2. Can you figure out how to simplify in these cases? Follow the example

a. "Old way":

$\frac{4}{5} \times \frac{5}{9} = \frac{4 \times 5}{5 \times 9} = \frac{20}{45} = \frac{4}{9}$

Simplify first:

$\frac{4}{\cancel{5}} \times \frac{\cancel{5}}{9} =$

b. "Old way":

$\frac{2}{3} \times \frac{3}{10} = \_\_\_\_\_ =$

Simplify first:

$\frac{2}{3} \times \frac{3}{10} =$

c. "Old way":

$\frac{7}{10} \times \frac{3}{7} = \_\_\_\_\_ =$

Simplify first:

$\frac{7}{10} \times \frac{3}{7} =$

d. "Old way":

$\frac{5}{8} \times \frac{4}{5} = \_\_\_\_\_ =$

Simplify first:

$\frac{5}{8} \times \frac{4}{5} =$

e. "Old way":

$\frac{1}{8} \times \frac{8}{11} = \_\_\_\_\_ =$

Simplify first:

$\frac{1}{8} \times \frac{8}{11} =$

f. "Old way":

$\frac{6}{11} \times \frac{11}{6} = \_\_\_\_\_ =$

Simplify first:

$\frac{6}{11} \times \frac{11}{6} =$

You can cross out the same number above the line and below the line: $\frac{4}{\cancel{5}} \times \frac{\cancel{5}}{9} = \frac{4}{9}$

Why does this work? Compare how it is written using ÷ instead of a fraction line:

$\frac{4}{5} \times \frac{5}{9} = 4 \div 5 \times 5 \div 9$. Note how there is again both division by 5 and multiplication by 5.

That is why we can simplify or "cross" those fives out. Similarly,

$\frac{8}{7} \times \frac{3}{8} = \mathbf{8} \div 7 \times 3 \div \mathbf{8}$. There is 8 and there is division by 8, so $\frac{\cancel{8}}{7} \times \frac{3}{\cancel{8}} = \frac{3}{7}$.

You can simplify a fraction before multiplying.
In the example here 3/6 is simplified to 1/2 before the multiplication process, which makes it much easier.

$\frac{\overset{1}{\cancel{3}}}{\underset{2}{\cancel{6}}} \times \frac{5}{8} = \frac{5}{16}$

Why does this work? Obviously we can write $\frac{1}{2}$ instead of $\frac{3}{6}$ since they are equivalent.

3. Simplify before multiplying.

a. $\frac{6}{10} \times \frac{1}{7} =$

b. $\frac{2}{4} \times \frac{5}{15} =$

c. $\frac{8}{32} \times \frac{14}{21} =$

c. $\frac{8}{12} \times \frac{1}{2} =$

d. $\frac{6}{15} \times \frac{6}{9} =$

f. $\frac{27}{45} \times \frac{21}{49} =$