TUTOR'S PAL

Book 5

Measurement

A vocabulary approach to mathematics, designed for middle school students, high school students, and adults, who want to fully learn mathematical concepts by first studying the vocabulary of each topic, and then solving problems.

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PREFACE

This book gets the best results when gone through from beginning to end. This assures you will not have missed something you will need to know to solve later problems. Be sure to do chapter 1, the Introduction, to see how to use this workbook. Each chapter is also designed to be stand-alone, though you may need to know previous materials also.

Students using these books should be able to add, subtract, multiply, and divide quickly. If not, have them practice these skills by working problems, and using flash cards.

This workbook can also help to find what topics, and what areas within those topics the student doesn't understand. If a student knows all the material, they should be able to go through this book quickly and easily with very little help if any.

These workbooks are great summer study tools, as they cover basics to help the student do their best with new topics during the school year.

These workbooks are in a series as follows.

Book 1: Numbers, Arithmetic, Place Value, Symbols, Word Problems, and Factoring

Book 2: Fractions

Book 3: Decimals, Ratios, Proportions and Percent

Book 4: Exponents, Roots, Scientific Notation, Rounding, Multiplication & Division Short-Cuts and Statistics

Book 5: Measurement

Book 6: Geometry

Book 7: Pre-Algebra: Integers

Book 8: Pre-Algebra: Order of Operations, Properties, Expressions and Equations

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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".

measure- 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.

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

study (**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:

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

study (**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:

learn (**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. □□ + □□ = □□□□

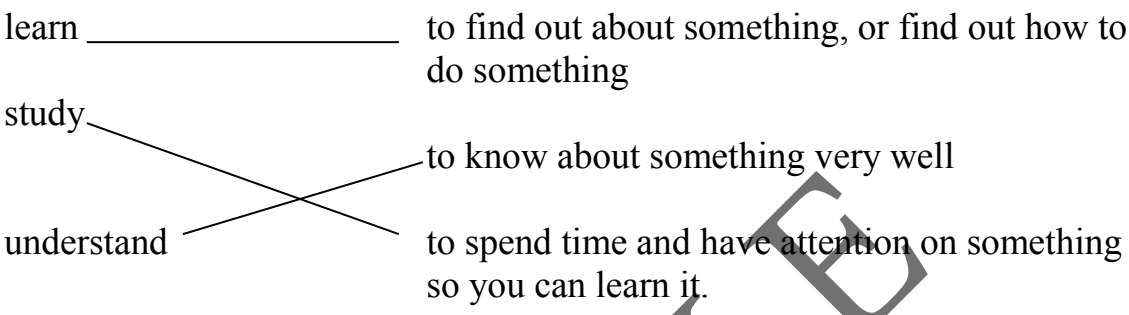
3. ▲▲ + ▲ = ▲▲▲

How to study the matching sections.

Draw lines to connect the word to its definition.

Example:

Matching.



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.

Study the following.

measure- (**mezh**-ur) 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.)

unit of measure- (**yoo**-nit of **mezh**-ur) a fixed amount used for measuring. (An inch is a unit of measure.)

unit (**yoo**-nit) - (same as a unit of measure) – a fixed amount used for measuring. (An inch is a unit used to measure length.)

All three words can be used to mean unit of measure.

Some examples are : inches, feet, pounds, gallons, minutes, meters.

List any other units you can think of:

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

measure_____
unit_____

Write each definition in your own words.

measure (definition 1)

measure (definition 2)

measure (definition 3)

unit of measure

unit

Write 2 sentences using each word.

measure (definition 1)
1.

2.

measure (definition 2)
1.

2.

measure (definition 3)
1.

2.

unit of measure
1.

2.

unit
1.

2.

Matching.

measure	a fixed amount used for measuring
unit of measure	a fixed amount used for measuring
unit	a fixed amount used for measuring

Study the following.

US Measurement System- the way things are usually measured in the United States using units like inches, gallons, and pounds.

Customary Measurement System (**kuss**-tuh-mer-ee) – another name for US Measurement System

Metric System (**met**-rik) – the way things are measured in other countries and sometimes in the United States, using units like meters, liters, and grams.

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

customary_____
metric_____

Write each definition in your own words.

US Measurement system

Customary measurement

Metric system

Write two sentences using each group of words.

US Measurement system
1.

2.

Customary Measurement system
1.

2.

Metric system
1.

2.

Write down some units of measure you know in the US or Customary System.

Write down some units of measure you know in the Metric System.

Write down some units of measure you know that are used all around the world. (Hint: time units.)

Matching

US Measurement System	the way things are usually measured in the United States using units like inches, gallons, and pounds.
Customary Measurement System	the way things are measured in other countries and sometimes in the United States, using units like meters, liters, and grams.
Metric System	another name for US Measurement System

Study the following.

length (**lengkth**) - how long something is

weight (**wate**) – how heavy something is

volume (**vol**-yuhm) or capacity (kuh-**pass**-uh-tee) – how much a container can hold

time (**time**) – how long something takes

temperature (**tem**-pur-uh-chur) – how hot or cold something is

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

length_____
weight_____
volume_____
capacity_____
time_____
temperature_____

Write each definition in your own words.

length

weight

volume

capacity

time

temperature

Write one sentence using each word.

length
1.

weight
1.
volume
1.
capacity
1.
time
1.
temperature
1.

Matching

length	how long something is
weight	how long something takes
volume	how much a container can hold
capacity	how much a container can hold
time	how heavy something is
temperature	how hot or cold something is

Write two examples of units of each if you can.

length-

weight-

capacity or volume-

time-

temperature-

Review.

What is a unit?

Give five examples of units.

What does measure mean?

What is the US Measurement System?

What is the Metric System?

Study the following.

These units of time are used around the world.

second (**sek**-uhnd) - a very short period of time. It takes about a second to say "one thousand one."

minute (**min**-it) – 60 seconds are in a minute.

hour (**our**) - 60 minutes are in an hour

day (**day**) – the time it takes the earth to spin around once. 24 hours are in one day

week (**week**) - 7 days are in one week

year (**yihr**) – the time it takes between one of your birthdays and the next, or the time it takes the earth to go all the way around the sun. 52 weeks, or 365 days are in one year.

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

second_____
minute_____
hour_____
day_____
week_____
year _____

Write each definition in your own words.

second

minute

hour

day

week

year

Write one sentence using each word.

second
1.
minute
1.
hour
1.
day
1.
week
1.
year
1.

Matching.

second	60 minutes
minute	60 seconds
hour	a very short period of time
day	7 days
week	the time it takes for the earth to go around the sun
year	the time it takes for the earth to rotate once

Fill in the blanks.

1. 1 minute = _____ seconds

2. 1 hour = _____ minutes

3. 1 day = _____ hours

4. 1 week = _____ days

5. 1 year = _____ weeks

6. 1 year = _____ days

List 5 activities you have done, and about how long it took you to do them.

1.
2.
3.
4.
5.

Study the following abbreviations.

seconds (s) or (sec)

minutes (min)

hours (hr)

day (no abbreviation)

week (wk)

year (yr)

Write the following numbers with the abbreviations for the units.

1. 20 seconds _____

2. 47 minutes _____

3. 16 hours _____

4. 5 weeks _____

5. 2 years _____

Fill in the blanks with the correct number, and use the abbreviation for each unit.

1. 1 minute = _____

2. 1 hour = _____

3. 1 day = _____

4. 1 week = _____

5. 1 year = _____

6. 1 year = _____

Study the following.

Fahrenheit (**fa**-ren-hite) – In the US measurement system, the Fahrenheit scale is used to measure temperature. (The temperature outside was 70 degrees Fahrenheit.)

Celsius (**sel-**see-uhss) - In the Metric System, the Celsius scale is used to measure temperature. (The temperature outside was 30 degrees Celsius.)

degree (**di-**gree) – this unit goes with temperature measurements. (The temperature of the water was 20 degrees Celsius. The thermometer said 65 degrees Farenheit.)

º - the symbol for degrees.

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

Fahrenheit_____
Celsius_____
degree_____

Write each definition in your own words.

Fahrenheit

Celsius

degree

Write one sentence using each word.

Fahrenheit
1.
Celsius
2.
degree
3.

Matching.

Fahrenheit	temperature in the US Measurement System
Celsius	The unit used with temperature measurements.
Degree	temperature in the Metric System

Study the following abbreviations.

Degrees Fahrenheit- (º F)

Degrees Celsius (º C)

Study the following.

In the Fahrenheit Scale, water freezes at 32 degrees, and boils at 212 degrees.

In the Celsius Scale, water freezes at 0 degrees, and boils at 100 degrees.

Matching.

º F	degrees Celsius
º C	degrees Fahrenheit
water freezes in ºF	32
water freezes in ºC	212
water boils in ºF	100
water boils in ºC	0

Study the following.

The following are units of length for the US measurement system.

inch (**inch**) - a quarter is about an inch across.

foot (**fut**) – a notebook is about a foot high. (My computer screen is about a foot high. The plural of foot is feet (**feet**). (The table is 6 feet across.)

yard (**yard**) – The distance from the floor to the surface of a kitchen counter.

mile (**mile**) –four times around a running track is a mile.

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

inch_____
foot_____
feet_____
yard_____
mile_____

Write each definition in your own words. (Say about how long each is.)
inch

foot

yard

mile

Write one sentence using each word.

inch
1.
foot or feet
2.
yard
3.
mile
4.

Matching.

inch	the height of a notebook
foot	the distance four times around a running track
yard	the length across a quarter
mile	the length from the floor to a doorknob.

Study the following.

1 foot =12 inches
1 yard = 3 feet
1 yard = 36 inches
1 mile = 5280 feet

Matching

1 foot	12 inches
1 yard	3 feet or 36 inches
1 mile	5280 feet

Study the following abbreviations.

inch (in)
foot or feet (ft)
yards (yd)
mile (mi)

Write the following numbers with the abbreviations for the units.

1. 20 inches _____

2. 15 feet _____

3. 8 yards _____

4. 12 miles _____

Fill in the blanks with the correct number, and use the abbreviation for each unit.

1. 1 foot = _____

2. 1 yard = _____ or _____

3. 1 mile = _____

Study the following.

ruler (**roo**-lur) – a flat stick with inches marked on it. It is used to measure things in inches or feet. Rulers are usually 6 inches or 1 foot long.

yard stick (**yard stik**) – a yard long flat stick with inches marked on it. It is used to measure things in inches, feet, or yards. It is called a yard stick because it is a yard long.

