

Adding and Subtracting Mixed Numbers

Name: _____ Date: _____ Score: _____ / 24

Q Quick Review

A **mixed number** like $1\frac{3}{4}$ is a whole number plus a fraction. One reliable way to add or subtract them is to first turn each into an **improper fraction**: multiply the whole number by the denominator, add the numerator, and keep the denominator. So $1\frac{3}{4} = \frac{7}{4}$. Then use a **common denominator**, add or subtract the numerators, and **convert back** to a mixed number at the end. This method avoids tricky regrouping and works every time.

◇ **Example:** Add $1\frac{3}{4} + 1\frac{1}{6}$.

⇒ Change each mixed number to an improper fraction. For $1\frac{3}{4}$: $1 \times 4 + 3 = 7$, so it is $\frac{7}{4}$. For $1\frac{1}{6}$: $1 \times 6 + 1 = 7$, so it is $\frac{7}{6}$. The common denominator of 4 and 6 is 12: $\frac{7}{4} = \frac{21}{12}$ and $\frac{7}{6} = \frac{14}{12}$. Add: $\frac{21}{12} + \frac{14}{12} = \frac{35}{12}$. Convert back: $35 \div 12 = 2$ remainder 11, so the answer is $2\frac{11}{12}$.

Answer: $2\frac{11}{12}$

PRACTICE

Add or subtract. Write each answer as a mixed number in simplest form.

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

◆ Word Problems

21. Jada jogged $2\frac{1}{2}$ miles and then walked $1\frac{1}{3}$ miles. How far did she travel in all? _____
22. A board is $4\frac{3}{4}$ feet long. A piece $2\frac{1}{6}$ feet long is cut off. How much board is left? _____
23. A baker used $1\frac{3}{4}$ cups of flour for bread and $1\frac{1}{6}$ cups for muffins. How much flour was used? _____
24. A pitcher holds $6\frac{1}{3}$ cups of juice. After serving, $2\frac{7}{8}$ cups remain poured out. How much juice is still in the pitcher? _____



Answer Keys

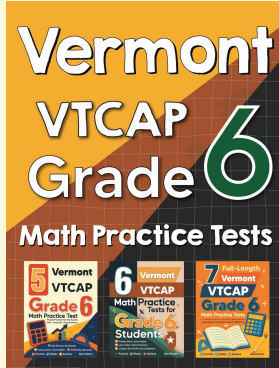
- | | |
|----------------------|---------------------------|
| 1. $3\frac{3}{4}$ | 13. $4\frac{2}{5}$ |
| 2. $3\frac{2}{3}$ | 14. $2\frac{1}{6}$ |
| 3. $4\frac{3}{5}$ | 15. $2\frac{7}{12}$ |
| 4. $3\frac{5}{6}$ | 16. $1\frac{5}{12}$ |
| 5. $3\frac{5}{12}$ | 17. $2\frac{3}{10}$ |
| 6. $4\frac{11}{12}$ | 18. $2\frac{5}{12}$ |
| 7. $2\frac{11}{12}$ | 19. $3\frac{11}{24}$ |
| 8. $5\frac{7}{20}$ | 20. $2\frac{7}{8}$ |
| 9. $6\frac{1}{3}$ | 21. $3\frac{5}{6}$ miles |
| 10. $5\frac{11}{12}$ | 22. $2\frac{7}{12}$ feet |
| 11. $2\frac{1}{2}$ | 23. $2\frac{11}{12}$ cups |
| 12. $2\frac{1}{3}$ | 24. $3\frac{11}{24}$ cups |

