

WORKING WITH FRACTIONS

- When adding fractions don't forget to find the least common denominator first and then express each fraction so their denominators match.
- When multiplying fractions remember that cancelling (simplifying) before multiplying greatly reduces the amount of work involved.
- When dividing fractions don't forget to invert the divisor (the fraction you are dividing by) and rewrite the problem as a multiplication problem.

Model Problems:

$$1. \quad \frac{1}{3} + \frac{2}{5} = \frac{5}{15} + \frac{6}{15} = \frac{11}{15}$$

$$2. \quad \frac{10}{21} - \frac{4}{9} = \frac{30}{63} - \frac{28}{63} = \frac{2}{63}$$

$$3. \quad \frac{2}{3} \times \frac{5}{4} = \frac{10}{12} = \frac{5}{6}$$

$$4. \quad \frac{10 \times 9 \times 8 \times 7 \times 6}{5 \times 4 \times 3 \times 2 \times 1} = \frac{\overset{2}{10} \times \overset{2}{9} \times \overset{2}{8} \times 7 \times 6}{5 \times 4 \times 3 \times 2 \times 1} = \frac{2 \times 9 \times 2 \times 7}{1} = 252$$

$$5. \quad \frac{1}{10} \div \frac{2}{5} = \frac{1}{10} \times \frac{5}{2} = \frac{5}{20} = \frac{1}{4}$$

$$6. \quad \begin{array}{r} 6\frac{2}{3} = 6\frac{4}{6} \\ + 4\frac{1}{2} = 4\frac{3}{6} \\ \hline 10\frac{7}{6} = 11\frac{1}{6} \end{array}$$

$$7. \quad \begin{array}{r} 2\frac{5}{6} = 2\frac{20}{24} \\ - 1\frac{3}{8} = -1\frac{9}{24} \\ \hline 1\frac{11}{24} \end{array}$$

$$8. \quad \begin{array}{r} 7 = 6\frac{8}{8} \\ - 3\frac{3}{8} = -3\frac{3}{8} \\ \hline 3\frac{5}{8} \end{array}$$

$$9. \quad \begin{array}{r} 3\frac{2}{7} = 3\frac{8}{28} = 2\frac{36}{28} \\ - 1\frac{3}{4} = -1\frac{21}{28} = -1\frac{21}{28} \\ \hline 1\frac{15}{28} \end{array}$$

$$10. \quad \left(2\frac{3}{4}\right)\left(1\frac{5}{8}\right) = \frac{11}{4} \cdot \frac{13}{8} = \frac{143}{32} = 4\frac{15}{32}$$

$$11. \quad 18\frac{2}{3} \div 5\frac{1}{2} = \frac{56}{3} \div \frac{11}{2} = \frac{56}{3} \cdot \frac{2}{11} = \frac{112}{33} = 3\frac{13}{33}$$

Practice:

Simplify as indicated:

$$1. \quad \frac{1}{3} \times \frac{2}{5}$$

$$2. \quad \frac{1}{2} \div \frac{1}{8}$$

$$3. \quad \frac{5}{6} \div \frac{7}{8}$$

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

$$5. \quad \frac{3}{17} \times \frac{51}{100}$$

$$6. \quad \frac{5 \times 4 \times 3}{3 \times 2 \times 1}$$

$$7. \quad 5 \times \frac{3}{10}$$

$$8. \quad \left(\frac{2}{3}\right)^3$$

$$9. \quad \frac{8 \times 7 \times 6 \times 5 \times 4}{5 \times 4 \times 3 \times 2 \times 1}$$

$$10. \quad \frac{1}{3} + \frac{1}{4}$$

$$11. \quad \frac{11}{12} - \frac{5}{8}$$

$$12. \quad \frac{4}{5} - \frac{3}{10}$$

$$13. \quad 1 - \frac{2}{5}$$

$$14. \quad \left(\frac{2}{5}\right)^2 + \frac{1}{10}$$

$$15. \quad \frac{2}{3} + \frac{1}{5} + \frac{3}{10}$$

$$16. \quad \frac{4}{5} \times \frac{3}{4} \times \frac{2}{3} \times \frac{1}{2}$$

$$17. \quad \frac{1}{2} \times \frac{1}{7} + \frac{1}{6} \times \frac{1}{7}$$

$$18. \quad 5\frac{6}{18} + 17\frac{2}{9}$$

$$19. \quad 3\frac{1}{5} + 3\frac{5}{7} + 1\frac{1}{2}$$

20. $18\frac{4}{5} + 9\frac{5}{9}$

21. $12\frac{7}{8} - 1\frac{9}{10}$

22. $16\frac{5}{7} - 3\frac{5}{6}$

23. $6 - 4\frac{3}{5}$

24. $8\frac{1}{4} \times 13\frac{2}{3}$

25. $2\frac{1}{7} \times \frac{5}{7} \times 8\frac{2}{5}$

26. $3\frac{3}{8} \times 9 \times 2\frac{2}{3}$

27. $7\frac{3}{5} \div 1\frac{4}{15}$

28. $8\frac{6}{7} \div 2\frac{2}{5}$

29. $4\frac{1}{3} \div 2$

30. $\frac{4}{9} + \frac{7}{36}$

31. $3\frac{5}{14} + 2\frac{11}{21}$

32. $7\frac{4}{5} + 6\frac{7}{10} + 13\frac{11}{15}$

33. $\frac{5}{7} - \frac{11}{35}$

34. $66 - 2\frac{2}{3}$

35. $61\frac{5}{21} - 28\frac{5}{9}$

36. $1\frac{5}{9} \times \frac{5}{7}$

37. $2\frac{1}{3} \times \frac{3}{14} \times 6$

38. $6\frac{1}{3} \times 3 \times 1\frac{2}{19}$

39. $12\frac{3}{5} \div 7$

40. $4\frac{2}{3} \div \frac{8}{15}$

41. $9 \div 2\frac{1}{6}$

Answers:

1. $\frac{2}{15}$

2. 4

3. $\frac{20}{21}$

4. $\frac{2}{5}$

5. $\frac{9}{100}$

6. 10

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

8. $\frac{8}{27}$

9. 56

10. $\frac{7}{12}$

11. $\frac{7}{24}$

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

13. $\frac{3}{5}$

14. $\frac{13}{50}$

15. $\frac{7}{6}$

16. $\frac{1}{5}$

17. $\frac{2}{21}$

18. $22\frac{5}{9}$

19. $8\frac{29}{70}$

20. $28\frac{16}{45}$

21. $10\frac{39}{40}$

22. $12\frac{37}{42}$

23. $1\frac{2}{5}$

24. $112\frac{3}{4}$

25. $12\frac{6}{7}$

26. 81

27. 6

28. $3\frac{29}{42}$

29. $2\frac{1}{6}$

30. $\frac{23}{36}$

31. $5\frac{37}{42}$

32. $28\frac{7}{30}$

33. $\frac{2}{5}$

34. $63\frac{1}{3}$

35. $32\frac{43}{63}$

36. $1\frac{1}{9}$

37. 3

38. 21

39. $1\frac{4}{5}$

40. $8\frac{3}{4}$

41. $4\frac{2}{13}$