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

ruler_____
stick_____

Write each definition in your own words.
ruler

yard stick

Write one sentence using each word.

ruler
1.
yard stick
1.

Using a ruler or yard stick, find 5 things that measure about an inch.

1. 4.
2. 5.
3.

Using a ruler or yard stick, find 5 things that measure about a <u>foot</u>.

1.
2.
3.
4.
5.

Using a ruler or yard stick, find 5 things that measure about a <u>yard</u>.

1.
2.
3.
4.
5.

Find 5 items and measure them in <u>inches</u>.

	Item	Length in inches
1. 2. 3. 4. 5.		

Find 5 items and measure them in <u>feet</u>.

	Item	Length in feet
1. 2. 3. 4. 5.		

Find 5 items and measure them in <u>yards</u>. (You can measure floors, walls, etc.)

	Item	Length in yards
1. 2. 3. 4. 5.		

Now before you measure, take a guess of the length. Write it down. Then measure the item and write down the length.

Guess and measure 5 items in <u>inches</u>.

	Item	guess	Length in inches
1. 2. 3. 4. 5.			

Guess and measure 5 items in <u>feet</u>.

	Item	guess	Length in feet
1. 2. 3. 4. 5.			

Guess and measure 5 items in <u>yards</u>.

	Item	guess	Length in yards
1. 2. 3. 4. 5.			

Review. Fill in the blanks.

1. 1 mile = _____

2. 1 yard = _____ or _____

3. 1 foot = _____

4. The abbreviation for inches is _____.

5. The abbreviation for feet is _____.

6. The abbreviation for yards is _____.

7. The abbreviation for miles is _____.

Study the following.

The following are units of capacity or volume for the US Measurement system

cup (**kuhp**) – a cup is about the amount of water you could hold in your two hands cupped together.

pint (**pinte**) – two cups make a pint. A pint is an extra large drinking glass. A pint is the size of a milk carton that is half as tall as a quart.

quart (**kwort**) – a quart is the size of a tall skinny milk or juice carton. Two pints make a quart.

gallon (**gal-**uhn) –a gallon is the size of the large milk or water containers. Four quarts make a gallon.

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

cup_____
pint_____
quart_____
gallon_____

Write each definition in your own words. (Say about how much each holds.)
cup

pint

quart

gallon

Write one sentence using each word.

cup
1.
pint
1.

quart
1.
gallon
1.

Matching.

cup	The size of a tall skinny milk carton
pint	Half the size of a tall skinny milk carton
quart	The size of a large milk container.
gallon	The amount of water you could hold in your cupped hands.

Study the following.

1 pint =2 cups
1quart = 2 pints
1 gallon = 4 quarts

Matching

1 gallon	2 cups
1 quart	4 quarts
1 pint	2 pints

Study the following abbreviations.

cup (c)

pint (pt)

quart (qt)

gallon (gal)

Write the following numbers with the abbreviations for the units.

1. 6 cups _____

2. 8 pints _____

3. 4 quarts _____

4. 3 gallons _____

Fill in the blanks with the correct number, and use the abbreviation for each unit.

1. 1 pint = _____

2. 1 quart = _____

3. 1 gallon = _____

Go into your kitchen or go to a store and find 2 containers that hold one <u>cup</u>.

1.
2.

Go into your kitchen or go to a store and find 2 containers that hold one <u>pint</u>.

1.
2.

Go into your kitchen or go to a store and find 2 containers that hold one <u>quart</u>.

1.
2.

Go into your kitchen or go to a store and find 2 containers that hold one gallon.

1.
2.

Get a 1 cup measuring cup from the kitchen.
Find containers of different sizes.
Fill the 1 cup measuring cup with water, and pour it into a container.
Keep doing this until you have filled the container, counting as you go.
Write down the results below.

	Container (mugs, drinking glasses, Tupperware containers.)	Capacity in cups
1. 2. 3. 4. 5.		

If you have a 2 cup measuring cup (2 cups = 1 pint) do the same as above, finding the capacity in pints.

	Container (sauce jars, Tupperware)	Capacity in pints
1. 2. 3. 4. 5.		

If you have a quart container do the same as above.

	Container (large soda containers, buckets)	Capacity in quarts
1. 2. 3. 4. 5.		

If you have a gallon container do the same as above.

	Container (buckets, a bathroom sink)	Capacity in gallons
1. 2. 3. 4. 5.		

Now before you measure, take a guess of the capacity. Write it down. Then find the capacity and write it down.

Guess and measure 5 containers in <u>cups</u>.

	container	guess	Capacity in cups
1. 2. 3. 4. 5.			

Guess and measure 5 containers in <u>pints</u>.

	container	guess	Capacity in pints
1. 2. 3. 4. 5.			

Guess and measure 5 containers in <u>quarts</u>.

	container	guess	Capacity in quarts
1. 2. 3. 4. 5.			

Guess and measure 5 containers in gallons.

	container	guess	Capacity in gallons
1. 2. 3. 4. 5.			

Review. Fill in the blanks.

1. 1 pint = _____

2. 1 quart = _____

3. 1 gallon = _____

4. The abbreviation for cups is _____.

5. The abbreviation for pints is _____.

6. The abbreviation for quarts is _____.

7. The abbreviation for gallons is _____.

Study the following.

The following are units of weight for the US Measurement system.

ounce (**ounss**) – an ounce is about how much a few sheets of paper weighs.

pound (**pound**) – a rectangular package of 4 sticks of butter weighs a pound.

ton (**tuhn**) – a large cow weighs about a ton.

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

Write each definition in your own words.
ounce

pound

ton

Write one sentence using each word.

ounce
1.
pound
1.
ton
1.

Matching.

ounce	the weight of a cow.
pound	The weight of 4 sticks of butter.
ton	The weight of a few sheets of paper.

Study the following.

1 pound = 16 ounces
1 ton = 2000 pounds

Matching

1 pound	2000 pounds
1 ton	16 ounces

Study the following abbreviations.

ounce (oz)
pound (lb)
ton (no abbreviation)

Write the following numbers with the abbreviations for the units.

1. 32 ounces _____

2. 10 pounds _____

3. 2 tons _____

Fill in the blanks with the correct number, and use the abbreviation for each unit.

1 pound = _____

1 ton = _____

Get a food scale or a mail scale that will measure things in ounces. Find 5 things that weigh about an <u>ounce</u>.

1.
2.
3.
4.
5.

If the food scale or mail scale measures up to 1 pound (16 ounces), find 5 things that weigh about a <u>pound</u>. (If your scale doesn't go high enough, use a bathroom scale.)

1.
2.
3.
4.
5.

Find 5 items and weigh them in <u>ounces</u>.

	Item	Weight in ounces
1. 2. 3. 4. 5.		

Find 5 items and weigh them in <u>pounds</u>. (Use a bathroom scale.)

	Item	Weight in pounds
1. 2. 3. 4. 5.		

Now before you measure, take a guess of the weight. Write it down. Then find the weight and write it down.

Guess and weigh 5 items in <u>ounces</u>.

	Item	guess	Weight in ounces
1. 2. 3. 4. 5.			

Guess and weigh 5 items in <u>pounds</u>.

	item	guess	Weight in pounds
1. 2. 3. 4. 5.			

Review. Fill in the blanks.

1. 1 pound = _____

2. 1 ton = _____

3. The abbreviation for ounces is _____.

4. The abbreviation for pounds is _____.

Review of US Measurement System

Fill in the blanks.

1. _____ inches = 1 foot
2. _____feet = 1 yard
3. _____inches = 1 yard
4. _____ feet = 1 mile
5. _____ cups = 1 pint
6. _____pints = 1 quart
7. _____quarts = 1 gallon
8. _____ounces = 1 pound
9. _____pounds = 1 ton

Make flash cards for the above to help you learn them.

Go over the cards every day for at least a week.
Check the boxes each day after you study them.

Sun	Mon	Tues	Wed	Thur	Fri	Sat

Do this review after studying the flash cards for at least a week.

1. What is a unit of measure? _____

2. What is the US Measurement System? _____

_____

3. What is the Customary Measurement System? _____

_____

Define the following.

4. length-

5. weight-

6. volume-

7. capacity-

Fill in the blanks.

8. _____pints = 1 quart

9. _____ inches = 1 foot

10. _____ounces = 1 pound

11. _____cups = 1 pint

12. 2000 pounds = _____

13. 1 mile = _____ feet

14. 1 yard = _____ or _____

15. 1 gallon = _____ quarts

Fill in the blanks with length, capacity, or weight, to show what kind of unit of measure is written.

1. cups _____
2. pounds _____
3. feet _____
4. inches _____
5. quarts _____
6. tons _____
7. miles _____
8. gallons _____
9. ounces _____
10. pints _____
11. yards _____

Fill in the unit of measure for each abbreviation.

1. in _____
2. gal _____
3. yd _____
4. pt _____
5. oz _____
6. c _____
7. lb _____
8. ft _____
9. mi _____
10. qt _____

Study the following.

convert (kuhn-**vurt**) – the change from one thing to another. When you are talking about measurement, you are changing from one unit of measure to another unit of measure. (I want to convert from minutes to seconds.)

conversion (kuhn-**vur**-shuhn) – a change from one thing to another. (I had no trouble with the conversion of days to weeks.)

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

convert_____
conversion_____

Write each definition in your own words.
convert

conversion

Write two sentences using each word.
convert
1.

2.

conversion
1.

2.

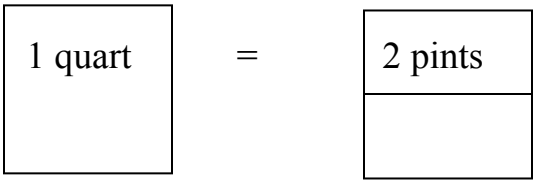
Study the following. Review of time units of measure.
60 seconds = 1 minute
60 minutes = 1 hour
24 hours = 1 day
7 days = 1 week
52 weeks = 1 year
365 days = 1 year

Make flash cards to study these if you don't know them.
Study the flash cards every day for at least a week.

