Adding Fractions with Unlike Denominators

Name: _____ Date: _____ Score: _____ / 24

Quick Review

To add fractions, the pieces must be the same size — that means the **denominators must match**. When they do not, rewrite each fraction using a **common denominator**, usually the **least common multiple** of the two denominators. For $\frac{1}{2} + \frac{1}{3}$, the common denominator is 6: rewrite as $\frac{3}{6} + \frac{2}{6}$. Then **add the numerators** and keep the denominator: $\frac{5}{6}$. Finally, **simplify** if you can. The denominator never gets added — it just names the size of the pieces.

◇ **Example:** Add $\frac{1}{2} + \frac{1}{3}$.

⇒ The denominators 2 and 3 are different, so first find a common denominator — the smallest number both divide into is 6. Rewrite each fraction with 6 on the bottom: $\frac{1}{2} = \frac{3}{6}$ and $\frac{1}{3} = \frac{2}{6}$. Now the pieces match, so add the numerators: $3 + 2 = 5$. The denominator stays 6, giving $\frac{5}{6}$. It is already in simplest form.

Answer: $\frac{5}{6}$

PRACTICE

Add. Write each answer in simplest form.

1. $\frac{1}{2} + \frac{1}{3}$ _____
2. $\frac{1}{4} + \frac{1}{6}$ _____
3. $\frac{2}{3} + \frac{1}{4}$ _____
4. $\frac{3}{5} + \frac{1}{2}$ _____
5. $\frac{1}{3} + \frac{2}{5}$ _____
6. $\frac{3}{4} + \frac{1}{6}$ _____
7. $\frac{2}{5} + \frac{3}{10}$ _____
8. $\frac{1}{2} + \frac{3}{8}$ _____
9. $\frac{5}{6} + \frac{1}{4}$ _____
10. $\frac{2}{3} + \frac{3}{5}$ _____
11. $\frac{1}{4} + \frac{2}{9}$ _____
12. $\frac{3}{8} + \frac{1}{3}$ _____
13. $\frac{4}{5} + \frac{1}{3}$ _____
14. $\frac{1}{6} + \frac{3}{8}$ _____
15. $\frac{5}{8} + \frac{1}{6}$ _____
16. $\frac{2}{7} + \frac{1}{2}$ _____
17. $\frac{3}{10} + \frac{2}{5}$ _____
18. $\frac{1}{3} + \frac{1}{12}$ _____
19. $\frac{5}{12} + \frac{1}{4}$ _____
20. $\frac{2}{9} + \frac{1}{6}$ _____

Word Problems

21. Emma walked $\frac{1}{2}$ mile in the morning and $\frac{1}{3}$ mile in the afternoon. How far did she walk in all? _____
22. A recipe needs $\frac{2}{3}$ cup of sugar and $\frac{1}{4}$ cup of brown sugar. How much sugar is used altogether? _____
23. Noah read $\frac{3}{5}$ of a book on Monday and $\frac{1}{2}$ of the book on Tuesday. What total fraction did he read? _____
24. A board is made by gluing a $\frac{1}{4}$-inch strip to a $\frac{2}{9}$-inch strip. How thick is the board? _____

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Answer Keys

1. $\frac{5}{6}$
2. $\frac{5}{12}$
3. $\frac{11}{12}$
4. $\frac{11}{10}$
5. $\frac{11}{15}$
6. $\frac{11}{12}$
7. $\frac{7}{10}$
8. $\frac{7}{8}$
9. $\frac{13}{12}$
10. $\frac{19}{15}$
11. $\frac{17}{36}$
12. $\frac{17}{24}$
13. $\frac{17}{15}$
14. $\frac{13}{24}$
15. $\frac{19}{24}$
16. $\frac{11}{14}$
17. $\frac{7}{10}$
18. $\frac{5}{12}$
19. $\frac{2}{3}$
20. $\frac{7}{18}$
21. $\frac{5}{6}$ mile
22. $\frac{11}{12}$ cup
23. $\frac{11}{10}$
24. $\frac{17}{36}$ inch

Step-by-Step Explanations

1. Common denominator 6: $\frac{3}{6} + \frac{2}{6} = \frac{5}{6}$.
2. Common denominator 12: $\frac{3}{12} + \frac{2}{12} = \frac{5}{12}$.
3. Common denominator 12: $\frac{8}{12} + \frac{3}{12} = \frac{11}{12}$.
4. Common denominator 10: $\frac{6}{10} + \frac{5}{10} = \frac{11}{10}$.
5. Common denominator 15: $\frac{5}{15} + \frac{6}{15} = \frac{11}{15}$.
6. Common denominator 12: $\frac{9}{12} + \frac{2}{12} = \frac{11}{12}$.
7. Common denominator 10: $\frac{4}{10} + \frac{3}{10} = \frac{7}{10}$.
8. Common denominator 8: $\frac{4}{8} + \frac{3}{8} = \frac{7}{8}$.
9. Common denominator 12: $\frac{10}{12} + \frac{3}{12} = \frac{13}{12}$.
10. Common denominator 15: $\frac{10}{15} + \frac{9}{15} = \frac{19}{15}$.
11. Common denominator 36: $\frac{9}{36} + \frac{8}{36} = \frac{17}{36}$.
12. Common denominator 24: $\frac{9}{24} + \frac{8}{24} = \frac{17}{24}$.
13. Common denominator 15: $\frac{12}{15} + \frac{5}{15} = \frac{17}{15}$.
14. Common denominator 24: $\frac{4}{24} + \frac{9}{24} = \frac{13}{24}$.
15. Common denominator 24: $\frac{15}{24} + \frac{4}{24} = \frac{19}{24}$.
16. Common denominator 14: $\frac{4}{14} + \frac{7}{14} = \frac{11}{14}$.
17. Common denominator 10: $\frac{3}{10} + \frac{4}{10} = \frac{7}{10}$.
18. Common denominator 12: $\frac{4}{12} + \frac{1}{12} = \frac{5}{12}$.
19. Common denominator 12: $\frac{5}{12} + \frac{3}{12} = \frac{8}{12} = \frac{2}{3}$.
20. Common denominator 18: $\frac{4}{18} + \frac{3}{18} = \frac{7}{18}$.
21. Use a common denominator of 6: $\frac{3}{6} + \frac{2}{6} = \frac{5}{6}$ mile.
22. Common denominator 12: $\frac{8}{12} + \frac{3}{12} = \frac{11}{12}$ cup.
23. Common denominator 10: $\frac{6}{10} + \frac{5}{10} = \frac{11}{10}$ (he finished and re-read a bit).
24. Common denominator 36: $\frac{9}{36} + \frac{8}{36} = \frac{17}{36}$ inch.

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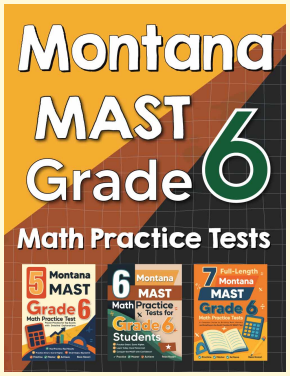

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