

# Adding and Subtracting Fractions

Name: \_\_\_\_\_

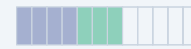
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## Quick Review and Helpful Hints

To add or subtract fractions with different denominators, first find a common denominator (the least common denominator works best). Rewrite each fraction with that denominator, then add or subtract the numerators and keep the denominator the same. Always simplify your answer.

▶ **Example:** Add  $\frac{1}{3} + \frac{1}{4}$ . **Work:** The least common denominator of 3 and 4 is 12. Rewrite:  $\frac{1}{3} = \frac{4}{12}$  and  $\frac{1}{4} = \frac{3}{12}$ . Now add the numerators:  
 $\frac{4}{12} + \frac{3}{12} = \frac{7}{12}$ . **★ Answer:**  $\frac{7}{12}$



$$\frac{4}{12} + \frac{3}{12} = \frac{7}{12}$$

## ◆ Practice Problems

Add or subtract. Write each answer in simplest form.

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

\_\_\_\_\_

8.  $\frac{2}{5} + \frac{1}{2}$

\_\_\_\_\_

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

\_\_\_\_\_

9.  $\frac{3}{4} - \frac{1}{6}$

\_\_\_\_\_

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

\_\_\_\_\_

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

\_\_\_\_\_

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

\_\_\_\_\_

11.  $\frac{5}{8} - \frac{1}{2}$

\_\_\_\_\_

5.  $\frac{5}{6} - \frac{1}{3}$

\_\_\_\_\_

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

\_\_\_\_\_

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

\_\_\_\_\_

13.  $\frac{1}{4} + \frac{1}{5}$

\_\_\_\_\_

7.  $\frac{7}{8} - \frac{1}{4}$

\_\_\_\_\_

14.  $\frac{3}{5} + \frac{1}{10}$

\_\_\_\_\_

## ◆ Word Problems

15. A recipe needs  $\frac{1}{2}$  cup of white sugar and  $\frac{1}{3}$  cup of brown sugar. How much sugar in all?

\_\_\_\_\_

16. A board is  $\frac{7}{8}$  foot long. If  $\frac{1}{4}$  foot is cut off, how much is left?

\_\_\_\_\_

17. Maria walked  $\frac{2}{3}$  mile in the morning and  $\frac{1}{6}$  mile in the evening. How far did she walk?

\_\_\_\_\_

18. A tank is  $\frac{3}{4}$  full. After  $\frac{1}{3}$  of the tank is used, what fraction is left?

\_\_\_\_\_



## Answer Keys

1.  $\frac{3}{4}$

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

3.  $\frac{1}{4}$

4.  $\frac{11}{15}$

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

6.  $\frac{5}{6}$

7.  $\frac{5}{8}$

8.  $\frac{9}{10}$

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

10.  $\frac{11}{12}$

11.  $\frac{1}{8}$

12.  $\frac{5}{12}$

13.  $\frac{9}{20}$

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

15.  $\frac{5}{6}$  cup

16.  $\frac{5}{8}$  ft

17.  $\frac{5}{6}$  mile

18.  $\frac{5}{12}$

### Step-by-Step Explanations

1. Start by naming the process: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is Find a common denominator for 2 and 4 – that is 4. Rewrite  $\frac{1}{2} = \frac{2}{4}$ , then add the numerators:  $\frac{2}{4} + \frac{1}{4} = \frac{3}{4}$ . So the final answer is  $\frac{3}{4}$ .

2. A good way to think about this is: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is The denominators 3 and 6 share the common denominator 6. Change  $\frac{2}{3} = \frac{4}{6}$ , then add:  $\frac{4}{6} + \frac{1}{6} = \frac{5}{6}$ . So the final answer is  $\frac{5}{6}$ .

3. Step by step: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is Use denominator 4. Rewrite  $\frac{1}{2} = \frac{2}{4}$ , then subtract the numerators:  $\frac{3}{4} - \frac{2}{4} = \frac{1}{4}$ . So the final answer is  $\frac{1}{4}$ .

4. Take it one move at a time: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is Since 3 and 5 share no factor, the least common denominator is  $3 \times 5 = 15$ . Rewrite  $\frac{1}{3} = \frac{5}{15}$  and  $\frac{2}{5} = \frac{6}{15}$ , then add:  $\frac{5}{15} + \frac{6}{15} = \frac{11}{15}$ . So the final answer is  $\frac{11}{15}$ .