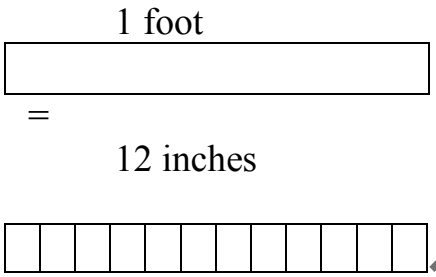
Study the following.

When converting, you are changing the units of measure, not the actual amount of what you have.

Example:



Same amount, with different units of measure.



Same length, with different units of measure.

Draw an example of 4 quarts = 1 gallon.

Draw an example of 1 yard = 3 feet.

Study the following.

There are two parts to converting a unit of measure to another unit of measure.

Part 1 is figuring out the relationship between the original unit of measure and the new one.

Example: convert 14 days, to weeks.

Ask yourself what the relationship is between the two units of measure. Days is the original unit of measure, and weeks is the new one.

The relationship between days and weeks is:
There are 7 days in 1 week.

Answer these questions related to Part 1.

1. What is the relationship between hours and days? _____

2. What is the relationship between days and years? _____

3. What is the relationship between hours and minutes? _____

4. What is the relationship between seconds and minutes? _____

5. To convert 48 hours to days, what relationship do you need to know?

_____

6. To convert 240 minutes to hours, what relationship do you need to know?

_____

7. To convert 4 years to weeks, what relationship do you need to know?

_____

Study the following.

Part 2 is figuring out whether to multiply or divide.

If your original unit of measure is a larger size (like weeks), and you are changing it to a smaller unit of measure (like days), the number of units will be larger, so you multiply the original number by the relationship number.

If your original unit of measure is a smaller size (like days), and you are changing it to a larger unit of measure (like weeks), the number of units will be smaller, so you divide the original number by the relationship number.

Example: Convert 2 weeks, to days.

Part 1: the relationship is 1 week = 7 days

Part 2: Weeks are larger than days, so the number of units will be larger, so you multiply.

Example: Convert 14 days, to weeks.

Part 1: the relationship is 1 week = 7 days

Part 2: Days are smaller than weeks, so the number of units will be smaller, so you divide.

Fill in the blanks.

1. What is part 1 for converting units? _____
_____

2. What is part 2 for converting units? If your original unit of measure is a _____ size, and you are changing it to a _____ unit of measure, the number of units will be _____ so you _____the original number by the relationship number.

3. If your original unit of measure is a _____ size, and you are changing it to a _____ unit of measure, the number of units will be _____ so you _____the original number by the relationship number.

Answer these questions related to Part 2.

1. If my original unit of measure is seconds, and I want to convert to minutes, do I multiply or divide? _____

2. If my original unit of measure is years, and I want to convert to days, do I multiply or divide? _____

3. If my original unit of measure is hours, and I want to convert to minutes, do I multiply or divide? _____

4. If my original unit of measure is weeks, and I want to convert to years, do I multiply or divide? _____

Convert the following using multiplication.

1. 3 minutes = _____ seconds
2. 4 hours = _____ minutes
3. 2 days = _____ hours
4. 5 weeks = _____ days
5. 2 years = _____ weeks
6. 2 years = _____ days

Convert the following using division.

1. 120 seconds = _____ minutes
2. 180 minutes = _____ hours
3. 48 hours = _____ days
4. 28 days = _____ weeks
5. 104 weeks = _____ years
6. 730 days = _____ years

Convert the following.

1 3 yards = _____ feet
2. 24 inches = _____ feet
3. 6 feet = _____ inches
4. 32 ounces = _____ pounds
5. 4 cups = _____ pints
6. 2 gallons = _____quarts

Study the following.

Drawings can also help you figure out whether to multiply or divide.

Example: Convert 2 weeks, to days.

Part 1: the relationship between weeks and days is there are 7 days in one week.

1 week

1	2	3	4	5	6	7

days

Part 2:

2 weeks can be shown as follows.

1 week	2 weeks

Replacing each week with 7 days gives the following.

1	2	3	4	5	6	7	1	2	3	4	5	6	7

You can see you need to multiply, to get the answer.

2 weeks times 7 = 14 days.

Solve the following using drawings.

1. Convert 2 yards, to feet.

2. Convert 3 quarts to pints.

3. Covert 2 feet, to inches.

Study the following.

Here is an example of a drawing showing division.

Example: Convert 14 days, to weeks.

Part 1: the relationship between weeks and days is there are 7 days in one week.

1 week

1	2	3	4	5	6	7

days

Part 2:

14 days can be shown as follows

1	2	3	4	5	6	7	8	9	10	11	12	13	14

Replacing each group of 7 days, with one week gives the following.

1 week	2 weeks

You can see you need to divide, to get the answer.

14 days divided by 7 = 2 weeks.

Solve the following using drawings.

1. Convert 6 feet, to yards.

2. Convert 6 pints, to quarts.

3. Covert 24 inches, to feet.

Study the following.

Sometimes exact drawing are too difficult because the numbers are too large.
You can do rough sketches as shown below.

Example: Convert 3 minutes, to seconds.

Part 1: The relationship between minutes and seconds is, there are 60 seconds in one minute.

1 minute

1,2,3…..60 seconds

Part 2:

3 minutes can be shown as the following.

1 minute	2 minutes	3 minutes

Replacing each minute with 30 seconds gives the following.

1,2,3,…30 seconds	1,2,3,…30 seconds	1,2,3,…30 seconds

You can see you need to multiply, to get the answer.

3 minutes times 30 = 90 seconds.

Solve the following using drawings.

1. 21 days = _____ weeks

2. 120 seconds = _____minutes

3. 4 minutes = _____ seconds

4. 104 weeks = _____years

5. 2 years = _____days

6. 240 minutes = _____hours

7. 48 hours = _____days

Convert the following using multiplication.

1. 2 feet = _____ inches
2. 3 feet = _____ inches
3. 3 yards = _____ feet
4. 5 yards = _____feet
5. 8 yards = _____feet
6. 2 yards = _____ inches
7. 3 yards = _____ inches
8. 5 feet = _____ inches
9. 2 miles = _____feet
10. 3 miles = _____feet
11. 4 pints = _____ cups
12. 5 pints = _____ cups
13. 6 quarts = _____ pints
14. 8 quarts= _____pints
15. 3 gallons = _____ quarts
16. 6 gallons = _____quarts
17. 3 pounds = _____ ounces
18. 2 tons =_____pounds
19. 2 pounds = _____ ounces

Convert the following using division.

1. 24 inches = _____ feet
2. 36 inches = _____ feet
3. 72 inches = _____ yards
4. 6 feet = _____ yards
5. 12 feet = _____ yards
6. 10560 feet = _____ miles
7. 32 ounces = _____ pounds
8. 96 ounces = _____pounds
9. 4000pounds = _____ tons
10. 12000 pounds = _____ tons
11. 12 quarts = _____ gallons
12. 16 quarts = _____ gallons
13. 6 pints = _____ quarts
14. 10 pints = _____ quarts
15. 6 cups = _____ pints
16. 20 cups= _____ pints

Convert the following using multiplication or division.

1. 24 inches = _____ feet
2. 3 gallons = _____quarts
3. 4 pounds = _____ounces
4. 4 cups = _____pints
5. 3 tons = _____pounds
6. 18 feet = _____yards
7. 2 miles = _____feet
8. 6 pints = _____quarts
9. 32 ounces = _____pounds
10. 8000 pounds = _____tons
11. 16 quarts = _____gallons
12. 6 yards = _____feet
13. 72 inches = _____yards
14. 4 pounds = _____ounces
15. 8 pints = _____cups
16. 2 yards = _____inches
17. 5 quarts = _____pints
18. 48 inches = _____feet

Study the following.

The following are units of length for the metric system.

millimeter (**mil**-i-mee-tur) – a dime is about a millimeter thick.

centimeter (**sent**-uh-mee-tur) – a ball point pen is about a centimeter thick.

meter (**mee**-tur) – The distance from the floor to a doorknob is about a meter

kilometer (kuh-**lom**-uh-tur) or (**kil**-uh-mee-tur) –a little more than two times around a running track..

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

millimeter_____
centimeter_____
meter_____
kilometer_____

Write each definition in your own words. (Say about how long it is.)

millimeter

centimeter

meter

kilometer

Write one sentence using each word.

millimeter
1.
centimeter
1.
meter
1.
kilometer
1.

Matching.

millimeter	the thickness of a dime
centimeter	the distance two times around a running track
meter	the thickness of a ball point pen
kilometer	the length from the floor to a kitchen counter.

Study the following.

1centimeter = 10 millimeters
1 meter = 100 centimeters
1 meter = 1000 millimeters
1 kilometer = 1000 meters

Matching

1 centimeter	100 centimeters
1 meter	1000 millimeters
1 meter	1000 meters
1 kilometer	10 millimeters

Study the following.

The metric system is a very organized system with all the units in multiples of 10 of each other. (Multiples of 10 are 10, 100, 1000, etc.)
See how all the relationships above are in multiples of 10.

The names of the units in the metric system are logical also.

Meter is the basic unit for length. All the other units contain this word.

Milli means a thousandth, so the millimeter is a thousandth of a meter.
(Milli – meter = thousandth - meter.)
1000 millimeters are in 1 meter

Centi means a hundredth, so the centimeter is a hundredth of a meter.
(Centi-meter = hundredth - meter.)
100 centimeters are in 1 meter

Kilo means a thousand, so the kilometer is a thousand meters.
(Kilo-meter = thousand meters)
1 kilometer is 1000 meters

Answer the following questions.

1. What does milli mean? _____

2. What does centi mean? _____

3. What does kilo mean? _____

4. Metric system units of measure are all in multiples of _____.

5. What is the basic unit of length in the metric system? _____

6. 1000 millimeters = 1 _____

7. 100 centimeters = 1 _____

8. 1000 meters = 1 _____

Study the following.

Millimeters and centimeters are a multiple of 10 apart.
There are 10 millimeters in 1 centimeter.

This is because milli is thousandth, centi is hundredth, and a thousandth and a hundredth are a multiple of 10 apart.

1 mm	2 mm	3 mm	4 mm	5 mm	6 mm	7 mm	8 mm	9 mm	10 mm

1 centimeter

Fill in the blanks.

1. Milli means _____, and centi means _____ so a millimeter and a centimeter are one multiple of _____ apart.

2. There are _____ millimeters in _____ centimeter.

Matching

100 centimeters	1 centimeter
1000 millimeters	1 meter
10 millimeters	1 meter
1000 meters	1 kilometer

Study the following abbreviations.

millimeter (mm)

centimeter (cm)

meter (m)

kilometer (km)

Write the following numbers with the abbreviations for the units.

