

Math 105 Skill Builder # F - 1
Simplifying Fractions

- Step 1** Write the numerator and denominator in factored form.
- Step 2** Divide both the numerator and the denominator by the common factors.
- Step 3** Repeat step 1 and step 2 and continue until there are no common factors in the numerator and in the denominator.

$$\frac{45}{120} = \frac{9 \cdot 5}{24 \cdot 5} \quad \text{Cancel the common factor 5.}$$

$$= \frac{3 \cdot 3}{8 \cdot 3} \quad \text{Cancel the common factor 3.}$$

$$= \frac{3}{8} \quad \text{Stop, since the numerator and the denominator have no factor in common other than 1.}$$

OR

Write the numerator and the denominator as products of prime factors and cancel the common factors.

$$\frac{45}{120} = \frac{3 \cdot \cancel{3} \cdot \cancel{5}}{2 \cdot 2 \cdot 2 \cdot \cancel{3} \cdot \cancel{5}} = \frac{3}{8}$$

Examples:

Simplifying Fractions	OR
$\frac{54}{36} = \frac{18 \cdot 3}{18 \cdot 2} = \frac{3}{2}$	$\frac{54}{36} = \frac{2 \cdot 3 \cdot 3 \cdot 3}{2 \cdot 2 \cdot 3 \cdot 3} = \frac{3}{2}$
$\frac{35}{30} = \frac{7 \cdot 5}{6 \cdot 5} = \frac{7}{6}$	$\frac{35}{30} = \frac{7 \cdot 5}{3 \cdot 2 \cdot 5} = \frac{7}{6}$
$\frac{15}{30} = \frac{1 \cdot 15}{2 \cdot 15} = \frac{1}{2}$	$\frac{15}{30} = \frac{3 \cdot 5}{2 \cdot 3 \cdot 5} = \frac{1}{2}$

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Simplify the given fraction.

1) $\frac{36}{44} =$	2) $\frac{84}{90} =$
3) $\frac{4}{12} =$	4) $\frac{12}{32} =$
5) $\frac{12}{15} =$	6) $\frac{84}{144} =$

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Answers:

1) $\frac{9}{11}$

2) $\frac{14}{15}$

3) $\frac{1}{3}$

4) $\frac{3}{8}$

5) $\frac{4}{5}$

6) $\frac{7}{12}$

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