Finding Common Denominators

Finding Common Denominators: Find, Fix, and Work Backward

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

QUICK REVIEW

A common denominator names equal-sized parts. Use a common multiple of the denominators, and multiply numerator and denominator by the same factor. For $\frac{1}{3}$ and $\frac{1}{4}$, the least shared denominator is 12: $\frac{1}{3} = \frac{4}{12}$ and $\frac{1}{4} = \frac{3}{12}$.

Worked example

Find the least common denominator of $\frac{1}{4}$ and $\frac{2}{3}$. Rewrite both fractions.

1. Multiples of 4: $4, 8, 12$; multiples of 3: $3, 6, 9, 12$.
2. The first shared value is 12.
3. Scale both parts of each fraction: $\frac{1}{4} = \frac{3}{12}$ (factor 3); $\frac{2}{3} = \frac{8}{12}$ (factor 4).
Answer: Common denominator 12; $\frac{3}{12}$ and $\frac{8}{12}$.

Practice Problems

Show your thinking.

1. A student changes $\frac{3}{8}$ into $\frac{3}{24}$ without changing its numerator. Correct the equivalent fraction and also rewrite $\frac{2}{3}$.

2. Complete both numerators: $\frac{1}{6} = \frac{\square}{30}$ and $\frac{3}{10} = \frac{\square}{30}$. Explain the scale factors.

3. Use a common denominator twice the least common denominator for $\frac{3}{4}$ and $\frac{2}{5}$. Show both equivalent fractions.

4. For $\frac{1}{2}$ and $\frac{5}{8}$, decide whether 8 or 9 is a common denominator. Rewrite both using the valid choice.

5. The denominator 36 is required on two labels. Convert $\frac{2}{3}$ and $\frac{7}{12}$ to that denominator, giving each numerator multiplier.

6. A student changes $\frac{1}{3}$ into $\frac{1}{12}$ without changing its numerator. Correct the equivalent fraction and also rewrite $\frac{3}{4}$.

7. Prepare, but do not finish, an addition: $\frac{2}{5} + \frac{1}{2} = \frac{\square+\square}{10}$. Find the two missing numerators and show each conversion.

8. List multiples of 6 and 4 through their first common multiple. Use it to rewrite $\frac{5}{6}$ and $\frac{1}{4}$.

Answer Key

1. Common denominator 24; $\frac{9}{24}$ and $\frac{16}{24}$.
2. Common denominator 30; $\frac{5}{30}$ and $\frac{9}{30}$.
3. Common denominator 40; $\frac{30}{40}$ and $\frac{16}{40}$.
4. Common denominator 8; $\frac{4}{8}$ and $\frac{5}{8}$.
5. Common denominator 36; $\frac{24}{36}$ and $\frac{21}{36}$.
6. Common denominator 12; $\frac{4}{12}$ and $\frac{9}{12}$.
7. 4 and 5; $\frac{4+5}{10}$.
8. Common denominator 12; $\frac{10}{12}$ and $\frac{3}{12}$.

Step-by-Step Solutions

Follow each calculation, then check your own work.

Problem 1

1. Multiples of 8: $8, 16, 24$; multiples of 3: $3, 6, 9, 12, 15, 18, 21, 24$.
2. The first shared value is 24.
3. Scale both parts of each fraction: $\frac{3}{8} = \frac{9}{24}$ (factor 3); $\frac{2}{3} = \frac{16}{24}$ (factor 8).

Problem 2

1. Multiples of 6: $6, 12, 18, 24, 30$; multiples of 10: $10, 20, 30$.
2. The first shared value is 30.
3. Scale both parts of each fraction: $\frac{1}{6} = \frac{5}{30}$ (factor 5); $\frac{3}{10} = \frac{9}{30}$ (factor 3).

Problem 3

1. Multiples of 4: $4, 8, 12, 16, 20$; multiples of 5: $5, 10, 15, 20$.
2. The first shared value is 20; the requested denominator is 40.
3. Scale both parts of each fraction: $\frac{3}{4} = \frac{30}{40}$ (factor 10); $\frac{2}{5} = \frac{16}{40}$ (factor 8).

Problem 4

1. Multiples of 2: $2, 4, 6, 8$; multiples of 8: 8.
2. The first shared value is 8.
3. Scale both parts of each fraction: $\frac{1}{2} = \frac{4}{8}$ (factor 4); $\frac{5}{8} = \frac{5}{8}$ (factor 1).
4. 9 leaves remainder 1 when divided by 2, so it is not a common denominator.

Problem 5

1. Multiples of 3: $3, 6, 9, 12$; multiples of 12: 12.
2. The first shared value is 12; the requested denominator is 36.
3. Scale both parts of each fraction: $\frac{2}{3} = \frac{24}{36}$ (factor 12); $\frac{7}{12} = \frac{21}{36}$ (factor 3).

Problem 6

1. Multiples of 3: $3, 6, 9, 12$; multiples of 4: $4, 8, 12$.
2. The first shared value is 12.
3. Scale both parts of each fraction: $\frac{1}{3} = \frac{4}{12}$ (factor 4); $\frac{3}{4} = \frac{9}{12}$ (factor 3).

Problem 7

1. Multiples of 5: $5, 10$; multiples of 2: $2, 4, 6, 8, 10$.
2. The first shared value is 10.
3. Scale both parts of each fraction: $\frac{2}{5} = \frac{4}{10}$ (factor 2); $\frac{1}{2} = \frac{5}{10}$ (factor 5).

Problem 8

1. Multiples of 6: $6, 12$; multiples of 4: $4, 8, 12$.
2. The first shared value is 12.
3. Scale both parts of each fraction: $\frac{5}{6} = \frac{10}{12}$ (factor 2); $\frac{1}{4} = \frac{3}{12}$ (factor 3).

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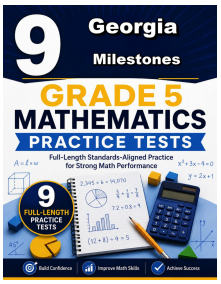

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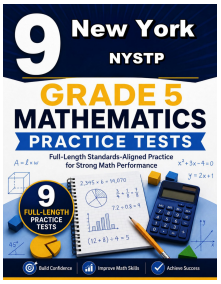

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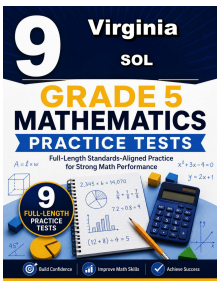

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