1. 36 millimeters _____
2. 80 centimeters _____
3. 5 meters _____
4. 3 kilometers _____

Fill in the blanks with the correct number, and use the abbreviation for each unit.

1. 1 centimeter = _____
2. 1 meter = _____ or _____
3. 1 kilometer = _____

Study the following.

ruler (**roo**-lur) – a flat stick with centimeters and millimeters marked on it. It is used to measure things in millimeters or centimeters. Rulers are usually about 15 to 32 centimeters long.

meter stick (**mee**-tur **stik**) – a meter long flat stick with centimeters and millimeters marked on it. It is used to measure things in millimeters, centimeters, or meters. It is called a meter stick because it is a meter long.

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

ruler_____
stick_____

Write each definition in your own words.

ruler

meter stick

Write one sentence using each word.

ruler
1.
meter stick
1.

Using a ruler or meter stick, find 5 things that measure about a millimeter.

1.
2.
3.
4.
5.

Using a ruler or meter stick, find 5 things that measure about a centimeter.

1.
2.
3.
4.
5.

Using a ruler or meter stick, find 5 things that measure about a meter.

1.
2.
3.
4.
5.

Find 5 items and measure them in millimeters.

	Item	Length in millimeters
1. 2. 3. 4. 5.		

Find 5 items and measure them in <u>centimeters</u>.

	Item	Length in centimeters
1. 2. 3. 4. 5.		

Find 5 items and measure them in <u>meters</u>. (You can measure floors, walls, etc.)

	Item	Length in meters
1. 2. 3. 4. 5.		

Now before you measure, take a guess of the length. Write it down. Then measure the item and write down the length.

Guess and measure 5 items in <u>millimeters</u>.

	Item	guess	Length in millimeters
1. 2. 3. 4. 5.			

Guess and measure 5 items in <u>centimeters</u>.

	Item	guess	Length in centimeters
1. 2. 3. 4. 5.			

Guess and measure 5 items in <u>meters</u>.

	Item	guess	Length in meters
1. 2. 3. 4. 5.			

Review. Fill in the blanks.

1. 1 kilometer = _____

2. 1 meter = _____ or _____

3. 1 centimeter = _____

4. The abbreviation for millimeters is _____.

5. The abbreviation for centimeters is _____.

6. The abbreviation for meters is _____.

7. The abbreviation for kilometers is _____.

8. Milli means _____.

9. Kilo means _____.

10. Centi means _____.

11. The basic unit of length is _____.

Study the following.

The following are units of capacity or volume for the Metric system.

milliliter (**mil**-i-lee-tur) – milli means a thousandth. A milliliter is a thousandth of a liter. It is about as big as the end of your little finger.

liter (**lee**-tur) – a liter is about the same size as a quart. Large soda bottles are sometimes a liter bottle.

kiloliter (**kil**-uh-lee-tur) – kilo means a thousand. A kiloliter is a thousand liters.

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

milliliter_____
liter_____
kiloliter_____

Write each definition in your own words. (Say about how much it holds.)

milliliter

liter

kiloliter

Write one sentence using each word.

milliliter
1.

liter
1.

kiloliter
1.

Matching.

milliliter-	The size of
liter	Half the size
kiloliter	The size.

Study the following.

1 liter = 1000 milliliters
1 kiloliter = 1000 Liters

Matching

1 liter	1000 liters
1 kiloliter	1000 milliliters

Study the following abbreviations.

milliliter (ml or mL)

liter (l or L)

kiloliter (kl or kL)

Write the following numbers with the abbreviations for the units.

1. 200 milliliters _____

2. 25 liters _____

3. 3 kiloliters _____

Fill in the blanks with the correct number, and use the abbreviation for each unit.

1. 1 liter = _____

2. 1 kiloliter = _____

Go into your kitchen or go to a store and find 2 containers that hold one <u>liter</u>.

1.
2.

Go into your kitchen or go to a store and find 2 containers that are labeled with <u>milliliters</u>.

1.
2.

Get a measuring cup from the kitchen or a container that is marked with milliliters.
Find containers of different sizes.
Fill the measuring cup with water, and pour it into a container. Keep doing this until you have filled the container, counting the milliliters as you go.
Write down the results below.

	Container (mugs, drinking glasses, Tupperware containers.)	Capacity in milliliters
1. 2. 3. 4. 5.		

Find a measuring cup or a container that measures 1 liter. Use it to fill up various containers. Count how many liters they each hold.

	Container (sauce jars, Tupperware)	Capacity in liters
1. 2. 3. 4. 5.		

Now before you measure, take a guess of the capacity. Write it down. Then find the capacity and write it down.

Guess and measure 5 containers in <u>milliliters</u>.

	container	guess	Capacity in milliliters
1. 2. 3. 4. 5.			

Guess and measure 5 containers in <u>liters</u>.

	container	guess	Capacity in liters
1. 2. 3. 4. 5.			

Review. Fill in the blanks.

1. 1 liter = _____

2. 1 kiloliter = _____

3. The abbreviation for milliliter is _____ or _____.

4. The abbreviation for liter is _____.

5. The abbreviation for kiloliter is _____.

Study the following.

The following are units of weight for the metric system.

milligram (**mil**-i-gram) – a milligram is a very, very small weight, used when talking about vitamins. (I took a 500 milligram tablet of Vitamin C.)

gram (**gram**) – a small paperclip weighs about a gram

kilogram (**kil**-uh-gram) – a school book weighs about a kilogram.

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

milligram _____
gram _____
kilogram_____

Write each definition in your own words.

milligram

gram

kilogram

Write one sentence using each word.

milligram
1.
gram
1.
kilogram
1.

Matching.

milligram	the weight of a small paperclip.
gram	The weight of a hard back school book
kilogram	A very, very small weight.

Study the following.

1 gram = 1000 milligrams
1 kilogram = 1000 grams

Matching

1 gram	1000 grams
1 kilogram	1000 grams

Study the following abbreviations.

milligram (mg)
gram (g)
kilogram (kg)

Write the following numbers with the abbreviations for the units.

1. 50 milligram _____
2. 100 grams _____
3. 3 kilograms _____

Fill in the blanks with the correct number, and use the abbreviation for each unit.

1. 1 gram = _____
2. 1 kilogram = _____

Get a food scale or a mail scale that will measure things in grams. Find 5 things that weigh about a gram.

1.
2.
3.
4.
5.

If you can find a scale that weighs kilograms, find 5 things that weigh about a <u>kilogram.</u>

1.
2.
3.
4.
5.

Find 5 items and weigh them in <u>grams</u>.

	Item	Weight in grams
1. 2. 3. 4. 5.		

Find 5 items and weigh them in <u>kilograms.</u>

	Item	Weight in kilograms
1. 2. 3. 4. 5.		

Now before you measure, take a guess of the weight. Write it down. Then find the weight and write it down.

Guess and weigh 5 items in <u>grams</u>.

	Item	guess	Weight in grams
1. 2. 3. 4. 5.			

Guess and weigh 5 items in <u>kilograms</u>.

	item	guess	Weight in kilograms
1. 2. 3. 4. 5.			

Review. Fill in the blanks.

1. 1 gram = _____
2. 1kilogram = _____
3. The abbreviation for milligrams is _____.
4. The abbreviation for grams is _____.
5. The abbreviation for kilograms is _____.

Review of the Metric System

Fill in the blanks.

1. _____ millimeters = 1 centimeter
2. _____centimeters = 1 meter
3. _____millimeters = 1 meter
4. _____ meters= 1 kilometer
5. _____ milliliters = 1 liter
6. _____liters = 1 kiloliter
7. _____milligrams = 1 gram
8. _____grams = 1 kilogram

Make flash cards for the above to help you learn them.

Go over the cards every day for at least a week.
Check the boxes each day after you study them.

Sun	Mon	Tues	Wed	Thur	Fri	Sat

Do this review after studying the flash cards for at least a week.

1. What is a unit of measure? _____

2. What is the Metric Measurement System? _____

_____

Define the following.

1. length-

2. weight-

3. volume-

4. capacity-

Fill in the blanks.

What is the basic unit of measure for the metric system for:

1. length? _____

2. volume? _____

3. weight? _____

4. What does milli mean? _____

5. What does kilo mean? _____

6. What does centi mean? _____

7. _____ millimeters = 1 centimeter

8. _____ milliliters = 1 liter

9. _____millimeters = 1 meter

10. _____ meters= 1 kilometer

11. _____liters = 1 kiloliter

12. _____milligrams = 1 gram

13. _____centimeters = 1 meter

14. _____grams = 1 kilogram

Fill in the blanks with length, capacity, or weight, to show what kind of unit of measure is written.

1. milliliter _____
2. centimeter _____
3. gram _____
4. kilometer_____
5. liter_____
6. millimeter _____
7. kilogram _____
8. kiloliter _____
9. meter _____
10. milligram _____

Fill in the unit of measure for each abbreviation.

1. cm _____
2. kl _____
3. mm _____
4. m _____
5. g _____
6. ml _____
7. kg _____
8. km _____
9. l _____
10. mg _____

Study the following.

convert (kuhn-**vurt**) – the change from one thing to another. When you are talking about measurement, you are changing from one unit of measure to another unit of measure. (I want to convert from minutes to seconds.)

conversion (kuhn-**vur**-shuhn) – a change from one thing to another. (I had no trouble with the conversion of days to weeks.)

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

convert_____
conversion_____

Write each definition in your own words.
convert

conversion

Write two sentences using each word.
convert
1.

2.

conversion
1.

2.

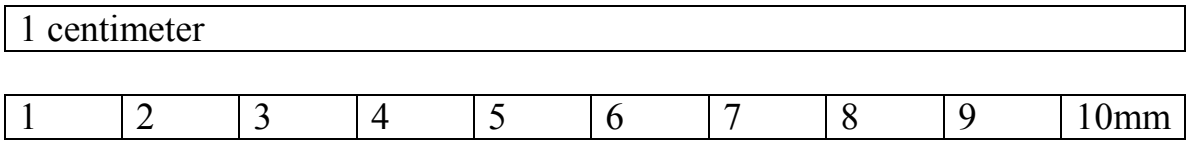
Study the following. Review of time units of measure.
60 seconds = 1 minute
60 minutes = 1 hour
24 hours = 1 day
7 days = 1 week
52 weeks = 1 year
365 days = 1 year

Make flash cards to study these if you don't know them.
Study the flash cards every day for at least a week.

