

Simplifying Before Multiplying

You've already learned to use **factoring** when simplifying.

The example on the right shows simplifying 96/144.

You have also learned how to simplify "**criss-cross**." To simplify 45/150, we cancel the 5s from the numerator and the denominator. Then we simplify 9 and 30 into 3 and 10.

$$\frac{96}{144} = \frac{\overset{2}{\cancel{8}} \times \overset{1}{\cancel{12}}}{\underset{3}{\cancel{12}} \times \underset{1}{\cancel{12}}} = \frac{2}{3}$$

$$\frac{45}{150} = \frac{\overset{1}{\cancel{5}} \times \overset{3}{\cancel{9}}}{\underset{10}{\cancel{30}} \times \underset{1}{\cancel{5}}} = \frac{3}{10}$$

In a similar manner, you can simplify fractions *before* multiplying. This just saves you one step in writing. Why?

Compare the two examples on the right. If you write the numerator and the denominator multiplications separately, and then simplify, it just adds one extra step of writing. You might as well simplify before writing it out that way since it makes no difference in the result.

$$\frac{7}{\cancel{6}} \times \frac{\overset{1}{\cancel{3}}}{9} = \frac{7}{18}$$

$$\frac{7}{6} \times \frac{3}{9} = \frac{\overset{1}{\cancel{7}} \times \overset{1}{\cancel{3}}}{\underset{2}{\cancel{6}} \times \underset{3}{\cancel{9}}} = \frac{7}{18}$$

1. Simplify before multiplying.

E. $\frac{3}{10} \times \frac{1}{3} =$

A. $\frac{5}{6} \times \frac{2}{4} =$

P. $\frac{4}{8} \times \frac{1}{3} =$

O. $\frac{2}{6} \times \frac{5}{7} =$

L. $\frac{2}{9} \times \frac{9}{11} =$

R. $\frac{2}{6} \times \frac{3}{9} =$

M. $\frac{4}{10} \times \frac{1}{3} =$

E. $\frac{3}{10} \times \frac{3}{9} =$

W. $\frac{4}{5} \times \frac{1}{6} =$

I. $7 \times \frac{5}{21} =$

N. $\frac{16}{24} \times 8 =$

S. $\frac{7}{40} \times 15 =$

These problems

$\frac{5}{12}$	$\frac{1}{9}$	$\frac{1}{10}$	$\frac{21}{8}$	$\frac{5}{3}$	$\frac{2}{15}$	$\frac{1}{6}$	$\frac{2}{11}$	$\frac{1}{10}$	$\frac{16}{3}$	$\frac{5}{21}$	$\frac{2}{15}$
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