What chapter 1 is all about.

This chapter explains the vocabulary approach to math, why the book is written the way it is, who will benefit, and how to do each of the different sections in the books. Study this chapter before continuing on to chapter 2.

Why a vocabulary approach?

This book is written as a vocabulary based approach to mathematics. As a tutor with over 10 years of experience, I have found that students have trouble because they do not understand various words related to their math studies. This makes it impossible for them to understand the materials they are reading or hearing the teacher discuss.

For example if a student doesn't know what the word "power" means, they will have trouble with exponents. The teacher will say, "What is three to the power of 2?" The student will not understand the question and not be able to solve the problem or learn how to solve exponential problems.

Why learn simple concepts first?

This book is designed to thoroughly teach basic middle school level mathematics. Mathematics builds from simple concepts, to more complex ones. The complex ones are always built on one or more earlier simpler concepts. Students must know basic arithmetic very well in order to succeed with these books. They must know their multiplication tables by heart, and know division by heart as well. These workbooks will then teach middle school level materials thoroughly and as a result the student will be prepared for pre-algebra. I have had a few students who could not reduce fractions. I discovered in each case the problem was they were weak in multiplication and division. Reducing 35/42 was difficult because they couldn't instantly recall that $5 \times 7 = 35$ and $6 \times 7 = 42$, so $35 \div 7 = 5$ and $42 \div 7 = 6$. If they instantly knew the division problems, then the fraction could be quickly reduced to 5/6.

Who will benefit from these workbooks?

This book can also be used as a thorough review of middle school level mathematics for the pre-algebra or algebra student, or the adult student facing a math test years after taking any math classes. I often give my pre-

algebra or algebra students sections of these workbooks as a review of a basic concept because I see they are having trouble with the more advanced materials because of it. For example, a student was having trouble with algebra problems involving measurements. They didn't know what "meter", "centimeter", or "kilometer" were, or how they were related. I reviewed this with them until they were able to then solve the algebra problems.

Learn the basics first!

 Again, I want to stress how important it is to learn the basics thoroughly and completely, before moving on. I have noticed over the years how once a student's math grade starts to go down to a B or C, it will keep getting worse each year. They will begin to hate math. I have tutored students in this situation that had a D. I would review earlier materials that they were having trouble with, as well as helping them understand the new materials. Their grades would gradually improve, with some working up to getting A's. These students start to like math again too!

Adults can also benefit.

It is never too late to learn. I tutored a 42 old college student who had not done well in math, and who didn't remember any algebra. He needed to pass algebra to graduate from college.   He considered math his worst subject. I reviewed the vocabulary and concepts for middle school level math first, using these workbooks. We reviewed topics like percentages, exponents and decimals. Next we worked on pre-algebra concepts. He was then able to pass the placement test and get into the algebra class. He started liking math and his confidence grew. He couldn't believe he could actually understand and do algebra problems now!

Learning vocabulary words.

It is important to learn each vocabulary word thoroughly. In this workbook there are various exercises to attempt to force the student to do this, e.g. writing definitions, writing sentences, matching, examples, drawing, and problem solving. You can always do more examples or solve more problems until you feel you really understand.

I sometimes include definitions of words that relate to the math word. For example the math term "place value" consists of two English words; place (a

particular area or location) and value (what something is worth). By learning the regular English words it helps you to learn and remember the math definition of "place value" (the worth of a position of a digit in a number.)

I also sometimes include more than one definition of a word. This helps the student to get a wider understanding of the concept. Here is an example for the word "measure".

<u>measure</u>- 1. to find the size, weight, etc. of something. (Please measure the height of this table.)
2. to have as a measurement. (The table measures three feet high.)
3. a unit of measure or a fixed amount used for measuring. (An inch is a measure of length.)

Symbols are also presented like a vocabulary word. For example the entry for percent would be as follows:

% (the symbol for percent.)

How to study the vocabulary section.

