

5th Grade Assignment – Week #16

Group Assignment:

For Tuesday: Discovery!

Notes for the Parent:

- The following discovery exercise is super important. It will likely take strong adult guidance, but be sure not to give anything away! We want to give the children a sense that they discovered it themselves.
- Don't get bogged down! Perhaps don't do all of the problems. But you should try to get to the end, and see if they can at least guess what the trick is for dividing fractions. I will go over it in the next lecture!
- Also, if someone in the group already knows this trick (for dividing fractions), then try to make sure they don't spoil it for the others in the group.

Answer each of the following questions:

- 1) Imagine that you have to explain (whole number) division to a second grader who doesn't understand it yet. How could you explain it to him/her? Think of as many different ways as you can to explain $12 \div 3 = 4$.

Note for the parent: After they have chewed on this question for a little while (but not too long), show them that $12 \div 3$ can be thought of as asking the question: "How many 3's fit into 12?" or "How many 3's add together to equal 12?" And since $3+3+3+3 = 12$, we know that $12 \div 3 = 4$.

- 2) To do each of the below problems, first ask yourself the question that comes after it:
- a) $12 \div 6$ How many times does 6 fit into 12?
 - b) $12 \div 4$ How many times does 4 fit into 12?
 - c) $12 \div 3$ How many times does 3 fit into 12? (See the question at the end of #1, above.)
 - d) $12 \div 2$ How many times does 2 fit into 12?
 - e) $12 \div 1$ How many times does 1 fit into 12?
 - f) $12 \div \frac{1}{2}$ How many times does $\frac{1}{2}$ fit into 12?
 - g) $12 \div \frac{1}{3}$ How many times does $\frac{1}{3}$ fit into 12?
- 3) Can you now see the short-cut for dividing by a fraction? Whether you do see it yet, or not, now try the following problems:
- a) $5 \div \frac{1}{2}$ How many times does $\frac{1}{2}$ fit into 5?
Can you see how $\frac{1}{2} + \frac{1}{2} + \frac{1}{2} + \frac{1}{2} + \frac{1}{2} + \frac{1}{2} + \frac{1}{2} + \frac{1}{2} + \frac{1}{2} + \frac{1}{2} = 5$
and because we add $\frac{1}{2}$ to itself 10 times to get 5, we know $5 \div \frac{1}{2} = 10$
 - b) $3 \div \frac{1}{4}$ How many times does $\frac{1}{4}$ fit into 3?
Can you see how $\frac{1}{4} + \frac{1}{4} + \frac{1}{4} + \frac{1}{4} + \frac{1}{4} + \frac{1}{4} + \frac{1}{4} + \frac{1}{4} + \frac{1}{4} + \frac{1}{4} + \frac{1}{4} + \frac{1}{4} = 3$
and because we add $\frac{1}{4}$ to itself 12 times to get 3, we know $3 \div \frac{1}{4} = 12$
 - c) $6 \div \frac{1}{3}$ How many times does $\frac{1}{3}$ fit into 6?
Now, for a big step!
 - d) $6 \div \frac{2}{3}$ How many times does $\frac{2}{3}$ fit into 6?
 - e) $6 \div \frac{1}{4}$ How many times does $\frac{1}{4}$ fit into 12?
 - f) $6 \div \frac{3}{4}$ How many times does $\frac{3}{4}$ fit into 12?
Now, another big step!
 - g) $\frac{3}{4} \div \frac{1}{4}$ How many times does $\frac{1}{4}$ fit into $\frac{3}{4}$?
 - h) $\frac{1}{2} \div \frac{1}{8}$ How many times does $\frac{1}{8}$ fit into $\frac{1}{2}$?
- 4) **Write down a statement summarizing what you think the short-cut is for dividing fractions.**
- 5) Do these problems by using the short-cut you have discovered:
- a) $\frac{1}{2} \div \frac{5}{8}$
 - b) $\frac{3}{5} \div \frac{2}{3}$

Group Assignment:

For Thursday: Puzzles!

- 1) Ross has 127 marbles and Jeffrey has 213 marbles. How many marbles does Jeffrey need to give Ross so that both boys end up with the same number of marbles?
- 2) Mary has 3 more apples than Ted and 3 times as many apples as Alex. How many apples do all three of them have combined if Mary has 24 apples?
- 3) The organizer of a race notices that if she divides the total number of racers into groups of 4, there are two left over, and if she divides them into groups of 3, there is one left over. How many racers are there? (There is more than one possible answer; give as many answers as you can!)

Individual Work

Fact Families. With each problem, first do the calculation, and then also give the three other facts in the fact family.

1. $8607-2779$
2. 36×49

Division Circles. For each one given below, give the other three parts of the division circle (as I did in previous lectures).

3. $61 \div 8$
4. $3 \frac{5}{6}$

Divisibility. State whether each of the following numbers are divisible by 2, 3, 4, 5, 9, or 10?

5. 8865
6. 703,830
7. 87,647,392

Long Division. Solve the below problem using “Flexible Long Division”

8. $8592 \div 3$
9. $5787 \div 9$
10. *Challenge!* $60,656 \div 17$

Note for parent: In next week’s assignment (not quite yet), your child should create one or two main lesson book (or summary) pages about all that they have learned so far with fractions.