Study the following.

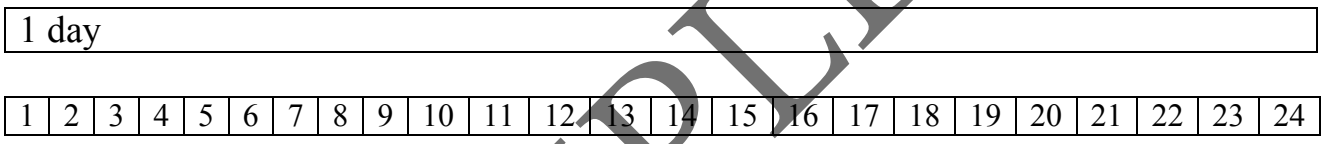
When converting, you are changing the units of measure, not the actual amount of what you have.

Example:



1 centimeter = 10 millimeters
The same amount, with different units of measure.

Example:



1 day = 24 hours
Same length, with different units of measure.

Draw an example of 1 centimeter = 10 millimeters.

Draw an example of 1 week = 7 days.

Study the following.

There are two parts to converting a unit of measure to another unit of measure.

Part 1 is figuring out the relationship between the original unit of measure and the new one.

Example: convert 14 days, to weeks.

Ask yourself what the relationship is between the two units of measure. Days is the original unit of measure, and weeks is the new one.

The relationship between days and weeks is:
There are 7 days in 1 week.

Answer these questions related to Part 1.

1. What is the relationship between hours and days?
_____

2. What is the relationship between days and years? _____

3. What is the relationship between hours and minutes? _____

4. What is the relationship between seconds and minutes? _____

5. To convert 48 hours to days, what relationship do you need to know?

_____

6. To convert 240 minutes to hours, what relationship do you need to know?

_____

7. To convert 4 years to weeks, what relationship do you need to know?

_____

Study the following.

Part 2 is figuring out whether to multiply or divide.

If your original unit of measure is a larger size (like weeks), and you are changing it to a smaller unit of measure (like days), the number of units will be larger, so you multiply the original number by the relationship number.

If your original unit of measure is a smaller size (like days), and you are changing it to a larger unit of measure (like weeks), the number of units will be smaller, so you divide the original number by the relationship number.

Example: Convert 2 weeks, to days.

Part 1: the relationship is 1 week = 7 days

Part 2: Weeks are larger than days, so the number of units will be larger, so you multiply.

Example: Convert 14 days, to weeks.

Part 1: the relationship is 1 week = 7 days

Part 2: Days are smaller than weeks, so the number of units will be smaller, so you divide.

Fill in the blanks.

1. What is part 1 for converting units? _____
_____

2. What is part 2 for converting units? If your original unit of measure is a _____ size, and you are changing it to a _____ unit of measure, the number of units will be _____ so you _____the original number by the relationship number.

3. If your original unit of measure is a _____ size, and you are changing it to a _____ unit of measure, the number of units will be _____ so you _____the original number by the relationship number.

Answer these questions related to Part 2.

1. If my original unit of measure is seconds, and I want to convert to minutes, do I multiply or divide? _____

2. If my original unit of measure is years, and I want to convert to days, do I multiply or divide? _____

3. If my original unit of measure is hours, and I want to convert to minutes, do I multiply or divide? _____

4. If my original unit of measure is weeks, and I want to convert to years, do I multiply or divide? _____

Convert the following using multiplication.

1. 3 minutes = _____ seconds
2. 4 hours = _____ minutes
3. 2 days = _____ hours
4. 5 weeks = _____ days
5. 2 years = _____ weeks
6. 2 years = _____ days

Convert the following using division.

1. 120 seconds = _____ minutes
2. 180 minutes = _____ hours
3. 48 hours = _____ days
4. 28 days = _____ weeks
5. 104 weeks = _____ years
6. 730 days = _____ years

Convert the following.

1 3 meters = _____ centimeters
2. 20 millimeters = _____ centimeters
3. 10 kilograms = _____grams
4. 400 milliliters = _____ liters
5. 20 liters = _____milliliters
6. 300 centimeters = _____meters

Study the following.

Drawings can also help you figure out whether to multiply or divide.

Example: Convert 2 weeks, to days.

Part 1: the relationship between weeks and days is there are 7 days in one week.

1 week

1	2	3	4	5	6	7

days

Part 2:

2 weeks can be shown as follows.

1 week	2 weeks

Replacing each week with 7 days gives the following.

1	2	3	4	5	6	7	1	2	3	4	5	6	7

You can see you need to multiply, to get the answer.

2 weeks times 7 = 14 days.

Solve the following using drawings.

1. Convert 2 centimeters, to millimeters.

2. Convert 3 centimeters to millimeters.

3. Covert 3 weeks, to days.

Study the following.

Here is an example of a drawing showing division.

Example: Convert 14 days, to weeks.

Part 1: the relationship between weeks and days is there are 7 days in one week.

1 week

1	2	3	4	5	6	7

days

Part 2:

14 days can be shown as follows

1	2	3	4	5	6	7	8	9	10	11	12	13	14

Replacing each group of 7 days, with one week gives the following.

1 week	2 weeks

You can see you need to divide, to get the answer.

14 days divided by 7 = 2 weeks.

Solve the following using drawings.

1. Convert 20 millimeters to centimeters.

2. Convert 30 millimeters to centimeters.

3. Covert 21 days, to weeks.

Study the following.

Sometimes exact drawing are too difficult because the numbers are too large.
You can do rough sketches as shown below.

Example: Convert 3 minutes, to seconds.

Part 1: The relationship between minutes and seconds is, there are 60 seconds in one minute.

1 minute

1,2,3…..60 seconds

Part 2:

3 minutes can be shown as the following.

1 minute	2 minutes	3 minutes

Replacing each minute with 30 seconds gives the following.

1,2,3,…30 seconds	1,2,3,…30 seconds	1,2,3,…30 seconds

You can see you need to multiply, to get the answer.

3 minutes times 30 = 90 seconds.

Solve the following using drawings.

1. 21 days = _____ weeks

2. 120 seconds = _____minutes

3. 4 minutes = _____ seconds

4. 104 weeks = _____years

5. 2 years = _____days

6. 240 minutes = _____hours

7. 48 hours = _____days

Convert the following using multiplication.

1. 3 centimeters = _____ millimeters
2. 5 centimeters = _____millimeters
3. 3 meters = _____ centimeters
4. 5 meters = _____ centimeters
5. 8 meters = _____ centimeters
6. 2 kilometers = _____ meters
7. 3 kilometers = _____meters
8. 5 kilometers = _____ meters
9. 2 grams = _____ milligrams
10. 3 grams = _____milligrams
11. 4 grams = _____ milligrams
12. 5 kilograms = _____ grams
13. 6 kilograms = _____ grams
14. 8 liters= _____ milliliters
15. 3 liters = _____ milliliters
16. 6 liters = _____milliliters
17. 2 kiloliters = _____ liters
18. 3 kiloliters =_____liters
19. 5 kiloliters = _____ liters

Convert the following using division.

1. 30 millimeters = _____ centimeters
2. 50 millimeters = _____ centimeters
3. 200 centimeters = _____ meters
4. 300 centimeters = _____ meters
5. 500 centimeters = _____ meters
6. 2000 meters = _____ kilometers
7. 6000 meters = _____ kilometers
8. 3000 milligrams = _____grams
9. 4000 milligrams = _____ grams
10. 8000 milligrams = _____ grams
11. 2000 grams = _____ kilogram
12. 6000 grams = _____ kilogram
13. 2000 milliliters = _____ liters
14. 3000 milliliters = _____ liters
15. 3000 liters = _____ kiloliters
16. 10,000 liters= _____ kiloliters

Convert the following using multiplication or division.

1. 6 centimeters = _____millimeters
2. 500 centimeters = _____meters
3. 2000 grams = _____kilograms
4. 7 liters = _____ milliliters
5. 2 kilometers = _____ meters
6. 40 millimeters = _____centimeters
7. 4 kiloliters = _____liters
8. 7000 liters = _____kiloliters
9. 2000 meters = _____kilometers
10. 4 centimeters = _____millimeters
11. 5 kilograms = _____grams
12. 4000 meters = _____kilometers
13. 5000 grams = _____kilograms
14. 6000 liters = _____kiloliters
15. 2 liters = _____milliliters
16. 2 meters = _____centimeters
17. 12 grams = _____milligrams
18. 400 centimeters = _____meters

Study the following.

The following are units of capacity or volume for the US Measurement system that are used in cooking recipes.

teaspoon (**tee**-spoon) - the amount that a regular spoon holds.

tablespoon (**tay**-buhl-spoon) - the amount that a soup or large spoon holds

cup (**kuhp**) - the amount of water that you could hold in your two cupped hands.

fluid (**floo**-id) - a fluid is a liquid like water or oil. (I poured the fluid into a measuring cup.)

fluidounce (**ounss**) - the amount 2 soup or 2 large spoons hold. A fluid ounce and an ounce are different so don't confuse the two. An ounce is weight, and a fluid ounce is volume of a liquid.

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

teaspoon_____
tablespoon_____
cup_____
fluid_____
ounce_____

Write each definition in your own words.

teaspoon

tablespoon

cup

fluid

ounce

Write one sentence using each word.

teaspoon
1.
tablespoon
1.
cup
1.
fluid
1.
fluidounce
1.

Matching.

teaspoon	a liquid
tablespoon	the amount of liquid you can hold in two cupped hands
cup	the amount a regular spoon holds
fluid	the amount two soup spoons hold
fluidounce	the amount one soup spoon holds

Study the following.

3 teaspoons = 1 tablespoon
2 tablespoons = 1 fluidounce
8 fluidounces = 1 cup
16 tablespoons = 1 cup

Matching

3 teaspoons	1 cup
2 tablespoons	1 cup
8 fluidounces	1 tablespoon
16 tablespoons	1 fluidounce

Study the following abbreviations.

teaspoon (tsp) or (t)

tablespoon (tbsp) or (T)

cup (c)

fluidounce (fl oz)

Write the following numbers with the abbreviations for the units.