Step-by-Step Explanations

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| <p>1. Add wholes $1 + 2 = 3$; add fractions $\frac{2}{4} + \frac{1}{4} = \frac{3}{4}$.</p> <p>2. Wholes $2 + 1 = 3$; fractions $\frac{1}{3} + \frac{1}{3} = \frac{2}{3}$.</p> <p>3. Wholes $3 + 1 = 4$; fractions $\frac{1}{5} + \frac{2}{5} = \frac{3}{5}$.</p> <p>4. Common denominator 6: $\frac{3}{6} + \frac{2}{6} = \frac{5}{6}$; wholes $2 + 1 = 3$.</p> <p>5. Common denominator 12: $\frac{3}{12} + \frac{2}{12} = \frac{5}{12}$; wholes $1 + 2 = 3$.</p> <p>6. Common denominator 12: $\frac{8}{12} + \frac{3}{12} = \frac{11}{12}$; wholes $3 + 1 = 4$.</p> <p>7. Improper: $\frac{7}{4} + \frac{7}{6} = \frac{21}{12} + \frac{14}{12} = \frac{35}{12} = 2\frac{11}{12}$.</p> <p>8. Improper: $\frac{13}{5} + \frac{11}{4} = \frac{52}{20} + \frac{55}{20} = \frac{107}{20} = 5\frac{7}{20}$.</p> <p>9. Common denominator 6: $\frac{3}{6} + \frac{5}{6} = \frac{8}{6} = 1\frac{1}{3}$; wholes $4 + 1 + 1 = 6$, leaving $6\frac{1}{3}$.</p> <p>10. Improper: $\frac{11}{3} + \frac{9}{4} = \frac{44}{12} + \frac{27}{12} = \frac{71}{12} = 5\frac{11}{12}$.</p> <p>11. Wholes $3 - 1 = 2$; fractions $\frac{3}{4} - \frac{1}{4} = \frac{2}{4} = \frac{1}{2}$.</p> <p>12. Wholes $4 - 2 = 2$; fractions $\frac{2}{3} - \frac{1}{3} = \frac{1}{3}$.</p> | <p>13. Wholes $5 - 1 = 4$; fractions $\frac{3}{5} - \frac{1}{5} = \frac{2}{5}$.</p> <p>14. Common denominator 6: $\frac{3}{6} - \frac{2}{6} = \frac{1}{6}$; wholes $3 - 1 = 2$.</p> <p>15. Common denominator 12: $\frac{9}{12} - \frac{2}{12} = \frac{7}{12}$; wholes $4 - 2 = 2$.</p> <p>16. Improper: $\frac{13}{4} - \frac{11}{6} = \frac{39}{12} - \frac{22}{12} = \frac{17}{12} = 1\frac{5}{12}$.</p> <p>17. Improper: $\frac{17}{5} - \frac{11}{10} = \frac{34}{10} - \frac{11}{10} = \frac{23}{10} = 2\frac{3}{10}$.</p> <p>18. Improper: $\frac{31}{6} - \frac{11}{4} = \frac{62}{12} - \frac{33}{12} = \frac{29}{12} = 2\frac{5}{12}$.</p> <p>19. Improper: $\frac{19}{3} - \frac{23}{8} = \frac{152}{24} - \frac{69}{24} = \frac{83}{24} = 3\frac{11}{24}$.</p> <p>20. Improper: $\frac{9}{2} - \frac{13}{8} = \frac{36}{8} - \frac{13}{8} = \frac{23}{8} = 2\frac{7}{8}$.</p> <p>21. Common denominator 6: $\frac{3}{6} + \frac{2}{6} = \frac{5}{6}$; wholes $2 + 1 = 3$, giving $3\frac{5}{6}$ miles.</p> <p>22. Common denominator 12: $\frac{9}{12} - \frac{2}{12} = \frac{7}{12}$; wholes $4 - 2 = 2$, giving $2\frac{7}{12}$ feet.</p> <p>23. Improper: $\frac{7}{4} + \frac{7}{6} = \frac{35}{12} = 2\frac{11}{12}$ cups.</p> <p>24. Improper: $\frac{19}{3} - \frac{23}{8} = \frac{83}{24} = 3\frac{11}{24}$ cups.</p> |
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