

Fractions: Adding & Subtracting — Solutions

Solutions

1. $\frac{12}{16} = \frac{3}{4}$

2. $\frac{3}{7} > \frac{3}{9}$ (same numerator; smaller denominator \Rightarrow larger fraction)

3. $\frac{11}{4} = 2\frac{3}{4}$

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

5. $\frac{1}{7} + \frac{3}{7} = \frac{4}{7}$ $\frac{5}{9} + \frac{2}{9} = \frac{7}{9}$

6. Convert to a common denominator of 4: $\frac{1}{2} = \frac{2}{4}$

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

8. $\frac{1}{3} + \frac{1}{4} = \frac{4}{12} + \frac{3}{12} = \frac{7}{12}$

Solutions

1. e.g. $\frac{4}{6}$, $\frac{6}{9}$, $\frac{8}{12}$

2. $\frac{1}{12} < \frac{1}{8} < \frac{1}{2}$

3. $2\frac{3}{7} = \frac{17}{7}$

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

5. $\frac{7}{10} - \frac{3}{10} = \frac{4}{10} = \frac{2}{5}$ $\frac{8}{9} - \frac{5}{9} = \frac{3}{9} = \frac{1}{3}$

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

7. $\frac{5}{6} - \frac{1}{4} = \frac{10}{12} - \frac{3}{12} = \frac{7}{12}$

8. $\frac{7}{8} - \frac{2}{3} = \frac{21}{24} - \frac{16}{24} = \frac{5}{24}$

9. $\frac{3}{8} < \frac{5}{12} < \frac{1}{2}$ (common denom. 24: $\frac{9}{24} < \frac{10}{24} < \frac{12}{24}$)

Solutions

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

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

$$3. \frac{36}{48} = \frac{3}{4}$$

$$4. 1\frac{3}{4} + 1\frac{1}{2} = \frac{7}{4} + \frac{6}{4} = \frac{13}{4} = 3\frac{1}{4}$$

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

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

6. $1\frac{3}{4}$ is at the $1\frac{3}{4}$ mark; $3\frac{1}{4}$ is at the $3\frac{1}{4}$ mark. Difference

$$= 3\frac{1}{4} - 1\frac{3}{4} = \frac{13}{4} - \frac{7}{4} = \frac{6}{4} = 1\frac{1}{2}$$

$$7. 2\frac{2}{3} + 1\frac{3}{4} = \frac{8}{3} + \frac{7}{4} = \frac{32}{12} + \frac{21}{12} = \frac{53}{12} = 4\frac{5}{12}$$

$$8. 1\frac{3}{4} - 3\frac{1}{4} = \frac{7}{4} - \frac{13}{4} = -\frac{6}{4} = -1\frac{1}{2}$$

Solutions

$$1. 2\frac{2}{5} > 2\frac{1}{3} \quad \left(\frac{1}{3} = \frac{5}{15}, \frac{2}{5} = \frac{6}{15}, \text{ so } 2\frac{2}{5} > 2\frac{1}{3}\right)$$

$$2. \frac{23}{6} = 3\frac{5}{6}$$

$$3. 3\frac{1}{4} - 1\frac{3}{4} = \frac{13}{4} - \frac{7}{4} = \frac{6}{4} = 1\frac{1}{2}$$

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

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

$$5. 4\frac{1}{4} - 1\frac{1}{2} = \frac{17}{4} - \frac{6}{4} = \frac{11}{4} = 2\frac{3}{4}$$

$$1\frac{2}{3} + 2\frac{1}{4} = \frac{5}{3} + \frac{9}{4} = \frac{20}{12} + \frac{27}{12} = \frac{47}{12} = 3\frac{11}{12}$$

$$6. 3\frac{1}{3} - 1\frac{3}{4} = \frac{10}{3} - \frac{7}{4} = \frac{40}{12} - \frac{21}{12} = \frac{19}{12} = 1\frac{7}{12}$$

$$5\frac{1}{3} - 2\frac{3}{4} = \frac{16}{3} - \frac{11}{4} = \frac{64}{12} - \frac{33}{12} = \frac{31}{12} = 2\frac{7}{12}$$

Solutions

$$1. \frac{72}{96} = \frac{3}{4}$$

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

$$3. 2\frac{3}{4} + 1\frac{2}{3} = \frac{11}{4} + \frac{5}{3} = \frac{33}{12} + \frac{20}{12} = \frac{53}{12} = 4\frac{5}{12}$$

$$4. 4\frac{1}{5} - 1\frac{3}{4} = \frac{21}{5} - \frac{7}{4} = \frac{84}{20} - \frac{35}{20} = \frac{49}{20} = 2\frac{9}{20}$$

5. Maya added the numerators and denominators separately. The correct method requires a common denominator:

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

$$6. \text{Total eaten} = \frac{3}{8} + \frac{1}{4} + \frac{1}{3} = \frac{9}{24} + \frac{6}{24} + \frac{8}{24} = \frac{23}{24}. \quad \text{Remaining} \\ = 1 - \frac{23}{24} = \frac{1}{24}$$

$$7. \square = 5\frac{1}{6} - 3\frac{1}{4} = \frac{31}{6} - \frac{13}{4} = \frac{62}{12} - \frac{39}{12} = \frac{23}{12} = 1\frac{11}{12}$$

8. **False.** Let $a = 1, b = 2, c = 3$: LHS = $\frac{1}{2} + \frac{1}{3} = \frac{5}{6}$; RHS = $\frac{2}{5}$. Since $\frac{5}{6} \neq \frac{2}{5}$, the statement is false. The correct sum is $\frac{a(b+c)}{bc}$, not $\frac{2a}{b+c}$.