UNIVERSIDADE FEDERAL DO ESTADO DE MINAS GERAIS
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MATHEMATICAL ENGLISH

BELO HORIZONTE - MG
NOVEMBER - 2010

COMPLETION OF COUSE WORK
(TCC)

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> **Do not worry about your difficulties in mathematics, I assure you that mine are greater.**
> **Einstein, Albert (1879-1955)**

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INTRODUCTION

This TCC is pointed to ESL Intermediate Middle School Students (10 -12 years-old).

It is sometimes difficult for students to appreciate the importance of Mathematics. They often find the subject boring and hard to understand. With this TCC I will hopefully help students realise that Mathematics is not just a subject on their time-table but a tool they use in their everyday life.

The purpose of any language, like English or Portuguese, is to make it possible for people to communicate. All languages have an alphabet, which is a group of letters that are used to make up words. There are also rules of grammar which explain how words are supposed to be used to build up sentences. This is needed because when a sentence is written, the person reading the sentence understands exactly what the writer is trying to explain. Punctuation marks (like a full stop or a comma) are used to further clarify what is written.

Mathematics is a language, specifically it is the language of Science. Like any language, mathematics has letters (known as numbers) that are used to make up words (known as expressions), and sentences (known as equations). The punctuation marks of mathematics are the different signs and symbols that are used, for example, the plus sign (+), the minus sign (-), the multiplication sign (×), the equals sign (=) and so on. There are also rules that explain how the numbers should be used together with the signs to make up equations that express some meaning.

Mathematical thinking is important for all members of a modern society as a habit of mind for its use in the workplace, business and finance; and for personal decision-making. Mathematics is fundamental to national prosperity in providing tools for understanding science, engineering, technology and economics. It is essential in public decision-making and for participation in the knowledge economy.

Mathematics equips pupils with uniquely powerful ways to describe, analyse and change the world. It can stimulate moments of pleasure and wonder for all pupils when they solve a problem for the first time, discover a more elegant solution, or notice hidden connections. Pupils who are functional in mathematics and financially capable are able to think independently in applied and abstract ways, and can reason, solve problems and assess risk.

Mathematics is a creative discipline. The language of mathematics is international. The subject transcends cultural boundaries and its importance is universally recognised. Mathematics has developed over time as a means of solving problems and also for its own sake.

UNIT 01

What is a number ?

A number is a way to represent quantity. Numbers are not something that you can touch or hold, because they are not physical. But you can touch three apples, three pencils, three books. You can never just touch three, you can only touch three of something. However, you do not need to see three apples in front of you to know that if you take one apple away, that there will be two apples left. You can just think about it. That is your brain representing the apples in numbers and then performing arithmetic on them.

A number represents quantity because we can look at the world around us and quantify it using numbers. How many minutes? How many kilometers? How many apples? How much money? How much medicine? These are all questions which can only be answered using numbers to tell us "how much" of something we want to measure.

A number can be written many different ways and it is always best to choose the most appropriate way of writing the number. For example, "a half" may be spoken aloud or written in words, ut that makes mathematics very difficult and also means that only people who speak the same language as you can understand what you mean. A better way of writing "a half" is as a fraction ½ or as a decimal number 0,5. It is still the same number, no matter which way you write it.

In high school, all the numbers which you will see are called real numbers and mathematicians use the symbol R to stand for the set of all real numbers, which simply means all of the real numbers. Some of these real numbers can be written in ways that others can not.

Comprehension

- Mark (T) True or (F) False according to the text:

( )   You can touch or hold numbers if you want.

( )   "a half" may be spoken aloud or written in papers.

( )   A better way of writing "a half" is as a fraction ½ or as a decimal number 0,5.

( )   In high school, all the numbers which you will see are called real numbers and mathematicians use the symbol P to stand for the set of all real numbers.

- Match the columns:

(1) How many minutes?	( ) 10$
(2) How many kilometers?	( ) 3 min
(3) How many apples?	( ) 80 Km
(4) How much money?	( ) 8 FL.OZ.(236ml)
(5) How much medicine?	( ) a dozen

VOCABULARY:

Hold - Temporarily the handling of**.**

Measure - A way to assign non-negative real numbers to subsets.

Half - Either of two equal parts that compose something.

Arithmetic - Is the oldest and most elementary branch of mathematics .

B – *WRITING*

GRAMMAR: *Countable/Uncountable*

Countable nouns:

For example: (a) **car**   (a) **man**   (a) **key**   (a) **house**   (a) **number**   (a) **idea**   (a) **accident**

You can use **one**/**two**/**three** (*etc.*) + countable noums (you can *count them*):

One car - Two cars - Three men - Four houses

Countable nouns can be *singular* (= one) or *plural* (= two or more)

s*ingular* : **a car**   **my car**   **the car** *etc.*

plural   : **cars**   **two cars**   **the cars**   **some cars**   **many cars** *etc.*

- I've got **a car**.
- There aren't **many cars** in the car park.
- New **cars** are very expensive.

