Subtracting Mixed Numbers

Name: _____	Date: _____	Score: _____ / 18

Quick Review and Helpful Hints

To subtract mixed numbers, work with the whole numbers and the fractions separately. First give the fractions a common denominator. If the top fraction is smaller than the bottom fraction, *borrow* 1 from the whole number and rewrite it as a fraction with that same denominator, then subtract. Always simplify your final answer.

Example: Subtract $5\frac{1}{4} - 2\frac{3}{4}$. **Work:** The denominators already match. Since $\frac{1}{4}$ is smaller than $\frac{3}{4}$, borrow 1 from the 5: write $5\frac{1}{4}$ as $4\frac{5}{4}$. Now subtract: $4\frac{5}{4} - 2\frac{3}{4} = 2\frac{2}{4} = 2\frac{1}{2}$. **Answer:** $2\frac{1}{2}$

Practice Problems

Subtract. Write each answer in simplest form.

1. $3\frac{2}{5} - 1\frac{1}{5}$ _____

2. $6\frac{3}{4} - 2\frac{1}{4}$ _____

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

4. $7\frac{1}{2} - 3\frac{1}{4}$ _____

5. $5\frac{1}{6} - 2\frac{5}{6}$ _____

6. $8\frac{3}{8} - 3\frac{1}{8}$ _____

7. $9\frac{2}{3} - 4\frac{1}{6}$ _____

8. $6\frac{1}{4} - 2\frac{5}{8}$ _____

9. $10\frac{1}{2} - 4\frac{2}{3}$ _____

10. $5 - 1\frac{3}{7}$ _____

11. $7\frac{2}{9} - 3\frac{5}{9}$ _____

12. $12\frac{5}{6} - 7\frac{1}{3}$ _____

13. $4\frac{3}{10} - 1\frac{4}{5}$ _____

14. $6\frac{1}{8} - 2\frac{3}{4}$ _____

Word Problems

15. A recipe needs $3\frac{1}{2}$ cups of flour. Maria has already used $1\frac{3}{4}$ cups. How much flour is left?

_____

16. A board is $8\frac{1}{4}$ feet long. A carpenter cuts off $3\frac{2}{3}$ feet. How long is the piece that remains?

_____

17. Jordan ran $5\frac{1}{3}$ miles on Monday and $2\frac{5}{6}$ miles on Tuesday. How much farther did Jordan run on Monday?

_____

18. A water tank holds 10 gallons. After $4\frac{2}{5}$ gallons are used, how much water is left?

_____

Answer Keys

1. $2\frac{1}{5}$	**7.** $5\frac{1}{2}$	**13.** $2\frac{1}{2}$
2. $4\frac{1}{2}$	**8.** $3\frac{5}{8}$	**14.** $3\frac{3}{8}$
3. $2\frac{2}{3}$	**9.** $5\frac{5}{6}$	**15.** $1\frac{3}{4}$ cups
4. $4\frac{1}{4}$	**10.** $3\frac{4}{7}$	**16.** $4\frac{7}{12}$ ft
5. $2\frac{1}{3}$	**11.** $3\frac{2}{3}$	**17.** $2\frac{1}{2}$ miles
6. $5\frac{1}{4}$	**12.** $5\frac{1}{2}$	**18.** $5\frac{3}{5}$ gal

Step-by-Step Explanations

1. The denominators already match, so handle the whole numbers and the fractions separately: $3-1=2$ and $\frac{2}{5}-\frac{1}{5}=\frac{1}{5}$. Together, the result is $2\frac{1}{5}$.

2. Subtract straight across since the bottoms agree: $6-2=4$ and $\frac{3}{4}-\frac{1}{4}=\frac{2}{4}$. Always simplify the result – $\frac{2}{4}$ becomes $\frac{1}{2}$, giving $4\frac{1}{2}$.

3. Here the top fraction $\frac{1}{3}$ is smaller than $\frac{2}{3}$, so borrow 1 from the 4. That borrowed 1 is $\frac{3}{3}$, turning $4\frac{1}{3}$ into $3\frac{4}{3}$. Now $3\frac{4}{3}-1\frac{2}{3}=2\frac{2}{3}$.

4. Give the fractions a common denominator of 4 first: $\frac{1}{2}=\frac{2}{4}$. Then it's an easy subtraction: $7\frac{2}{4}-3\frac{1}{4}=4\frac{1}{4}$.

