

## Fractions

### What is the cancellation technique?

Sometimes when you multiply fractions, the resulting answer needs to be reduced:

$$\frac{2}{5} \times \frac{3}{4} = \frac{2 \times 3}{5 \times 4} = \frac{6}{20} = \frac{3}{10}$$

Depending upon the problem, the task of reducing the answer can be difficult.

- To save a little work, a technique called *cancellation* is used so the answer will be in reduced form immediately.
- Think of cancellation as *reducing on the diagonal*.

### Example

Note how cancellation is used in this problem:

$$\begin{aligned} & \frac{2}{5} \times \frac{3}{4} = \\ & \frac{\textcircled{2}}{5} \times \frac{3}{\textcircled{4}} = \\ & \frac{1\cancel{2}}{5} \times \frac{3}{\cancel{4}_2} = \frac{1 \times 3}{5 \times 2} = \boxed{\frac{3}{10}} \end{aligned}$$

*The two circled numbers can be reduced since both are divisible by 2.*

*Note how the answer is already in reduced form!*

### Example

Note how cancellation is used in this problem:

$$\begin{aligned} & \frac{5}{12} \times \frac{9}{10} = \\ & \frac{\textcircled{5}}{12} \times \frac{9}{\textcircled{10}} = \\ & \frac{\cancel{5}}{12} \times \frac{9}{\cancel{10}_2} = \\ & \frac{\cancel{5}}{12} \times \frac{\cancel{9}^3}{\cancel{10}_2} = \frac{1 \times 3}{4 \times 2} = \boxed{\frac{3}{8}} \end{aligned}$$

*The 5 and 10 on this diagonal can be canceled since both are divisible by 5.*

*The 9 and 12 on the other diagonal can be canceled since both are divisible by 3.*