1. 3 teaspoons _____

2. 2 tablespoons _____

3. 6 cups _____

4. 4 fluidounces _____

Fill in the blanks with the correct number, and use the abbreviation for each unit.

1. 1 cup = _____ or _____

2. 1 fluidounce = _____

3. 1 tablespoon = _____

Find 5 food or drink containers, that are labeled in fluidounces.

	Container	Fluidounces
1		
2		
3		
4		
5		

Get the following from your kitchen.

1. **A 1 cup measuring cup.**
2. **a measuring spoon that is labeled a teaspoon.**
3. **a measuring spoon that is labeled a tablespoon .**
4. **a container or measuring cup that is marked in fluidounces. (It may just say ounces.)**

Find containers of different sizes.
Fill the 1 cup measuring cup with water, and pour it into a container.
Keep doing this until you have filled the container, counting as you go.
Write down the results below. You will have found the capacity in <u>cups</u>.

	Container (mugs, drinking glasses, Tupperware containers.)	Capacity in cups
1. 2. 3. 4. 5.		

Using the teaspoon, do the same as above, finding the capacity in <u>teaspoons</u>.

	Small containers, jar lids, serving spoons	Capacity in teaspoons
1. 2. 3. 4. 5.		

Using the tablespoon, do the same as above, finding the capacity in <u>tablespoons</u>.

	Small containers, jar lids, serving spoons	Capacity in tablespoons
1. 2. 3. 4. 5.		

Use the measuring cup marked in fluidounces to find the capacity in <u>fluidounces</u>.

	Small containers, drinking glasses, jars	Capacity in fluidounces.
1. 2. 3. 4. 5.		

Now before you measure, take a guess of the capacity. Write it down. Then find the capacity and write it down.

Guess and measure 5 containers in <u>cups</u>.

	container	guess	Capacity in cups
1. 2. 3. 4. 5.			

Guess and measure 5 containers in <u>teaspoons</u>.

	container	guess	Capacity in teaspoons
1. 2. 3. 4. 5.			

Guess and measure 5 containers in <u>tablespoons</u>.

	container	guess	Capacity in tablespoons
1. 2. 3. 4. 5.			

Guess and measure 5 containers in fluidounces.

	container	guess	Capacity in fluidounces
1. 2. 3. 4. 5.			

Review. Fill in the blanks.

1. 1 cup = _____ or _____

2. 1 tablespoon = _____

3. 1 fluidounce = _____

4. The abbreviation for teaspoons is _____ or _____.

5. The abbreviation for tablespoons is _____ or _____.

6. The abbreviation for cups is _____.

7. The abbreviation for fluidounces is _____.

Study the following.

unit multiplier (**yoo**-nit **mul**-tuh-plye-ur) - a fraction that is equal to one, and contains units in the numerator and denominator. You multiply it, in conversion problems.

Examples:

7 days	1 week	365 days	1 year
1 week	7 days	1 year	365 days

To make a unit multiplier you take a relationship between units, and make it a fraction. For example the relationship between days and weeks is there are 7 days in one week. You can make two different unit multipliers using this relationship.

$$\frac{7 \text{ days}}{1 \text{ week}} \quad \text{or} \quad \frac{1 \text{ week}}{7 \text{ days}}$$

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

unit_____
multiplier_____

Write the definition in your own words.

unit multiplier

Write two sentences using "unit multiplier."

unit multiplier
1.

2.

Write two different unit multipliers for each of the following.

There are 52 weeks in one year.

There are 60 minutes in one hour.

In one minute there is 60 seconds.

In one year there are 365 days.

Write down 4 examples of unit multipliers using US or Metric units.

1.

2.

3.

4.

Study the following.

When studying fractions you learned that fractions with the same numerator and denominator equal one.

Examples: $\frac{4}{4} = 1$ $\frac{17}{17} = 1$

Solve

1. $\frac{3}{3} =$
2. $\frac{54}{54} =$
3. $\frac{153}{153} =$

Study the following.

When you have the same units in a numerator and denominator, that also equals one.

Example: $\frac{\text{weeks}}{\text{weeks}} = 1$

Solve

1. $\frac{\text{days}}{\text{days}} =$
2. $\frac{\text{years}}{\text{years}} =$
3. $\frac{\text{minutes}}{\text{minutes}} =$

Study the following.

Anything times 1 is itself.

Examples: $5 \times 1 = 5$ $99 \times 1 = 99$

Solve

1. $4 \times 1 =$
2. $6 \times 1 =$
3. $14 \times 1 =$

Study the following.

Anything divided by one is itself.

Examples: $\frac{2}{1} = 2$ $\frac{5}{1} = 5$ $\frac{\text{days}}{1} = \text{days}$

Solve

1. $\frac{5}{1} =$ 2. $\frac{17}{1} =$ 3. $\frac{\text{years}}{1} =$

4. $\frac{\text{minutes}}{1} =$ 5. $\frac{\text{seconds}}{1} =$

Study the following.

You can also write in a denominator of 1 to help you with other calculations.

Examples: $2 = \frac{2}{1}$ $47 = \frac{47}{1}$ $\text{seconds} = \frac{\text{seconds}}{1}$

Write with a denominator of 1.

1. $4 =$ 2. $85 =$ 3. $27 =$

4. days = 5. hours =

Study the following.

When you are multiplying fractions, and you have the same number in one of the numerators as in one of the denominators, you can cross both numbers out and make them 1's.

This is sometimes called canceling.

Then multiply the remaining numbers across.

Example: $\frac{3}{8} \times \frac{5}{2} \times \frac{8}{7}$

$\frac{3}{\cancel{8}} \times \frac{5}{2} \times \frac{\cancel{8}}{7}$

$\frac{3}{1} \times \frac{5}{2} \times \frac{1}{7}$

answer: $\frac{15}{14}$

Solve.

1. $\frac{4}{9} \times \frac{2}{3} \times \frac{7}{4} =$

2. $\frac{5}{2} \times \frac{1}{5} \times \frac{7}{3} =$

Study the following.

Canceling also applies to units.

Example: $\frac{14 \text{ days}}{1} \times \frac{1 \text{ week}}{7 \text{ days}}$

$\frac{14 \times 1}{1} \times \frac{1 \text{ week}}{7 \times 1}$

$\frac{14}{1} \times \frac{1 \text{ week}}{7} = \frac{14 \text{ weeks}}{7} = 2 \text{ weeks}$

Usually when you cancel units you just cross them out. You do not need to replace them with a 1.

Example:

$\frac{4 \text{ minutes}}{1} \times \frac{60 \text{ seconds}}{1 \text{ minute}} =$

$\frac{4 \text{ minutes}}{1} \times \frac{60 \text{ seconds}}{1 \text{ minute}} =$

$\frac{4}{1} \times \frac{60 \text{ seconds}}{1} = 240 \text{ seconds} = 240 \text{ seconds}$

Solve.

1. $\frac{48 \text{ hours}}{1} \times \frac{1 \text{ day}}{24 \text{ hours}} =$

2. $\frac{3 \text{ hours}}{1} \times \frac{60 \text{ minutes}}{1 \text{ hour}} =$

3. $\frac{120 \text{ minutes}}{1} \times \frac{1 \text{ hour}}{60 \text{ minutes}} =$

Study the following.

There are 4 steps to convert units of measure.

Step 1: Write down the original number with the units an numerator and a 1 as denominator.
Step 2: Figure out the two possible unit multipliers.
Step 3: Select the unit multiplier that will result in the original units being canceled. Write it multiplied by step 1.
Step 4: Solve.

Example: Problem: Convert 21 days to weeks.

Step 1: $\frac{21 \text{ days}}{1}$

Step 2: $\frac{7 \text{ days}}{1 \text{ week}}$ or $\frac{1 \text{ week}}{7 \text{ days}}$

Step 3: $\frac{21 \text{ days}}{1} \times \frac{1 \text{ week}}{7 \text{ days}}$

Step 4: $\frac{21 \text{ days}}{1} \times \frac{1 \text{ week}}{7 \text{ days}} = \frac{21 \text{ weeks}}{7} = 3 \text{ weeks}$

Convert 4 minutes to seconds, and show all 4 steps.

Step 1:

Step 2:

Step 3:

Step 4:

Convert 104 weeks to years, and show all 4 steps.

Step 1:

Step 2:

Step 3:

Step 4:

Convert 6 hours to minutes, and show all 4 steps.

Step 1:

Step 2:

Step 3:

Step 4:

Convert 180 hours to minutes, and show all 4 steps.

Step 1:

Step 2:

Step 3:

Step 4:

US Measurement Conversions.
Convert the following using steps 1 to 4.

1. 24 inches = _____ feet

2. 3 gallons = _____quarts

3. 4 pounds = _____ounces

4. 4 cups = _____pints

5. 3 tons = _____pounds

6. 18 feet = _____yards

7. 2 miles = _____feet

8. 6 pints = _____quarts

9. 32 ounces = _____pounds

10. 8000 pounds = _____tons

11. 16 quarts = _____gallons

12. 6 yards = _____feet

13. 72 inches = _____yards

14. 4 pounds = _____ounces

15. 8 pints = _____cups

16. 2 yards = _____inches

17. 5 quarts = _____pints

18. 48 inches = _____feet

Metric Measurement Conversions.
Convert the following using steps 1 to 4.

1. 6 centimeters = _____millimeters

2. 500 centimeters = _____meters

3. 2000 grams = _____kilograms

4. 7 liters = _____ milliliters

5. 2 kilometers = _____ meters

6. 40 millimeters = _____centimeters

7. 4 kiloliters = _____liters

8. 7000 liters = _____kiloliters

9. 2000 meters = _____kilometers

10. 4 centimeters = _____millimeters

11. 5 kilograms = _____grams

12. 4000 meters = _____kilometers

13. 5000 grams = _____kilograms

14. 6000 liters = _____kiloliters

15. 2 liters = _____milliliters

16. 2 meters = _____centimeters

17. 12 grams = _____milligrams

18. 400 centimeters = _____meters

Final Review

Define the following.

1. a unit-

2. length-

3. weight-

4. capacity-

5. volume-

Solve.

6. 4 yards = _____feet

7. 32 oz = _____lbs

8. 3 gal. = _____quarts

9. 48 inches = _____feet

10. 6 meters = _____cm

11. 7000 g = _____kg

12. 3000 ml = _____L

13. 3 cm = _____mm

14. 300 cm = _____m

Chapter 3

Write the abbreviation for each.