5. Since $\frac{1}{6}<\frac{5}{6}$, borrow one whole: $5\frac{1}{6}=4\frac{7}{6}$. Subtracting gives $4\frac{7}{6}-2\frac{5}{6}=2\frac{2}{6}$, which reduces to $2\frac{1}{3}$.

6. The denominators match, so subtract directly: $8-3=5$ and $\frac{3}{8}-\frac{1}{8}=\frac{2}{8}$. Simplify $\frac{2}{8}$ to $\frac{1}{4}$ for the final $5\frac{1}{4}$.

7. Rewrite $\frac{2}{3}$ as $\frac{4}{6}$ so both share denominator 6. Then $9\frac{4}{6}-4\frac{1}{6}=5\frac{3}{6}$, and $\frac{3}{6}$ simplifies to $\frac{1}{2}$.

8. Use denominator 8, so $\frac{1}{4}=\frac{2}{8}$. Because $\frac{2}{8}<\frac{5}{8}$, borrow to make $5\frac{10}{8}$, then $5\frac{10}{8}-2\frac{5}{8}=3\frac{5}{8}$.

9. A common denominator of 6 gives $10\frac{3}{6}-4\frac{4}{6}$. The top fraction is too small, so borrow: $10\frac{3}{6}=9\frac{9}{6}$. Now $9\frac{9}{6}-4\frac{4}{6}=5\frac{5}{6}$.

10. Whole numbers can borrow too. Rewrite 5 as $4\frac{7}{7}$, then subtract: $4\frac{7}{7}-1\frac{3}{7}=3\frac{4}{7}$.

11. Since $\frac{2}{9}<\frac{5}{9}$, borrow to get $6\frac{11}{9}$. Then $6\frac{11}{9}-3\frac{5}{9}=3\frac{6}{9}$, which reduces to $3\frac{2}{3}$.

12. Match the denominators: $\frac{1}{3}=\frac{2}{6}$. Then $12\frac{5}{6}-7\frac{2}{6}=5\frac{3}{6}=5\frac{1}{2}$.

13. Rewrite $\frac{4}{5}$ as $\frac{8}{10}$. Since $\frac{3}{10}<\frac{8}{10}$, borrow: $4\frac{3}{10}=3\frac{13}{10}$, and $3\frac{13}{10}-1\frac{8}{10}=2\frac{5}{10}=2\frac{1}{2}$.

14. With denominator 8, $\frac{3}{4}=\frac{6}{8}$. Borrow because $\frac{1}{8}<\frac{6}{8}$: $6\frac{1}{8}=5\frac{9}{8}$, then $5\frac{9}{8}-2\frac{6}{8}=3\frac{3}{8}$.

15. Subtract what's used from what's needed: $3\frac{1}{2}-1\frac{3}{4}$. Using fourths and borrowing, $2\frac{6}{4}-1\frac{3}{4}=1\frac{3}{4}$ cups of flour are left.

16. Take the cut piece from the whole board: $8\frac{1}{4}-3\frac{2}{3}$. With twelfths and a borrow, $7\frac{15}{12}-3\frac{8}{12}=4\frac{7}{12}$ feet remain.

17. "How much farther" is a subtraction: $5\frac{1}{3}-2\frac{5}{6}$. Using sixths and borrowing, $4\frac{8}{6}-2\frac{5}{6}=2\frac{3}{6}=2\frac{1}{2}$ miles more on Monday.

18. Start from the full tank: $10-4\frac{2}{5}$. Write 10 as $9\frac{5}{5}$, then $9\frac{5}{5}-4\frac{2}{5}=5\frac{3}{5}$ gallons left.

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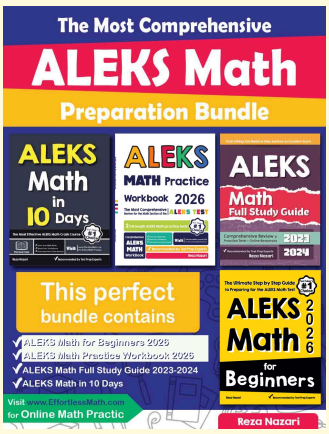

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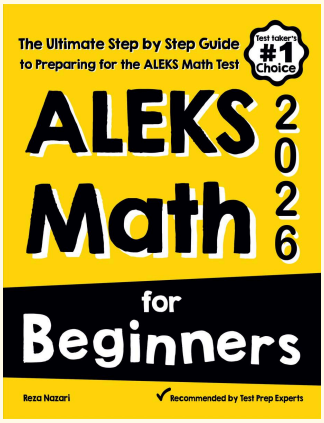

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