This section gives words, definitions, or other information. You should carefully read and study what is written. You will need to know this information in order to answer questions or solve problems. The sentences in parentheses after the definitions show an example sentence using the vocabulary word.

Example:

Study the following.

<u>learn</u> (**lurn**) - to find out about something, or find out how to do something. (I want to learn about dogs.)

<u>study</u> (**stuhd**-ee) - to spend time and have attention on something so you can learn it. (To study dogs, I spent two hours reading a book, and 20 minutes talking with my friend about how he trains his dog.)

understand (uhn-dur-**stand**) - to know the concept of something very well. (I really understand dogs now, since I carefully studied them.)

How to study the pronunciation section.

Learning how to pronounce a word, and saying it out loud helps you to learn the word. It will be easier to remember. Also, when your teacher says it, you will understand what they are saying.

This section helps you learn the pronunciation of a word if you don't already know it. In the vocabulary section, the word is written first and the pronunciation follows it in parentheses. Say the word out loud first. If you can't pronounce it, use the pronunciation to help you. (The bold part of the pronunciation is the part you accent). Then write the word in the blank.
If you need help understanding the pronunciation, use the pronunciation key in the back of the book, or ask someone to help you.

Example:

understand (uhn-dur-**stand**) - to know the concept of something very well. (I really understand dogs now, since I carefully studied them.)

Say each word out loud and write it in the blank.

understand_____ *understand*

For the word understand:
understand (uhn-dur-**stand**). The part in bold means to accent that part, or
                    ↑   say that part more forcefully.
          accent this syllable

Remember, you can also ask someone if you are having trouble pronouncing a word.

How to do the writing definitions sections.

Reading and studying a definition thoroughly enough to write the definition in your own words, helps you to learn the definitions.

When doing this section carefully read the definition. Study the example sentence. Then write the definition in your own words.

Example:

<u>learn</u> (**lurn**) - to find out about something, or find out how to do something. (I want to learn about dogs.)

<u>study</u> (**stuhd**-ee) - to spend time and have attention on something so you can learn it. (To study dogs, I spent two hours reading a book, and 20 minutes talking with my friend about how he takes care of his dog.)

Write each definition in your own words.

learn - *discovering something about a topic or figuring out how to do a task.*

study - *putting my efforts towards a topic to learn it*

How to do the writing sentences sections.

Writing sentences using words that are new to you, helps you to learn the words. You can write as many sentences as you need to so you can really learn the word.

When a word is shown with its definition, there is usually an example sentence in parentheses after the definition.

Example:

<u>learn</u> (**lurn**) - to find out about something, or find out how to do something. (I want to learn about dogs.)

The example sentence is, "(I want to learn about dogs.)"

Write three sentences using the word.

learn

1.   *I will learn about the sun in science class.*

2.   *My friend learned how to bake cookies.*

3.   *Jim learns different things in each class at school.*

How to do the "writing examples" sections.

Writing down examples using numbers or pictures also helps you to learn words and math concepts. Example sections will vary depending on the topic. Read the instructions carefully for each section.

Example:

Write three examples of addition using numbers.

1.   *2 + 3 = 5*
2.   *4 + 1 =5*
3.   *10 + 10 = 20*

Write three examples of addition using pictures.

1.   ●●● +   ●● = ●●●●●

2.   □□ + □□ = □□□□

3.   ▲▲ + ▲ = ▲▲▲

How to study the matching sections.

Draw lines to connect the word to its definition.

Example:

Matching.

learn _____ to find out about something, or find out how to do something

study

to know about something very well

understand to spend time and have attention on something so you can learn it.

Additional information.

The back of the book contains several sections that will help you study. They are as follows:

      Extra problems
      Answers to the questions and problems
      A symbols page
      A glossary/index
      A pronunciation key

A dictionary is often useful to have with you when you are studying.

If you have any questions or problems that you can't figure out by yourself, be sure to ask someone for help before you continue.