Finding Common Denominators

Finding Common Denominators: Apply, Compare, and Design

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.

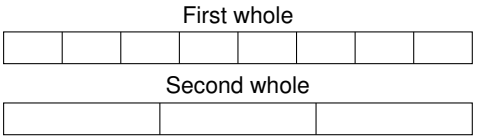
1. Two measurements are $\frac{2}{3}$ cup and $\frac{7}{12}$ cup. Rewrite both in cups using the least common denominator; do not add them yet.

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

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

4. Express the comparison of $\frac{1}{6}$ and $\frac{3}{10}$ as a comparison of whole-number numerators over a common denominator. State the larger fraction.

5. The strips represent equal wholes. Use the fewest equal pieces per whole that keep both sets of partition lines. Shade $\frac{3}{8}$ on the first and $\frac{2}{3}$ on the second. Label the equivalent fractions.



6. Find the first two common denominators for $\frac{5}{6}$ and $\frac{1}{4}$. Rewrite both fractions using the second one.

7. Complete both numerators: $\frac{2}{5} = \frac{\square}{10}$ and $\frac{1}{2} = \frac{\square}{10}$. Explain the scale factors.

8. For $\frac{1}{3}$ and $\frac{3}{4}$, decide whether 12 or 13 is a common denominator. Rewrite both using the valid choice.

Answer Key

1. Least common denominator 12: $\frac{8}{12}$ cup and $\frac{7}{12}$ cup.
2. Common denominator 8; $\frac{4}{8}$ and $\frac{5}{8}$.
3. Common denominator 40; $\frac{30}{40}$ and $\frac{16}{40}$.
4. Compare 5 and 9 over 30; $\frac{3}{10}$ is larger.
5. Common denominator 24; $\frac{9}{24}$ and $\frac{16}{24}$.
6. 12 and 24; $\frac{20}{24}$ and $\frac{6}{24}$.
7. Common denominator 10; $\frac{4}{10}$ and $\frac{5}{10}$.
8. Common denominator 12; $\frac{4}{12}$ and $\frac{9}{12}$.

Step-by-Step Solutions

Follow each calculation, then check your own work.

Problem 1

1. Multiples of 3: $3, 6, 9, 12$; multiples of 12: 12.

2. The first shared value is 12.

3. Scale both parts of each fraction: $\frac{2}{3} = \frac{8}{12}$ (factor 4); $\frac{7}{12} = \frac{7}{12}$ (factor 1).

Problem 2

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 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 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).

4. The numerators are 5 and 9; with equal-sized parts their order gives the fraction order.

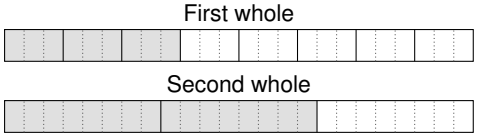
Problem 5

1. Multiples of 8: $8, 16, 24$; multiples of 3: $3, 6, 9, 12, 15, 18, 21, 24$.

2. The first shared count is 24 pieces per whole. Split each first-strip part into 3, and each second-strip part into 8.

3. Shade $3 \times 3 = 9$ new pieces in the first and $2 \times 8 = 16$ in the second.

4. The shading represents the same fractions in both models. Dots mark new divisions.



Problem 6

1. Multiples of 6: $6, 12$; multiples of 4: $4, 8, 12$.

2. The first shared value is 12; the requested denominator is 24.

3. Scale both parts of each fraction: $\frac{5}{6} = \frac{20}{24}$ (factor 4); $\frac{1}{4} = \frac{6}{24}$ (factor 6).

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 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).

4. 13 leaves remainder 1 when divided by 3, so it is not a common denominator.

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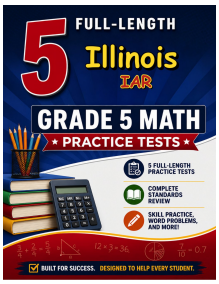

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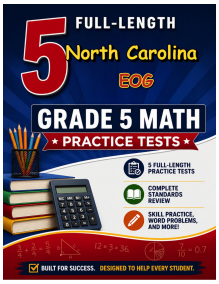

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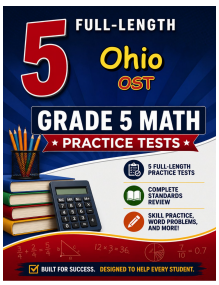

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