{3}{2} \\ &= \frac{\overset{5}{\cancel{15}}}{4} \times \frac{\overset{2}{\cancel{2}}}{\underset{1}{\cancel{3}}} \\ &= \frac{5 \times 1}{4 \times 1} = \frac{5}{4} = 1\frac{1}{4} \end{aligned}$$

$$\begin{aligned} 8) \quad & 4\frac{1}{5} \div 2\frac{1}{3} \\ &= \frac{21}{5} \div \frac{7}{3} \\ &= \frac{\overset{3}{\cancel{21}}}{5} \times \frac{\overset{3}{\cancel{3}}}{\underset{1}{\cancel{7}}} \\ &= \frac{3 \times 3}{5 \times 1} = \frac{9}{5} = 1\frac{4}{5} \end{aligned}$$

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

$$3 \frac{2+}{5} \times \frac{3}{7}$$

$$\frac{3 \times 3}{5 \times 1} = \frac{9}{5} = 1\frac{4}{5}$$
