Division of Fractions

Words that mean division - quotient

You never actually divide fractions. When dealing with fractions, always convert any division to multiplication by inverting or flipping over the fraction that comes directly after the division symbol.

Sample problem: $\dfrac{15}{12} \div \dfrac{18}{24} \quad \rightarrow \dfrac{15}{12} \cdot \dfrac{24}{18}$ You flip the guy right after the division symbol.

Then do a war game like normal.

Practice War Game Problems:

- $\dfrac{3^2}{4} \cdot \left(\dfrac{8}{9}\right)^2 \div \dfrac{4^3}{18}$

- $\dfrac{128}{144} \div \dfrac{0}{64} \cdot \dfrac{81}{72}$ *this answer will be undefined because zero ends up on the bottom

- $\dfrac{2^3}{18} \div 6^2 \div \dfrac{36}{216}$

Jealousy Games (for real)

This concept will be on the homework this week. Remind the students of the story and then do lots of practice problems. The Jealousy Game makes the addition and subtraction of basic math and complex, algebraic fractions memorable and easy. Remember, you only play a Jealousy Game when you are adding or subtracting fractions. The story behind this game goes something like this: Each fraction represents a two-story house with a family that lives upstairs and one that lives downstairs. The houses are next door to each other on the same side of the street. Each family has one child and it is your job to babysit the two kids who live downstairs, on the lower level of each house. You manage to babysit both kids at the same time because they are playing with their toys outside in their own front yards. The kids who live upstairs are looking out their front windows, watching the kids you are babysitting play. The toys that the kids are playing with are the numbers and letters that come from doing trees on the bottom of each fraction. The problem is that the kids you are babysitting can see each other's toys and they get jealous and cry because they do not have all the toys that the other has. Since your job is to keep the kids happy, you stop them from crying by giving them the toys they want so that, in the end, all of the kids you are babysitting are playing with exactly the same toys. Mathematically, all of the toys you give to the children are given through multiplication. You think that you have stopped all of the crying, but you are wrong. The kids who live upstairs were watching you give "presents" to the kids who live downstairs so they start crying because it is not

fair to give a toy to the downstairs kid and not the upstairs kid. In order to keep the peace, you give each upstairs kid exactly what you gave to the kid you babysat who lived below them. Once all of the kids have stopped crying and are happy, your job is done. Mathematically, the game ends by multiplying together all of the toys that each upstairs kid is playing with and then adding or subtracting those answers together. This becomes the top of the new fraction while the bottom is constructed by simply multiplying one set of toys together from one of the downstairs kids and making that the bottom of this new fraction. The game is now over and the fractions have been combined. Be sure to check for war game in your final answer to reduce your fraction answer.

Practice Jealously Game Problems:

- $\dfrac{5}{108} - \dfrac{1}{96}$

- $\dfrac{7}{24} - \dfrac{1}{18} + \dfrac{3}{20}$ This problem is a three way jealously game and can be done all at once.

- $\dfrac{5}{231} + \dfrac{1}{616}$

- $\dfrac{1}{6} - \dfrac{1}{3}$

Practice Math God Problem:

$$-3^2 - \left(-1-2\right)^2 - 4\left(3x-2\right) - \sqrt[3]{1331} - 5x = -24 \div 6\left(-1-1\right) - \left(-1-2\right)^0 - 3\left(2x-1\right) - 2x - 7^0$$