

Mixed Number Arithmetic

Multiplication and Division

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

$$\begin{aligned} \text{Ex 2} \quad 2\frac{1}{4} \times 1\frac{1}{3} \\ &= \frac{3\cancel{9}}{\cancel{4}_1} \times \frac{\cancel{4}_1}{\cancel{3}_1} \\ &= \frac{3 \times 1}{1 \times 1} = \frac{3}{1} \\ &= 3 \end{aligned}$$

Changing Between Improper Fractions and Mixed Numbers

$$1) \quad \frac{27}{4} = 6\frac{3}{4}$$

$$4) \quad 2\frac{2}{3} = \frac{8}{3}$$

$$2) \quad \frac{15}{7} = 2\frac{1}{7}$$

$$5) \quad 4\frac{3}{4} = \frac{19}{4}$$

$$3) \quad \frac{19}{5} = 3\frac{4}{5}$$

$$6) \quad 1\frac{7}{8} = \frac{15}{8}$$

Exercise Mixed Number \leftrightarrow Improper Fraction

$$1) \quad \frac{19}{8} = 2\frac{3}{8}$$

$$6) \quad 3\frac{1}{4} = \frac{13}{4}$$

$$2) \frac{23}{7} = 3\frac{2}{7}$$

$$7) 5\frac{1}{2} = \frac{11}{2}$$

$$3) \frac{21}{4} = 5\frac{1}{4}$$

$$8) 1\frac{4}{5} = \frac{9}{5}$$

$$4) \frac{16}{9} = 1\frac{7}{9}$$

$$9) 2\frac{7}{8} = \frac{23}{8}$$

$$5) \frac{43}{8} = 5\frac{3}{8}$$

$$10) 5\frac{2}{7} = \frac{37}{7}$$

Ex 3

$$\begin{aligned} & 2\frac{1}{4} \times 1\frac{1}{7} \\ &= \frac{9}{4} \times \frac{8}{7} \\ &= \frac{9 \times 2}{1 \times 7} \\ &= \frac{18}{7} \\ &= 2\frac{4}{7} \end{aligned}$$

Ex 4

$$\begin{aligned} & 1\frac{1}{4} \times 2\frac{3}{5} \\ &= \frac{5}{4} \times \frac{13}{5} \\ &= \frac{1 \times 13}{4 \times 1} \\ &= \frac{13}{4} \\ &= 3\frac{1}{4} \end{aligned}$$

Exercise

$$\begin{aligned} 1) & 3\frac{1}{2} \times 1\frac{1}{5} \\ &= \frac{7}{2} \times \frac{6}{5} \end{aligned}$$

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

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

$$= \frac{21}{5}$$

$$= 4 \frac{1}{5}$$

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

$$= \frac{15}{4}$$

$$= 3 \frac{3}{4}$$

$$3) \quad 1 \frac{2}{5} \times 1 \frac{1}{9}$$

$$= \frac{7}{5} \times \frac{10}{9}$$

$$= \frac{7 \times 2}{1 \times 9}$$

$$= \frac{14}{9}$$

$$= 1 \frac{5}{9}$$

$$4) \quad 2 \frac{1}{4} \times 1 \frac{1}{5}$$

$$= \frac{9}{2} \times \frac{6}{5}$$

$$= \frac{9 \times 3}{2 \times 5}$$

$$= \frac{27}{10}$$

$$= 2 \frac{7}{10}$$

$$5) \quad 3 \frac{1}{5} \times 2 \frac{1}{4}$$

$$= \frac{16}{5} \times \frac{9}{4}$$

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

$$= \frac{36}{5}$$

$$= 7 \frac{1}{5}$$

$$6) \quad 2 \frac{2}{7} \times 1 \frac{1}{4}$$

$$= \frac{16}{7} \times \frac{5}{4}$$

$$= \frac{4 \times 5}{7 \times 1}$$

$$= \frac{20}{7}$$

$$= 2 \frac{6}{7}$$

$$\begin{aligned}
 7) \quad & 2\frac{2}{3} \times 2\frac{1}{4} \\
 &= \frac{\overset{2}{\cancel{8}}}{\cancel{3}_1} \times \frac{\overset{2}{\cancel{4}}^3}{\cancel{4}_1} \\
 &= \frac{2 \times 3}{1 \times 1} \\
 &= 6
 \end{aligned}$$

$$\begin{aligned}
 8) \quad & 4\frac{1}{2} \times 1\frac{2}{5} \\
 &= \frac{9}{2} \times \frac{7}{5} \\
 &= \frac{63}{10} \\
 &= 6\frac{3}{10}
 \end{aligned}$$

$$\begin{aligned}
 9) \quad & 5\frac{1}{3} \times 1\frac{3}{4} \\
 &= \frac{\overset{4}{\cancel{16}}}{\cancel{3}} \times \frac{\overset{2}{\cancel{4}}^3}{\cancel{4}_1} \\
 &= \frac{4 \times 7}{3 \times 1} \\
 &= \frac{28}{3} \\
 &= 9\frac{1}{3}
 \end{aligned}$$

$$\begin{aligned}
 10) \quad & 7\frac{1}{2} \times 1\frac{1}{3} \\
 &= \frac{\overset{5}{\cancel{15}}}{\cancel{2}} \times \frac{\overset{4}{\cancel{4}}^2}{\cancel{3}_1} \\
 &= \frac{5 \times 2}{1 \times 1} \\
 &= 10
 \end{aligned}$$

$$\begin{aligned}
 11) \quad & 1\frac{3}{8} \times 1\frac{3}{11} \\
 &= \frac{\overset{1}{\cancel{11}}}{\cancel{8}_4} \times \frac{\overset{14}{\cancel{14}}^7}{\cancel{11}_1} \\
 &= \frac{1 \times 7}{4 \times 1} = \frac{7}{4} \\
 &= 1\frac{3}{4}
 \end{aligned}$$

$$\begin{aligned}
 12) \quad & 3\frac{1}{2} \times 3\frac{1}{2} \\
 &= \frac{7}{2} \times \frac{7}{2} \\
 &= \frac{49}{4} \\
 &= 12\frac{1}{4}
 \end{aligned}$$

$$\begin{aligned}
 13) \quad & 2\frac{4}{7} \times 1\frac{5}{6} \\
 &= \frac{\overset{3}{\cancel{18}}}{\cancel{7}} \times \frac{\overset{11}{\cancel{11}}^5}{\cancel{6}_1}
 \end{aligned}$$

$$\begin{aligned}
 14) \quad & 6\frac{1}{4} \times 1\frac{4}{5} \\
 &= \frac{\overset{5}{\cancel{25}}}{\cancel{4}} \times \frac{\overset{9}{\cancel{9}}^4}{\cancel{5}_1}
 \end{aligned}$$

$$= \frac{33}{7}$$

$$= 4\frac{5}{7}$$

$$= \frac{45}{4}$$

$$= 11\frac{1}{4}$$
