

Math 4 ~~~~~ Lesson 3

1. Thoroughly review the 0, 1, 2, 3, 4, and 5 times tables this week. If your child has not memorized all of these, make a note of which tables still need to be learned. The sooner she can commit all the tables to memory, the easier the rest of her math work this year will be. The games described in Lesson 1 may easily be adapted to reviewing times tables.

In particular, remember to use the walking skip-counting game that was introduced in Lesson 1. This game is especially valuable for children who prefer learning by moving. It can easily be used to memorize all the times tables.

2. Chanting or singing the times tables while jumping rope, marching, doing jumping jacks or other rhythmical physical activities are also excellent methods for memorizing. Try it!
3. Review the place value for each digit in a series of numbers of different sizes up through a place value of one hundred thousand. Start with a one or two digit numeral, and proceed all the way up to a six-digit numeral. Moving from right to left, the columns are as follows: ones, tens, hundreds, thousands, ten thousands, hundred thousands.
4. Practice telling time with your child on an analog clock. Ask your child to tell time to the nearest minute using Arabic numerals on the clock face. Focus on telling time all week, asking your child what time it is and asking him to help you determine how much time is left before a certain appointment etc. Use a clock to figure the answers to all time problems. We will teach your child how to figure written problems in the fifth grade.

Math 4 ~~~~~ Lesson 8

1. Continue working with Roman Numerals.
2. If there are other concepts your child needs more practice with, return to them several times during the week.
3. Present multiplication with tens as described below.

During the second block of science, we investigated the nature of seeds. The study of seeds naturally leads to a discussion of the abundance that is produced from one small seed. When we stop to consider the extraordinary number of apples (bearing even more seeds!) that can result from planting and tending just one apple seed, we can only stand in awe at the marvelous potency of a small seed. Visualizations such as this are an excellent foundation for introducing the next step in multiplying: the use of two-digit multipliers.

We will begin by introducing multiplication with tens. More complicated two-digit multiplication will come later. First, work with your child to more fully understand the relationships between 1s and 10s.

Discuss the following concepts with your child, and illustrate them with beans, groups of popsicle sticks tied together in bundles of 10, unifix cubes, unit blocks, or any other tangible method you have available. Piles of pennies, dimes, and silver dollars will also work well until you get into higher numbers.



$$1 \times 10 = 10$$

10 = how many 1s? (10)
10 = how many 10s? (1)

$$2 \times 10 = 20$$

20 = how many 1s? (20)
20 = how many 10s? (2)

$$3 \times 10 = 30$$

30 = how many 1s? (30)
30 = how many 10s? (3)

Practice multiplying by 10, using tangibles instead of writing the problems on paper. What you want your child to discover (on her own, if possible, without you telling her), is that in order to multiply any number by 10, you can simply write that number with a 0 after it. Give your child many opportunities to explore and experience the concept in action before revealing this handy short cut. As with all math, you want her to understand the concept, not just the technique. This is an important concept for her to grasp before moving ahead into more complicated multiplication problems.

Practice with tens. Find the answers using manipulative s and describe how you arrived at each answer. Show your figuring work in the space provided:

1. You're going on a picnic with all your friends and relatives. You take 5 packages of cookies. There are 10 cookies in each pack. How many cookies did you bring?
2. For this picnic, your aunt brings 3 packages of paper plates with 10 plates in each. How many plates are there?
3. She also brings 6 packages of napkins with 10 napkins per pack. How many napkins all together?
4. To make sure there are enough cups for everyone, your aunt brings 10 packages of cups. Each pack has 8 cups in it. How many cups does she bring?

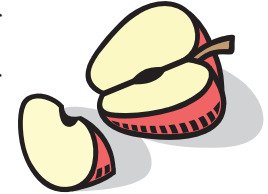
Math 4 ~~~~~ Lesson 19

In a few weeks you will be working with money and restaurant menus. Get ready now by gathering samples of your favorite take-out restaurant menus, or creating your own menus – including prices and plenty of variety.

FRACTIONS

During the next weeks we introduce the study of fractions. This is a very important turning point in your child's education, for it signifies his departure from the simple childhood world of whole numbers into the pre-adolescent stage of working with fractions, which involves breaking things down into their parts for analysis. It seems entirely appropriate to begin working with fractions at this time, for the child of this age has already begun to leave the innocence of his earlier years in which the world was seen as one marvelous whole. He has now entered into the world that is fractured into parts, and he is beginning to enjoy exploring these parts. You might begin your explanation as described below.

Suppose you and I want to share this apple. If we take a knife and cut it into two pieces, then you have half and I have half. (You should actually cut it as you go along.) But now suppose that John and Susan (think of real friends, or brothers or sisters) come in and they want a piece also. So we cut the two halves in half again. Now there are four pieces and each of us has one fourth of the apple. And just as we are about to eat our pieces, Mark, Dawn, Seth and Tara come in and they would each like a piece also. So we take our four pieces and cut each of them in half. Now there are eight pieces, and we each have one eighth.



When we started, we had one piece. Now we have eight pieces. But though eight is a larger number than one, each piece is smaller than the one apple.

How would we show this in writing? If we show the apple like this:



Then we can show cutting it in half like this:



When we write this in numbers, we use this knife-cut line as a dividing line. We would read 1 divided by 2 or one-half and write it like this: $1/2$

A part of anything is called a *fraction*.

Our dividing line we can call the *fraction line*. The top number of a fraction is called the *numerator*, and the bottom number is the *denominator*. It might not seem important to know these terms right now, but you will soon be doing various operations with fractions, and it will be important to remember them then.

When we divide the apple into four pieces we show it in writing like this: $1/4$. How would you write it when it is divided into eight pieces? If we drew a picture of it, it would look something like this:

	1	$=$	1	
	$1 \div 2$	$=$	$\frac{1}{2}$	
	$1 \div 4$	$=$	$\frac{1}{4}$	
	$1 \div 8$	$=$	$\frac{1}{8}$	

An introduction such as this will give your child a basic understanding of what fractions are. You can expand this to include fractional measurement with liquids (cups, etc.) by conveying the idea that a fraction of anything simply means a part of that thing. If your child moves easily from here into adding or subtracting parts (e.g.: $1/4$ plus $1/4 = 2/4$) of his own accord that is fine, but you don't need to go into that for now. Just allow him to play with measurements and the concept of fractions for a while.

Make your work very concrete at this point. Cut things up to show how one whole becomes many parts, and draw a series of illustrations. Use both circles and rectangles to illustrate your point.

As you proceed with the introduction of fractions, be sure that your child understands what a fraction is, and how to write different kinds of fractions. Give him examples that include simple fractions (e.g.: $1/2$, $3/4$) as well as "mixed numbers" that include both a whole number and a fraction (e.g.: $2 \frac{1}{3}$, $3 \frac{5}{8}$).

When you feel certain that he understands the concept and is able to write different fractions without your help, you can proceed to adding and subtracting fractions. But that will not be this week. Don't rush it!

Some activities for exploring fractions:

1. Take three or four pieces of $8\frac{1}{2} \times 11$ paper and experiment with different ways of dividing the papers into fourths — four equal parts. With each paper, discuss how you know you have successfully divided the page into fourths. Are all the pieces the same shape? The same size? Have fun trying to create new ways of dividing the paper into four equal parts. If you like, explore halves, thirds or fifths in the same way.
2. Throughout the week, experiment with dividing things equally between however many people are present. Invite a friend for lunch, and divide each sandwich so each person can have equal parts. Cut the carrot sticks so each person can have two equal servings. Use your imagination to explore fractions in this way. Each time you divide something, discuss the fractions you have created.