Subtracting Fractions with Unlike Denominators

Subtracting Fractions with Unlike Denominators: Models and Computation

Name _____ **Date** _____ **Score** _____ / 8

QUICK REVIEW

Subtract equal-sized parts. For $\frac{5}{6} - \frac{1}{4}$, write $\frac{10}{12} - \frac{3}{12} = \frac{7}{12}$. Keep the denominator. Check by adding the difference to the subtracted fraction: $\frac{7}{12} + \frac{1}{4} = \frac{5}{6}$.

Worked example

Calculate $\frac{7}{8} - \frac{1}{6}$. Show the place-value or fraction calculation.

1. A common denominator is 24: $\frac{7}{8} = \frac{21}{24}$ and $\frac{1}{6} = \frac{4}{24}$.
2. $\frac{7}{8} - \frac{1}{6} = \frac{21-4}{24} = \frac{17}{24}$.
3. Simplify to $\frac{17}{24}$; check $\frac{17}{24} + \frac{1}{6} = \frac{7}{8}$.
Answer: $\frac{17}{24}$.

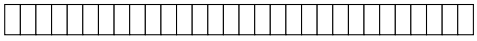
Practice Problems

Show your thinking.

1. Calculate $\frac{3}{4} - \frac{1}{3}$. Show the place-value or fraction calculation.

2. Use the strip to show $\frac{5}{6} - \frac{2}{5}$. Shade the starting amount, then cross out the amount removed. Find the difference.

Each strip is one whole



3. A strip is $\frac{7}{8}$ m long. A piece of $\frac{1}{4}$ m is removed. How much remains?

4. Use an inverse operation to verify a proposed result of $\frac{3}{10}$ for $\frac{4}{5} - \frac{1}{2}$. Show both computations.

5. Find the missing number: $\frac{11}{12} - \square = \frac{13}{24}$. Check by substitution.

6. A student writes $\frac{2}{3} - \frac{1}{6} = 1$. Correct the result and check it.

7. Is $\frac{9}{10} - \frac{2}{5}$ greater than, less than, or equal to $\frac{3}{4}$? Find the exact gap.

8. Calculate $\frac{7}{9} - \frac{1}{3}$. Show the place-value or fraction calculation.

Answer Key

1. $\frac{5}{12}$.
2. $\frac{13}{30}$.
3. $\frac{5}{8}$ m.
4. The result $\frac{3}{10}$ is correct.
5. $\frac{3}{8}$.
6. $\frac{1}{2}$, not 1.
7. Less than by $\frac{1}{4}$.
8. $\frac{4}{9}$.

Step-by-Step Solutions

Follow each calculation, then check your own work.

Problem 1

1. A common denominator is 12: $\frac{3}{4} = \frac{9}{12}$ and $\frac{1}{3} = \frac{4}{12}$.
2. $\frac{3}{4} - \frac{1}{3} = \frac{9-4}{12} = \frac{5}{12}$.
3. Simplify to $\frac{5}{12}$; check $\frac{5}{12} + \frac{1}{3} = \frac{3}{4}$.

Problem 2

1. A common denominator is 30: $\frac{5}{6} = \frac{25}{30}$ and $\frac{2}{5} = \frac{12}{30}$.
2. Shade 25 cells for the first amount. Cross out 12 of the shaded cells. There are 13 shaded cells left.

Each strip is one whole



3. $\frac{5}{6} - \frac{2}{5} = \frac{25-12}{30} = \frac{13}{30}$.
4. Simplify to $\frac{13}{30}$; check $\frac{13}{30} + \frac{2}{5} = \frac{5}{6}$.

Problem 3

1. The quantities call for $\frac{7}{8} - \frac{1}{4}$; the result is measured in m.
2. A common denominator is 8: $\frac{7}{8} = \frac{7}{8}$ and $\frac{1}{4} = \frac{2}{8}$.
3. $\frac{7}{8} - \frac{1}{4} = \frac{7-2}{8} = \frac{5}{8}$.
4. Simplify to $\frac{5}{8}$; check $\frac{5}{8} + \frac{1}{4} = \frac{7}{8}$.

Problem 4

1. A common denominator is 10: $\frac{4}{5} = \frac{8}{10}$ and $\frac{1}{2} = \frac{5}{10}$.
2. $\frac{4}{5} - \frac{1}{2} = \frac{8-5}{10} = \frac{3}{10}$.
3. Simplify to $\frac{3}{10}$; check $\frac{3}{10} + \frac{1}{2} = \frac{4}{5}$.
4. Inverse check: $\frac{3}{10} + \frac{1}{2} = \frac{4}{5}$.

Problem 5

1. Undo the known operation to find the missing value: $\frac{11}{12} - \frac{13}{24} = \frac{3}{8}$.
2. A common denominator is 24: $\frac{11}{12} = \frac{22}{24}$ and $\frac{3}{8} = \frac{9}{24}$.
3. $\frac{11}{12} - \frac{3}{8} = \frac{22-9}{24} = \frac{13}{24}$.
4. Simplify to $\frac{13}{24}$; check $\frac{13}{24} + \frac{3}{8} = \frac{11}{12}$.

Problem 6

1. A common denominator is 6: $\frac{2}{3} = \frac{4}{6}$ and $\frac{1}{6} = \frac{1}{6}$.
2. $\frac{2}{3} - \frac{1}{6} = \frac{4-1}{6} = \frac{3}{6}$.
3. Simplify to $\frac{1}{2}$; check $\frac{1}{2} + \frac{1}{6} = \frac{2}{3}$.
4. The claimed value differs by $\frac{1}{2}$, so it fails the exact calculation.

Problem 7

1. A common denominator is 10: $\frac{9}{10} = \frac{9}{10}$ and $\frac{2}{5} = \frac{4}{10}$.
2. $\frac{9}{10} - \frac{2}{5} = \frac{9-4}{10} = \frac{5}{10}$.
3. Simplify to $\frac{1}{2}$; check $\frac{1}{2} + \frac{2}{5} = \frac{9}{10}$.
4. $\frac{3}{4} - \frac{1}{2} = \frac{1}{4}$, so the expression is smaller.

Problem 8

1. A common denominator is 9: $\frac{7}{9} = \frac{7}{9}$ and $\frac{1}{3} = \frac{3}{9}$.
2. $\frac{7}{9} - \frac{1}{3} = \frac{7-3}{9} = \frac{4}{9}$.
3. Simplify to $\frac{4}{9}$; check $\frac{4}{9} + \frac{1}{3} = \frac{7}{9}$.

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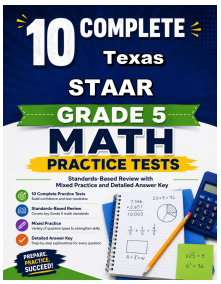

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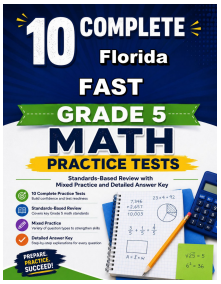

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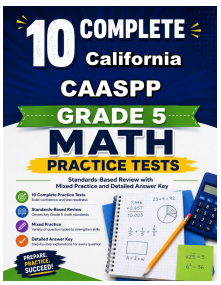

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