1. weeks
2. years
3. minute
4. hour
5. second

Fill in the blanks.

6. 1 hour = _____min
7. 1 year = _____weeks
8. 60 seconds = _____minutes
9. 1 day = _____hours
10. 1 year = _____days

Chapter 4

Fill in the blanks.

1. ºF means _____
2. ºC means _____
3. Water boils at _____ºC
4. Water freezes at _____ºC.
5. Water boils at _____ºF
6. Water freezes at _____ºF.

Chapter 8

Write the abbreviation for each.

1. gallons
2. miles
3. inches
4. cups
5. pounds
6. yards
7. pints
8. ounces
9. feet
10. tons
11. quarts

Fill in the blank.

12. 1 pound = _____ounces
13. _____inches = 1 foot
14. 1 quart = _____pints
15. 1 mile = _____feet
16. _____lbs = 1 ton
17. _____cups = 1 pint
18. 1 gallon = _____quarts
19. 1 yard = _____feet
20. 1 yard = _____inches

Chapter 9

Convert the following using multiplication or division.

1. 48 inches = _____ feet
2. 2 gallons = _____quarts
3. 3 pounds = _____ounces
4. 6 cups = _____pints
5. 5 tons = _____pounds
6. 21 feet = _____yards
7. 2 miles = _____feet
8. 8 pints = _____quarts
9. 48 ounces = _____pounds
10. 6000 pounds = _____tons
11. 12 quarts = _____gallons
12. 18 yards = _____feet
13. 36 inches = _____yards
14. 5 pounds = _____ounces
15. 10 pints = _____cups
16. 2 yards = _____inches
17. 4 quarts = _____pints
18. 60 inches = _____feet
19. 3 minutes = _____seconds

Chapter 13

Write the abbreviation for each.

1. kilogram
2. milliliter
3. gram
4. meter
5. centimeter
6. kiloliter
7. millimeter
8. milligram
9. liter
10. kilometer

Fill in the blanks.

11. What does milli mean? _____
12. What does kilo mean? _____
13. 1 gram = _____milligrams
14. _____liters = 1 kiloliter
15. 1 kilometer = _____meters
16. _____grams = 1 kilogram
17. 1 meter = _____centimeters
18. 1 centimeter = _____millimeters
19. 1 meter = _____millimeters
20. _____milliliters = 1 liter

Chapter 14

Convert the following using multiplication or division.

1. 6 centimeters = _____millimeters
2. 500 centimeters = _____meters
3. 2000 grams = _____kilograms
4. 7 liters = _____ milliliters
5. 2 kilometers = _____ meters
6. 40 millimeters = _____centimeters
7. 4 kiloliters = _____liters
8. 7000 liters = _____kiloliters
9. 2000 meters = _____kilometers
10. 4 centimeters = _____millimeters
11. 5 kilograms = _____grams
12. 4000 meters = _____kilometers
13. 5000 grams = _____kilograms
14. 6000 liters = _____kiloliters
15. 2 liters = _____milliliters
16. 2 meters = _____centimeters
17. 12 grams = _____milligrams
18. 400 centimeters = _____meters
19. 48 hours = _____days

Chapter 15

What do the abbreviations mean?

1. t
2. T
3. tsp
4. tbsp
5. c
6. fl oz

Fill in the blanks.

7. _____teaspoons = 1 tablespoon
8. 1 fluidounce = _____tablespoons
9. 1 cup = _____fluidounces
10. _____tablespoons = 1 cup

Chapter 16

US Measurement

1. 4 feet = _____ inches
2. 21 feet = _____yards
3. 2 gallons = _____quarts
4. 64 ounces = _____pounds
5. 8 cups = _____pints

Metric

6. 300 centimeters = _____meters
7. 5 liters = _____meters
8. 2 kilograms = _____grams
9. 30 millimeters = _____centimeters
10. 6000 meters = _____kilometers

Final Review (Answers)

Define the following.

1. a unit-

See glossary. Answers may vary.

2. length-

3. weight-

4. capacity-

5. volume-

Solve.

6. 4 yards = 12 feet

7. 32 oz = 2 lbs

8. 3 gal. = 12 quarts

9. 48 inches = 4 feet

10. 6 meters = 600 cm

11. 7000 g = 7 kg

12. 3000 ml = 3 L

13. 3 cm = 30 mm

14. 300 cm = 3 m

Chapter 3 (Answers)

Write the abbreviation for each.

1. weeks wk or wks
2. years yr or yrs
3. minute min
4. hour hr
5. second sec or s

Fill in the blanks.

6. 1 hour = 60 min
7. 1 year = 52 weeks
8. 60 seconds = 1 minute
9. 1 day = 24 hours
10. 1 year = 365 days

Chapter 4 (Answers)

Fill in the blanks.

1. ºF means degrees Fahrenheit
2. ºC means degrees Celsius
3. Water boils at 100 ºC
4. Water freezes at 0 ºC.
5. Water boils at 212 ºF
6. Water freezes at 32 ºF.

Chapter 8 (Answers)

Write the abbreviation for each.

1.	gallons	gal or gals
2.	miles	mi
3.	inches	in
4.	cups	c
5.	pounds	lb or lbs
6.	yards	yd or yds
7.	pints	pt
8.	ounces	oz
9.	feet	ft
10.	tons	ton
11.	quarts	qt

Fill in the blank.

12.	1 pound = _____ounces	16
13.	_____inches = 1 foot	12
14.	1 quart = _____pints	2
15.	1 mile = _____feet	5280
16.	_____lbs = 1 ton	2000
17.	_____cups = 1 pint	2
18.	1 gallon = _____quarts	4
19.	1 yard = _____feet	3
20.	1 yard = _____inches	36

Chapter 9 (Answers)

Convert the following using multiplication or division.

1. 48 inches = _____ feet 4
2. 2 gallons = _____quarts 8
3. 3 pounds = _____ounces 48
4. 6 cups = _____pints 3
5. 5 tons = _____pounds 10,000
6. 21 feet = _____yards 7
7. 2 miles = _____feet 10,560
8. 8 pints = _____quarts 4
9. 48 ounces = _____pounds 3
10. 6000 pounds = _____tons 3
11. 12 quarts = _____gallons 3
12. 18 yards = _____feet 54
13. 36 inches = _____yards 1
14. 5 pounds = _____ounces 80
15. 10 pints = _____cups 20
16. 2 yards = _____inches 72
17. 4 quarts = _____pints 8
18. 60 inches = _____feet 5
19. 3 minutes = _____seconds 180

Chapter 13 (Answers)

Write the abbreviation for each.

1.	kilogram	kg
2.	milliliter	mL or ml
3.	gram	g
4.	meter	m
5.	centimeter	cm
6.	kiloliter	kL
7.	millimeter	mm
8.	milligram	mg
9.	liter	L
10.	kilometer	km

Fill in the blanks.

11.	What does milli mean? <u>One thousandth</u>	
12.	What does kilo mean? <u>One thousand</u>	
13.	1 gram = _____milligrams	1000
14.	_____liters = 1 kiloliter	1000
15.	1 kilometer = _____meters	1000
16.	_____grams = 1 kilogram	1000
17.	1 meter = _____centimeters	100
18.	1 centimeter = _____millimeters	10
19.	1 meter = _____millimeters	1000
20.	_____milliliters = 1 liter	1000

Chapter 14 (Answers)

Convert the following using multiplication or division.

1. 6 centimeters = _____millimeters 60
2. 500 centimeters = _____meters 5
3. 2000 grams = _____kilograms 2
4. 7 liters = _____ milliliters 7,000
5. 2 kilometers = _____ meters 2,000
6. 40 millimeters = _____centimeters 4
7. 4 kiloliters = _____liters 4,000
8. 7000 liters = _____kiloliters 7
9. 2000 meters = _____kilometers 2
10. 4 centimeters = _____millimeters 40
11. 5 kilograms = _____grams 5,000
12. 4000 meters = _____kilometers 4
13. 5000 grams = _____kilograms 5
14. 6000 liters = _____kiloliters 6
15. 2 liters = _____milliliters 2,000
16. 2 meters = _____centimeters 200
17. 12 grams = _____milligrams 12,000
18. 400 centimeters = _____meters 4
19. 48 hours = _____days 2

Chapter 15 (Answers)

What do the abbreviations mean?

1.	t	teaspoon
2.	T	tablespoon
3.	tsp	teaspoon
4.	tbsp.	tablespoon
5.	c	cup
6.	fl oz	fluidounce

Fill in the blanks.

7.	_____teaspoons = 1 tablespoon	3
8.	1 fluidounce = _____tablespoons	2
9.	1 cup = _____fluidounces	8
10.	_____tablespoons = 1 cup	16

Chapter 16 (Answers)

US Measurement

1.	4 feet = _____ inches	48
2.	21 feet = _____yards	7
3.	2 gallons = _____quarts	8
4.	64 ounces = _____pounds	4
5.	8 cups = _____pints	4

Metric

6.	300 centimeters = _____meters	3
7.	5 liters = _____meters	5,000
8.	2 kilograms = _____grams	2,000
9.	30 millimeters = _____centimeters	3
10.	6000 meters = _____kilometers	6

Symbols from books 1 through 5.

\+ This is a plus sign. It means plus, or add.
Example: 2 + 3 means 2 plus 3.

– This is a minus sign. It means minus or subtract.
Example: 7 – 2 means 7 minus 2.

× This is a times sign. It means times, or multiplied by.
Example: 3 × 4 means 3 times 4.

• This also means times. Example: 2 • 3 means 2 times 3.

* This also means times. It is often used in computer programming.
Example: 3 * 4 means 3 times 4

÷ This means divided by.
Example: 10 ÷ 5 means 10 divided by 5.

$\overline{\quad}$
) This means divided by or divided into.

Example: 4)$\overline{12}$ means 12 divided by 4, or 4 into 12

Notice how when you say divided by, you read the problem backwards, 12 divided by 4.

= This is an equal sign. It means "is equal to", or "equals".
Example: 2 + 2 = 4 means 2 plus 2 equals 4
or 2 plus 2 is equal to 4.

> This is a greater than sign. It means "is greater than".
Example: 3 > 2 means 3 is greater than 2.