You cannot use the singular (**car**/**house**/**key** etc.) alone. You need **a**/**an**:

- We can't get in without **a key**. (not 'whitout key')

Uncountable nouns:

For example: **water air rice salt plastic money music tennis**

You *cannot* say **one**/**two**/ (*etc.*) + these things: **one water   two musics**

Uncountable nouns have only one form:

money   the **money**   my **money**   some **money**   much **money** *etc.*

– I've got **some money**.
– There isn't **much money** in the box.
– **Money** isn't everything.

You cannot use **a**/**an** + *uncountable nouns*: a **money**   a **music**

But you can say **a piece of** … /**a glass of** … *etc.* + *uncountable noun.*

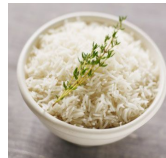*- Look the pictures and complete:*

 _____water

 a can of _____

 _____ chocolate

 a piece of _____

 a bottle of _____

 a bowl of _____

 _____ coffee

- Writing in paragraphs:

– A composition has more than one paragraph. A paragraph contains one topic or idea. You star a new paragraph when you change the topic or idea.

- How many paragraphs are there in the text "What is a number"?

- Write two paragraphs about mathematics:

_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____

C – LISTENING

🔊 *Listen and practice :*

Cardinal Numbers

1	one	11	eleven	21	twenty-one	71	seventy-one	600 six-hundred
2	two	12	twelve	30	thirty	80	eighty	700 seven hundred
3	three	13	thirteen	31	thirty-one	81	eighty-one	800 eight hundred
4	four	14	fourteen	40	forty	90	ninety	900 nine hundred
5	five	15	fifteen	41	forty-one	91	ninety-one	1,000 a/one thousand
6	six	16	sixteen	50	fifty	100	a/one hundred	10,000 ten thousand
7	seven	17	seventeen	51	fifty-one	200	two hundred	100,000 a hundred thousand
8	eight	18	eighteen	60	sixty	300	three hundred	1,000,000 one million
9	nine	19	nineteen	61	sixty-one	400	four hundred	
10	ten	20	twenty	70	seventy	500	five hundred	

Write the following numbers in full:

a) 79 _____

b) 55 _____

c) 24 _____

d) 68 _____

e) 96 _____

f) 43 _____

STUDY TIP I

Separation between hundreds and tens

Hundreds and tens are usually separated by **'and'** (in American English **'and'** is not necessary).

    110 - one hundred **and** ten
 1,250 - one thousand, two hundred **and** fifty
 2,001 - two thousand **and** one

Use 100 always with **'a'** or **'one'**.   **'a'** can only stand at the beginning of a number.

    100 - **a** hundred / **one** hundred
 2,100 - two thousand, **one** hundred

Use 1,000 and 1,000,000 always with **'a'** or **'one'**.

   1,000 – **a** thousand / **one** thousand
201,000 - two hundred and **one** thousand

Use **commas** as a separator. 57**,**458**,**302

STUDY TIP II

The Number 1,000,000,000

In English this number is a billion. This is very tricky for nations where 'a billion' has 12 zeros. 1,000,000,000,000 in English, however, is a trillion. But don't worry, these numbers are even a bit problematic for native speakers: for a long time the British 'billion' had 12 zeros (a number with 9 zeros was called 'a thousand million'). Now, however, also in British English 'a billion' has 9 zeros. But from time to time this number still causes confusion.

Singular or Plural?

Numbers are usually written in singular.

two **hundred** Euros
several **thousand** light years

The plural is only used with dozen, hundred, thousand, million,billion, if they are not modified by another number or expression (e.g. a few / several).

hundred**s** of Euros
thousand**s** of light years

VOCABULARY:

