

Fraction Mult 4: "Cancelling" as a problem solving aid

$\frac{1}{1}=1$ $\frac{2}{2}=1$ $\frac{9}{9}=1$ and so on. There is an infinite number of forms of "one" as you can see. And you will recall that dividing any number by one does not change the value of the number, but as you will see, dividing a fraction by some form of "one" does not change its value but certainly changes the way it looks. For example:

$\frac{4}{6} \div \frac{2}{2} = \frac{2}{3}$ which can be read, "four sixths divided by one equals two thirds, which is, of course, the simplest form of the fractional portion "four sixths."

No matter how many times you divide a value by one, you still have the same *value*, but in the case of fractions, the "values" look no more alike than four sixths looks like two thirds.

Consider this: In $\frac{5}{6} \times \frac{9}{20}$ a process called "cancelling" can be used in which the numerator of either fraction and the denominator of either fraction is divided by a form of one in order to make the digits smaller so the problem can be solved more easily. In this problem we are going to use the fractions $3/3$ and $5/5$ as our forms of "one" because $3/3$ divides nicely (and evenly) into the 9 -- 6 and $5/5$ divides into the 5 -- 20

Dividing by $\frac{5}{5}$ leaves us with $\frac{1}{6} \times \frac{9}{20}$ then dividing by $\frac{3}{3}$ we have $\frac{1}{2} \times \frac{3}{4} = \frac{3}{8}$

Practice cancelling by dividing each of the problems below with two forms of one in order to reduce the size of the fractions as shown above, before multiplying. Be sure your final answer is in lowest terms.

1.

$$\frac{2}{15} \times \frac{5}{8}$$

2.

$$\frac{4}{7} \times \frac{21}{26}$$

3.

$$\frac{3}{4} \times \frac{8}{15}$$

4.

$$\frac{9}{14} \times \frac{7}{12}$$

5.

$$\frac{9}{12} \times \frac{4}{15}$$

6.

$$\frac{5}{6} \times \frac{2}{15}$$

7.

$$\frac{8}{9} \times \frac{15}{16}$$

8.

$$\frac{4}{9} \times \frac{27}{32}$$

9.

$$\frac{3}{12} \times \frac{7}{9}$$

10.

$$\frac{5}{14} \times \frac{7}{10}$$

11.

$$\frac{11}{15} \times \frac{9}{22}$$

12.

$$\frac{25}{32} \times \frac{16}{75}$$

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