5. Start by naming the process: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is Common denominator 6: change  $\frac{1}{3} = \frac{2}{6}$ . Subtract:  $\frac{5}{6} - \frac{2}{6} = \frac{3}{6}$ , which simplifies to  $\frac{1}{2}$ . So the final answer is  $\frac{1}{2}$ .

6. A good way to think about this is: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is The LCD of 2 and 3 is 6. Rewrite  $\frac{1}{2} = \frac{3}{6}$  and  $\frac{1}{3} = \frac{2}{6}$ , then add to get  $\frac{5}{6}$ . So the final answer is  $\frac{5}{6}$ .

7. Step by step: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is Use denominator 8:  $\frac{1}{4} = \frac{2}{8}$ . Subtract:  $\frac{7}{8} - \frac{2}{8} = \frac{5}{8}$ . So the final answer is  $\frac{5}{8}$ .

8. Take it one move at a time: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is The LCD of 5 and 2 is 10. Change  $\frac{2}{5} = \frac{4}{10}$  and  $\frac{1}{2} = \frac{5}{10}$ , then add:  $\frac{4}{10} + \frac{5}{10} = \frac{9}{10}$ . So the final answer is  $\frac{9}{10}$ .

9. Start by naming the process: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is The LCD of 4 and 6 is 12. Rewrite  $\frac{3}{4} = \frac{9}{12}$  and  $\frac{1}{6} = \frac{2}{12}$ , then subtract:  $\frac{9}{12} - \frac{2}{12} = \frac{7}{12}$ . So the final answer is  $\frac{7}{12}$ .

10. A good way to think about this is: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is Use the LCD 12:  $\frac{1}{6} = \frac{2}{12}$  and  $\frac{3}{4} = \frac{9}{12}$ . Adding gives  $\frac{2}{12} + \frac{9}{12} = \frac{11}{12}$ . So the final answer is  $\frac{11}{12}$ .

11. Step by step: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is Use denominator 8:  $\frac{1}{2} = \frac{4}{8}$ . Subtract:  $\frac{5}{8} - \frac{4}{8} = \frac{1}{8}$ . So the final answer is  $\frac{1}{8}$ .

12. Take it one move at a time: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is The LCD of 3 and 4 is 12. Change  $\frac{2}{3} = \frac{8}{12}$  and  $\frac{1}{4} = \frac{3}{12}$ , then subtract:  $\frac{8}{12} - \frac{3}{12} = \frac{5}{12}$ . So the final answer is  $\frac{5}{12}$ .

13. Start by naming the process: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is Since 4 and 5 share no factor, the LCD is 20. Rewrite  $\frac{1}{4} = \frac{5}{20}$  and  $\frac{1}{5} = \frac{4}{20}$ , then add:  $\frac{5}{20} + \frac{4}{20} = \frac{9}{20}$ . So the final answer is  $\frac{9}{20}$ .

14. A good way to think about this is: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is Use denominator 10:  $\frac{3}{5} = \frac{6}{10}$ . Add:  $\frac{6}{10} + \frac{1}{10} = \frac{7}{10}$ . So the final answer is  $\frac{7}{10}$ .

15. Step by step: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is Add the two amounts of sugar. With common denominator 6,  $\frac{1}{2} = \frac{3}{6}$  and  $\frac{1}{3} = \frac{2}{6}$ , so  $\frac{3}{6} + \frac{2}{6} = \frac{5}{6}$  cup. So the final answer is  $\frac{5}{6}$  cup.

16. Take it one move at a time: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is Subtract what is cut off from the length. Using eighths,  $\frac{1}{4} = \frac{2}{8}$ , so  $\frac{7}{8} - \frac{2}{8} = \frac{5}{8}$  foot remains. So the final answer is  $\frac{5}{8}$  ft.

17. Start by naming the process: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is Add the morning and evening distances. With sixths,  $\frac{2}{3} = \frac{4}{6}$ , so  $\frac{4}{6} + \frac{1}{6} = \frac{5}{6}$  mile in all. So the final answer is  $\frac{5}{6}$  mile.

18. A good way to think about this is: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is Subtract the part used from  $\frac{3}{4}$ . The LCD of 4 and 3 is 12:  $\frac{3}{4} = \frac{9}{12}$  and  $\frac{1}{3} = \frac{4}{12}$ , so  $\frac{9}{12} - \frac{4}{12} = \frac{5}{12}$  is left. So the final answer is  $\frac{5}{12}$ .



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