

Adding and Subtracting Fractions

Name: _____

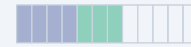
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Quick Review and Helpful Hints

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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