Punctuation Mark	Symbol	Definition	Examples
Apostrophe	**'**	An apostrophe is used as a substitute for a missing letter or letters in a word (as in the contraction cannot = can't), to show the possesive case (Jane's room), and in the plural of letters, **some numbers** and abbbreviations. Note: groups of years no longer require an apostrophe (for example, the 1950s or the 90s).	I can't see the cat's tail. Dot your i's and cross your t's. **100's of years.**
Colon	**:**	A colon is used before a list or quote. A colon is used to separate hours and minutes. **A colon is used to separate elements of a mathematical ratio.**	There are many punctuation marks: period, comma, colon, and others. **The time is 2:15.** **The ratio of girls to boys is 3:2.**
Comma	**,**	A comma is used to separate phrases **or items in a list.**	She bought milk, eggs, and bread.
Dash	**—**	A dash is used to separate parts of a sentence.	The dash is also known as an "em dash" because it is the length of a printed letter m — it is longer than a hyphen.
Ellipsis	**...**	An ellipsis (three dots) indicates that part of the text has been intentionally been left out.	**0, 2, 4, ... , 100**
Exclamation point	**!**	An exclamation point is used to show excitement or emphasis.	It is cold!
Hyphen	**-**	A hyphen is used between parts of a compound word or name. It is also used to split a word by syllables to fit on a line of text.	**The sixteen-year-old girl is a full-time student.**
Parentheses	**( )**	Parentheses are curved lines used to separate explanations or qualifying statements within a sentence (each one of the curved lines is called a parenthesis). The part in the parentheses is called a parenthetical remark.	This sentence (like others on this page) contains a parenthetical remark.
Period	**.**	A period is used to note the end of a declarative sentence.	I see the house.
Question mark	**?**	A question mark is used at the end of a question.	When are we going?
Quotation mark	**"**	Quotation marks are used at the beginning and end of a phrase to show that it is being written exactly as it was originally said or or written.	She said, "Let's eat."

Semicolon	;	A semicolon separates two independent clauses in a compound sentence. A semicolon is also used to separate items in a series (where commas are already in use).	Class was canceled today; Mr. Smith was home sick. Relatives at the reunion included my older brother, Bob; my cousin, Art; and my great-aunt, Mattie.

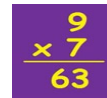## Mathematical expressions:

$+$ **Plus**

$1 + 1 = 2$ **Addition**
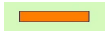
$-$ **Minus**

Subtraction

$\times$ **Times /Multiplied by**

Multiplication

$\div$ **Divided by**

$0 \div 5 = 0$ **Division**

$=$ **Equals / is**

$\%$ **Percent / per cent**

3^2 **Three squared**

5^3 **Five cubed**

6^{10} **Six to the power of ten**

$\sqrt{}$ **Square root of**

$\pm$ **Plus or minus**

$\neq$ **It's not equals to / It's not equal to**

$>$ **Is more than**

$<$ **Is less than**

∞ **Infinity**

π **Pi**

π^2 **Pi squared**

D – SPEAKING

- Pronunciation: Calculation

$2 + 2 = 4$	Two **and** two is/are four. (informal) Two **plus** two equals/is four. (formal)
$7 - 4 = 3$	Four **from** seven is/**leaves** three. (informal) Seven **take away** four is/**leaves** three. (informal) Seven **minus** four equals/is three. (formal)
$3 \times 4 = 12$	Three four**s** are twelve. (informal) Three **times** four is twelve. (informal) Three **multiplied by** our equals/is twelve (formal)
$9 \div 3 = 3$	Three(**s**) **into** nine **goes** three (**times**). (informal) Nine **divided by** three equals/is three (formal)

STUDY TIP IV

What is Sum ?

In mathematics, **sum** of two numbers is what we get and when we add the two numbers. There are a number of ways to writing **sums**, with the most common being:

Addition (2 + 4 + 6 = 12)

- Solve the problems bellow:

a) Christine is making a list of numbers whose digits have a sum of 20.
Cross out the number that should not be included on her list.

| 5,537 | 66,404 | 9,041 | 992 | 7,274 |

b) Kelli bought a new photo album to display her vocation pictures. Each page of the album displays six photos. There are a total of 143 pages in the book. How many photos can the album hold?

TEACHER'S GUIDE

Support ESL Math Development by Linking Math Instruction to Language Domains

Just as with literacy and with science and social studies content areas, teachers working with ESL students need to address all four of the language domains: reading, writing, listening, speaking.

- Be explicit in teaching math vocabulary.
- Keep story problems simple, but differentiate the difficulty of the numbers used in the problems.
- Create story problems using specific vocabulary that is within students' known skill range.
- Model strategies students can use to explain their thinking as they solve problems (ex. drawing pictures, using symbols such as dots or tallies, or using number lines).
- Provide opportunities for students to listen to other students explain their strategies and mathematical thinking.
- Allow students to verbalize their mathematical thinking one-on-one to other students or to the teacher, rather than always in front of the large group.
- Model how students can invent and write their own story problems.
- Provide anchor charts with math vocabulary that students can refer to when writing story problems or explaining their mathematical thinking.

Tap into a Variety of Learning Modalities to Teach Math to English Language Learners students, whether ELLs or native English speakers, need to work with more than just worksheets to learn and understand math concepts. Utilizing multiple learning modalities will help all students to develop a deeper understanding of number concepts and relationships, but is especially helpful for English language learners.

- Provide a variety of manipulatives, such as counting chips, 1 inch blocks, and linking or unifix cubes.
- Teach rote concepts through songs, rhythmic stanzas, or even rap.
- Use movement to reinforce number order and other math concepts.
- Provide materials and time to explore math concepts through drawing and simple art projects.
- Access technology: provide time for students to use problem solving and skill building programs on the computer; let even young students explore calculators.

