Equivalent Fractions

Apply the skill to decisions and designs

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

QUICK REVIEW

Multiply or divide the numerator and denominator by the same nonzero number. $\frac{2}{3} = \frac{2\times4}{3\times4} = \frac{8}{12}$. The piece size changes, not the amount of the whole.

Worked example

Write an equivalent fraction to $\frac{3}{5}$ using tenths.

1. Scale both counts by 2: $3 \times 2 = 6$ and $5 \times 2 = 10$.
2. Thus $\frac{3}{5} = \frac{6}{10}$; each old piece became 2 smaller pieces.
3. Check by division: $6 \div 2 = 3$ and $10 \div 2 = 5$.

Answer: $\frac{6}{10} = \frac{3}{5}$.

Practice Problems

Show your thinking.

1. A ribbon uses $\frac{3}{8}$ m. Write the same length in sixteenths.

2. A grid design covers $\frac{3}{5}$ of a whole. How many of 20 equal cells is that?

3. A recipe uses $\frac{7}{10}$ L. Rewrite this in twentieths of a liter.

4. A sign shades 8 of 12 equal spaces. Rename the amount in thirds.

5. A maker replaces each of 5 equal panels with 3 small panels. Two original panels were black. Find the new black fraction.

6. A poster labels $\frac{6}{10}$ as $\frac{3}{5}$ and $\frac{6}{12}$ as $\frac{3}{5}$. Repair the false label.

7. Design a fraction equal to $\frac{2}{3}$ whose denominator is greater than 10 but less than 15.

8. Explain why $\frac{4}{16}$ of a cake and $\frac{1}{4}$ of an equal cake are equal amounts.

Answer Key

1. $\frac{6}{16} = \frac{3}{8}$.
2. 12; $\frac{12}{20} = \frac{3}{5}$.
3. $\frac{14}{20} = \frac{7}{10}$.
4. $\frac{2}{3}$.
5. $\frac{6}{15}$.
6. $\frac{6}{12} = \frac{1}{2}$; the first label is correct.
7. $\frac{8}{12}$.
8. Both are one quarter.

Step-by-Step Solutions

Follow each calculation, then check your own work.

Problem 1

1. Scale both counts by 2: $3 \times 2 = 6$ and $8 \times 2 = 16$.
2. Thus $\frac{3}{8} = \frac{6}{16}$; each old piece became 2 smaller pieces.
3. Check by division: $6 \div 2 = 3$ and $16 \div 2 = 8$.

Problem 2

1. Scale both counts by 4: $3 \times 4 = 12$ and $5 \times 4 = 20$.
2. Thus $\frac{3}{5} = \frac{12}{20}$; each old piece became 4 smaller pieces.
3. Check by division: $12 \div 4 = 3$ and $20 \div 4 = 5$.

Problem 3

1. Scale both counts by 2: $7 \times 2 = 14$ and $10 \times 2 = 20$.
2. Thus $\frac{7}{10} = \frac{14}{20}$; each old piece became 2 smaller pieces.
3. Check by division: $14 \div 2 = 7$ and $20 \div 2 = 10$.

Problem 4

1. Scale both counts by 4: $2 \times 4 = 8$ and $3 \times 4 = 12$.
2. Thus $\frac{2}{3} = \frac{8}{12}$; each old piece became 4 smaller pieces.
3. Check by division: $8 \div 4 = 2$ and $12 \div 4 = 3$.

Problem 5

1. The total becomes $5 \times 3 = 15$ panels.
2. The black count becomes $2 \times 3 = 6$.
3. $\frac{6}{15} = \frac{2}{5}$ preserves the design.

Problem 6

1. $\frac{6}{10} = \frac{6 \div 2}{10 \div 2} = \frac{3}{5}$.
2. $\frac{6}{12} = \frac{6 \div 6}{12 \div 6} = \frac{1}{2}$.
3. $\frac{1}{2} = \frac{5}{10}$ differs from $\frac{3}{5} = \frac{6}{10}$.

Problem 7

1. A denominator must be a multiple of 3; 12 lies between 10 and 15.
2. $12 \div 3 = 4$, so $2 \times 4 = 8$.
3. $\frac{8}{12} = \frac{2}{3}$ checks the design.

Problem 8

1. Group the 16 pieces into 4 groups of 4.
2. The chosen 4 pieces make one of those groups.
3. $\frac{4}{16} = \frac{4 \div 4}{16 \div 4} = \frac{1}{4}$.

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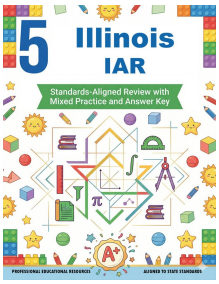

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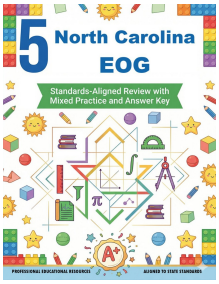

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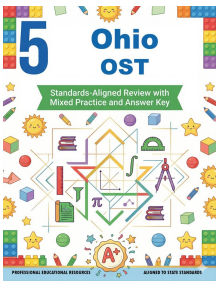

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