

Multiplying and Dividing Rationals

1. We always have to state the restrictions.
 - Dividing by zero is never allowed.
 - Sometimes this can be hard to see. For example, $y = x^2 + x - 6$ does not immediately look like it has zeroes of -3 and 2.
2. Factor all numerators and denominators.
 - This is so you can cancel terms. This will often be the case.
3. State the answer as one rational.

Let's start with multiplication:

$$\frac{x^2+x-6}{x^2+2x-15} \cdot \frac{x-3}{x-2}$$

$$\frac{x^2+7x+12}{x^2+2x-15} \cdot \frac{x^2-5x+6}{x^2-16}$$

We love quadratics, we love factoring and we love fractions!

This should be the best chapter ever!

When we divide a couple things need to be remembered.

1. We invert and multiply when we have a fraction divided by a fraction.
 - This is sometimes called "multiply by the inverse".
2. You can not cancel terms until this is done.
3. We will end up with one more non permissible term.

$$\frac{x^2-x-20}{x^2-6x} \div \frac{x^2+9x+20}{x^2-12x+36}$$

$$\frac{x^2+15x+56}{x^2-3x-54} \div \frac{x^2+6x-16}{x^2+4x-12}$$

Homework: pg: 327
#1,2,4,7,8abc,10,15,16