< This is a less than sign. It means "is less than".
Example: 1 < 4 means 1 is less than 4.

. this is a decimal point. Example: In 3.2 the 3 and the 2 are separated by a decimal point.

— this symbol in a fraction shows it is a fraction. It means divided by.
Example: $\frac{2}{3}$ is 2 divided by 3, and is the fraction two-thirds.

— a symbol for "per" when talking about ratios.
(He ate $\frac{2 \text{ fish}}{\text{meal}}$.) (The car went $\frac{60 \text{ miles}}{\text{hour}}$.)

— a symbol that can be read "out of" when talking about ratios.
$\frac{4}{100}$ = 4 out of 100 = 4%

— a symbol that can be read "to" when talking about ratios.
($\frac{2}{3}$ is read 2 to 3.)

/ this symbol means the same as the above fraction symbol. It is often used to make typing easier. Example: 2/3 is the fraction two-thirds or 2 divided by 3.

/ a symbol for "per" when talking about ratios.
(He ate 2 fish/meal.) (The car went 60 miles/hour.)

/ a symbol that can be read "out of" when talking about ratios.
(4/100 means 4 out of 100 or 4%).

/ a symbol that can be read "to" when talking about ratios.
($\frac{2}{3}$ is read 2 to 3.)

: this symbol in a ratio means "out of" "per" or "to".
(3:5 means 3 out of 5 , or 3 per 5 , or 3 to 5.)

% - the symbol for percent. It comes from the digits of the number 100. The slash is the 1, and the two circles are the two zeros.
Percent means per hundred.

$.7\overline{2}$ a bar over part of a decimal means those numbers repeat on and on.
(.72 means .72727272…)

$ dollar sign

¢ cents

( ) parentheses.

6^2 the two is an exponent and means squared.

5^3 the three is an exponent and means cubed

2^4 any small number written to the upper right corner of a number is an exponent. (For 2^4 you say 2 to the 4^{th} power.)

$\sqrt{\ }$ - the symbol for square root ($\sqrt{12}$ is the square root of 12.)

$\sqrt[3]{\ }$ - the symbol for cube root ($\sqrt[3]{24}$)

$\sqrt[4]{\ }$ - the symbol for fourth root ($\sqrt[4]{57}$)

𝍸 tally marks

number

: separates the two numbers when talking about odds, you say “to”. (Odds of 3:5 is said, “odds of three to five”)

º - the symbol for degrees.

Abbreviations

centimeter (cm)
cup (c)
day (no abbreviation)
degrees Celsius (º C)
degrees Fahrenheit- (º F)
fluidounce (fl oz)
foot or feet (ft)
gallon (gal)
gram (g)
hours (hr)
inch (in)
kilogram (kg)
kiloliter (kl or kL)
kilometer (km)
liter (l or L)
meter (m)
mile (mi)
milligram (mg)
milliliter (ml or mL)
millimeter (mm)
minutes (min)
ounce (oz)
pint (pt)
pound (lb)
quart (qt)
seconds (s) or (sec)
tablespoon (tbsp) or (T)
teaspoon (tsp) or (t)
ton (no abbreviation)
week (wk)
yards (yd)
year (yr)

Unit Conversions

1 foot =12 inches
1 yard = 3 feet
1 yard = 36 inches
1 mile = 5280 feet

1 pint =2 cups
1quart = 2 pints
1 gallon = 4 quarts

1 pound = 16 ounces
1 ton = 2000 pounds

1centimeter = 10 millimeters
1 meter = 100 centimeters
1 meter = 1000 millimeters
1 kilometer = 1000 meters

1 liter = 1000 milliliters
1 kiloliter = 1000 Liters

1 gram = 1000 milligrams
1 kilogram = 1000 grams

1 tablespoon = 3 teaspoons
1 fluidounce = 2 tablespoons
1 cup = 8 fluidounces
1 cup = 16 tablespoons

Words and definitions

Celsius (**sel-**see-uhss) - In the Metric System, the Celsius scale is used to measure temperature. (The temperature outside was 30 degrees Celsius.)

centimeter (**sent**-uh-mee-tur) – a ball point pen is about a centimeter thick.

conversion (kuhn-**vur**-shuhn) – a change from one thing to another. (I had no trouble with the conversion of days to weeks.)

convert (kuhn-**vurt**) – the change from one thing to another. When you are talking about measurement, you are changing from one unit of measure to another unit of measure. (I want to convert from minutes to seconds.)

cup (**kuhp**) – a cup is about the amount of water you could hold in your two hands cupped together.

Customary Measurement System (**kuss**-tuh-mer-ee) – another name for US Measurement System

day (**day**) – the time it takes the earth to spin around once. 24 hours are in one day

degree (**di-**gree) – this unit goes with temperature measurements. (The temperature of the water was 20 degrees Celsius. The thermometer said 65 degrees Farenheit.)

Fahrenheit (**fa**-ren-hite) – In the US measurement system, the Fahrenheit scale is used to measure temperature. (The temperature outside was 70 degrees Fahrenheit.)

fluid (**floo**-id) - a fluid is a liquid like water or oil. (I poured the fluid into a measuring cup.)

fluidounce (**ounss**) - the amount 2 soup or 2 large spoons hold. A fluid ounce and an ounce are different so don't confuse the two. An ounce is weight, and a fluid ounce is volume of a liquid.

foot (**fut**) – a notebook is about a foot high. (My computer screen is about a foot high. The plural of foot is feet (**feet**). (The table is 6 feet across.)

gallon (**gal**-uhn) –a gallon is the size of the large milk or water containers. Four quarts make a gallon.

gram (**gram**) – a small paperclip weighs about a gram

hour (**our**) - 60 minutes are in an hour

inch (**inch**) - a quarter is about an inch across.

kilogram (**kil**-uh-gram) – a school book weighs about a kilogram.

kiloliter (**kil**-uh-lee-tur) – kilo means a thousand. A kiloliter is a thousand liters.

kilometer (kuh-**lom**-uh-tur) or (**kil**-uh-mee-tur) –a little more than two times around a running track..

length (**lengkth**) - how long something is

liter (**lee**-tur) – a liter is about the same size as a quart. Large soda bottles are sometimes a liter bottle.

measure- (**mezh**-ur) 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.)

meter (**mee**-tur) – The distance from the floor to a doorknob is about a meter

meter stick (**mee**-tur **stik**) – a meter long flat stick with centimeters and millimeters marked on it. It is used to measure things in millimeters, centimeters, or meters. It is called a meter stick because it is a meter long.

Metric System (**met**-rik) – the way things are measured in other countries and sometimes in the United States, using units like meters, liters, and grams.

mile (**mile**) –four times around a running track is a mile.

milligram (**mil**-i-gram) – a milligram is a very, very small weight, used when talking about vitamins. (I took a 500 milligram tablet of Vitamin C.)

milliliter (**mil**-i-lee-tur) – milli means a thousandth. A milliliter is a thousandth of a liter. It is about as big as the end of your little finger.

millimeter (**mil**-i-mee-tur) – a dime is about a millimeter thick.

minute (**min**-it) – 60 seconds are in a minute.

ounce (**ounss**) – an ounce is about how much a few sheets of paper weighs.

pint (**pinte**) – two cups make a pint. A pint is an extra large drinking glass. A pint is the size of a milk carton that is half as tall as a quart.

pound (**pound**) – a rectangular package of 4 sticks of butter weighs a pound.

quart (**kwort**) – a quart is the size of a tall skinny milk or juice carton. Two pints make a quart.

ruler (**roo**-lur) – a flat stick with inches marked on it. It is used to measure things in inches or feet. Rulers are usually 6 inches or 1 foot long.

ruler (**roo**-lur) – a flat stick with centimeters and millimeters marked on it. It is used to measure things in millimeters or centimeters. Rulers are usually about 15 to 32 centimeters long.

second (**sek**-uhnd) - a very short period of time. It takes about a second to say "one thousand one."

tablespoon (**tay**-buhl-spoon) - the amount that a soup or large spoon holds

teaspoon (**tee**-spoon) - the amount that a regular spoon holds.

temperature (**tem**-pur-uh-chur) – how hot or cold something is

time (**time**) – how long something takes

ton (**tuhn**) – a large cow weighs about a ton.

unit (**yoo**-nit) - (same as a unit of measure) – a fixed amount used for measuring. (An inch is a unit used to measure length.)

unit of measure- (**yoo**-nit of **mezh**-ur) a fixed amount used for measuring. (An inch is a unit of measure.)

unit multiplier (**yoo**-nit **mul**-tuh-plye-ur) - a fraction that is equal to one, and contains units in the numerator and denominator. You multiply it, in conversion problems.

US Measurement System- the way things are usually measured in the United States using units like inches, gallons, and pounds.

volume (**vol**-yuhm) or capacity (kuh-**pass**-uh-tee) – how much a container can hold

week (**week**) - 7 days are in one week

weight (**wate**) – how heavy something is

yard (**yard**) – The distance from the floor to the surface of a kitchen counter.

yard stick (**yard stik**) – a yard long flat stick with inches marked on it. It is used to measure things in inches, feet, or yards. It is called a yard stick because it is a yard long.

year (**yihr**) – the time it takes between one of your birthdays and the next, or the time it takes the earth to go all the way around the sun. 52 weeks, or 365 days are in one year.

Pronunciation Key

Vowels	Consonants
a s**a**d	b **b**etter
ah h**o**t	ch **ch**alk
air p**air**	d **d**og
ar p**ar**t	f **f**ive
ay s**ay**	g **g**ift
a-consonant-e m**a**de	h **h**eart
aw j**aw**	j **j**ump
	k **k**itten
e t**e**n	l **l**ike
ee f**ee**t	m **m**ovie
eye h**i**	n **n**ever
	ng ri**ng**
i t**i**n	p **p**it
ihr n**ear**	r **r**at
i-consonant-e n**i**ne	s **s**ock
consonant-ie p**ie**	ss ki**ss**
	sh **sh**ort
o l**o**t	t **t**wo
oh kn**ow**	th **th**ank
o-consonant-e b**o**ne	TH **th**at
oo t**oo**l	v **v**ery
or t**or**n	w **w**atch
oi b**oy**	y **y**et
ou n**ow**	z **z**one
	zh mea**s**ure
u f**oo**t	
uh s**u**n	
ur t**ur**n	
yoo **you**	
consonant-ye b**ye**	