Name: _____ Thinking Some More about Division

Multiplication and division are *inverse* operations. This means that they are related to one another.

Multiplication can undo division. And division can undo *most* multiplication. There is one multiplication that division cannot undo—multiplication by 0.

Why?—because our number system does *not allow* division by zero. It's against the rules. This is important to remember—never try to divide by zero.

1. The commutative property of multiplication says that 10 x 5 = 5 x 10. Is there a commutative property of division?
   (Hint: is 10 ÷ 5 the same as 5 ÷ 10?)

   What does this tell you?—When you write an expression for a division problem, be careful to put the divisor and the dividend in the right places. Don't mix them up!

   Rewrite 560 ÷ 8 using a bracket:

The divisor is _____. The dividend is _____. The quotient is _____.

2. Let's say you want to check the division problem 173 ÷ 3 = 57 R2. *Write* an expression that shows how you would do it.

   Now, check the division. Is the answer correct? _____

3. When you multiply two *counting* numbers (1, 2, 3...), the product will **always** be greater than (or equal to) **each** of its factors. (Remember: product = factor x factor.) When would it be *equal* to one of the factors?

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When you divide one counting number by a *smaller* one, the quotient (answer) will always be less than (or equal to) the dividend. (Remember: quotient = dividend ÷ divisor.) When would the quotient be *equal* to the dividend?

Remember the above facts; they will help you decide whether you need to multiply or to divide.

When dealing with *counting* numbers (1, 2, 3...):

If you expect to end up with a number that is greater than you started with, then multiply. (The word multiply means to make greater.)

If you expect to end up with a number that is less than you started with, then divide. (When you divide something up into groups, each group will have less in it than whatever was divided up.)

Sometimes deciding whether to multiply or divide can be confusing.

For example: Let's say I divide 3 apples into 4 pieces each, and I want to know how many pieces I'll end up with.

Don't let the word *divide* confuse you. This is NOT a division problem.

Think: I would expect to end up with more apple pieces than the 3 apples I originally had. 4 pieces for each apple, or $4 \times 3 = 12$ pieces.

Let's say I now divide the 12 apple pieces among 5 people so that each gets the same number of pieces. What do I do?

Think: Each of the 4 people will get fewer apple pieces than the 12 I started with. How many will each get? 12 divided equally into 5 groups, or $12 \div 5$. Each person will get 2 pieces, and there will be 2 extra pieces.