

Operations with Fractions

Adding fractions: To add fractions with the same denominator, add the numerators, and place over the common denominator.

- *Example*

$$\frac{3}{7} + \frac{5}{7} =$$

$$\frac{8}{7} =$$

$$1\frac{1}{7}$$

Remember to put the final answer in mixed form if needed.

- *Example*

$$6\frac{1}{3} + 5\frac{2}{3} =$$

Add the whole numbers.

$$11\frac{3}{3} =$$

Then, add the fractions.

$$11 + 1 =$$

Simplify.

$$12$$

Adding Fractions with Different Denominators

To add fractions with different denominators, rewrite fractions as equivalent fractions with the same denominator, and follow the previous example.

- *Example*

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

The fractions are rewritten with a common denominator.

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

The whole number parts and fraction parts are added separately.

$$7\frac{6}{15} + 3\frac{20}{15} =$$

The fraction is simplified.

$$10\frac{26}{15} =$$

$$10 + 1\frac{11}{15} =$$

$$11\frac{11}{15}$$



Subtraction of fractions proceeds the same way as addition, unless regrouping is needed.

- *Example*

$$\begin{aligned}
 &5\frac{1}{3} - 2\frac{2}{3} = \\
 &\left(4 + 1 + \frac{1}{3}\right) - 2\frac{2}{3} = \\
 &4 + \left(\frac{3}{3} + \frac{1}{3}\right) - 2\frac{2}{3} = \\
 &4\frac{4}{3} - 2\frac{2}{3} = \\
 &\quad 2\frac{2}{3}
 \end{aligned}$$

Multiplying fractions is performed by changing fractions to their improper form, and then multiplying both numerators together and both denominators together.

- *Example*

$$\begin{aligned}
 &4\frac{1}{5} \times 1\frac{2}{3} = && \text{Fractions are changed to improper form.} \\
 &\quad 7 \quad 1 && \text{Cancelling is done where appropriate.} \\
 &\frac{\cancel{21}}{\cancel{5}} \times \frac{\cancel{2}}{\cancel{3}} = && \text{Numerators and denominators are multiplied together.} \\
 &\quad 1 \quad 1 \\
 &\quad 7
 \end{aligned}$$

Division of fractions is carried out the same way, except the second fraction is inverted.

- *Example*

$$\begin{aligned}
 &4\frac{1}{2} \div \frac{3}{4} = \\
 &\frac{9}{2} \div \frac{3}{4} = \\
 &\quad 3 \quad 2 && \text{Notice that the second fraction is inverted.} \\
 &\frac{\cancel{9}}{\cancel{2}} \times \frac{\cancel{4}}{\cancel{3}} = \\
 &\quad 1 \quad 1 \\
 &\quad 6
 \end{aligned}$$



Operations with Fractions (R)

Name _____

Perform the following operations as indicated.

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

2. $\frac{6}{10} + \frac{4}{5}$

3. $\frac{5}{8} - \frac{3}{8}$

4. $\frac{7}{10} - \frac{4}{6}$

5. $\frac{1}{3} \times \frac{5}{9}$

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

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

8. $\frac{9}{5} \div \frac{3}{10}$

9. $4\frac{1}{2} \times \frac{2}{5}$

10. $2\frac{1}{3} \div 2\frac{1}{6}$

Answer Key

Name _____

Perform the following operations as indicated.

1. $\frac{2}{7} + \frac{6}{7} = 1\frac{1}{7}$

2. $\frac{6}{10} + \frac{4}{5} = 1\frac{2}{5}$

3. $\frac{5}{8} - \frac{3}{8} = \frac{1}{4}$

4. $\frac{7}{10} - \frac{4}{6} = \frac{1}{30}$

5. $\frac{1}{3} \times \frac{5}{9} = \frac{5}{27}$

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

7. $\frac{5}{6} \div \frac{5}{2} = \frac{1}{3}$

8. $\frac{9}{5} \div \frac{3}{10} = 6$

9. $4\frac{1}{2} \times \frac{2}{5} = 1\frac{4}{5}$

10. $2\frac{1}{3} \div 2\frac{1}{6} = 1\frac{1}{13}$