TEST BOOKLET

Question 1

Venice's population was 272,679 in 2005. Write this number in word form.

a. Two hundred seventy thousand six hundred seventy-nine
b. Two hundred seventy-two thousand six hundred seventy-nine
c. Two hundred seventy-two thousand six hundred nine
d. Two hundred seventy-two thousand six hundred seventy

Question 2

Anna bought a pair of shoes for $27.65. She paid $30 to the cashier. How much change should she get back from the cashier?

a. $1.45
b. $2.65
c. $2.35
d. $3.35

Question 3

Jamal paints on Saturdays and earns $4.50 per hour. He deposits half of his earned money into his piggy bank. If he paints for 5 hours every Saturday, how much money can he deposit in his piggy bank every month? (1 month has 4 weeks)

a. $90
b. $55
c. $50
d. $45

Question 4

Which sign will go in the bracket?

7,329 ( ) 7,239

a. >
b. <
c. =
d. >=

Question 5

As shown in picture, there are 15 balls in a pool rack. How many balls will fit into 3 racks like this?

a . 40

b . 45

c . 35

d . 55

Question 6

What number comes next in the pattern?

48, 51, 54, 57, _____

| a. | 59 | b. | 60 |
| c. | 61 | d. | 69 |

Question No	Answer
1	b
2	c
3	d
4	a
5	b
6	b

UNIT 02

A – READING

Letters and Arithmetic

The simplest things that can be done with numbers is to add, subtract, multiply or divide them. When two numbers are added, subtracted, multiplied or divided, you are performing *arithmetic1*.

These four basic operations can be performed on any two real numbers. Mathematics as a language uses special notation to write things down. So instead of:

one plus one is equal to two

mathematicians write

$$1 + 1 = 2$$

In earlier grades, place holders were used to indicate missing numbers in an equation.

$$1 + (\ ) = 2$$
$$4 - (\ ) = 2$$
$$(\ )+ 3 - 2(\ ) = 2$$

However, place holders only work well for simple equations. For more advanced mathematical workings, letters are usually used to represent numbers.

$$1 + x = 2$$
$$4 - y = 2$$
$$z + 3 - 2z = 2$$

These letters are referred to as **variables**, since they can take on any value depending on what is required. For example, $x = 1$ in Equation 2.2, but $x = 26$ in $2 + x = 28$.

A **constant** has a fixed value. The number 1 is a constant. The *speed of light* in a vacuum is also a constant which has been defined to be exactly 299 792 458 m·s−1(read metres per second). The speed of light is a big number and it takes up space to always write down the entire number. Therefore, letters are also used to represent some constants. In the case of the speed of light, it is accepted that the letter *c* represents the speed of light. Such constants represented by letters occur most often in physics and chemistry.

Additionally, letters can be used to describe a situation, mathematically. For example, the following equation

$$x + y = z$$

can be used to describe the situation of finding how much change can be expected for buying an item. In this equation, *y* represents the price of the item you are buying, *x* represents the amount of change you should get back and *z* is the amount of money given to the cashier. So, if the price is R10 and you gave the cashier R15, then write R15 instead of *z* and R10 instead of *y* and the change is then *x.*

$$x + 10 = 15$$
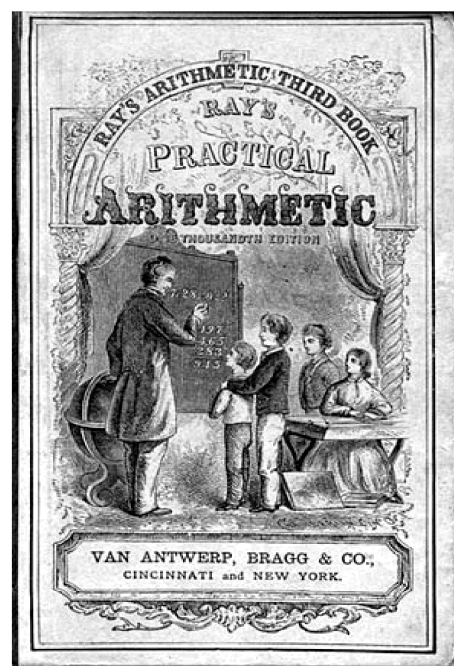
Comprehension

- Mark the correct alternative:

This text is:

A . ( ) a letter about Arithmetic.

B . ( ) a tale about mathematics.

C . ( ) a short-story about letters.

D . ( ) a information about letters and numbers.

- Find in the text:

1 . An expression that means " performing arithmetic1": _____

_____

2 . The opposite of "complex operations": _____

3 . A synonym for "First levels": _____

4 . What is a "speed of light"? _____

_____

5 . What can we used to represent number? _____

VOCABULARY:

Notaion - Is a system of symbolic representations of mathematical objects and ideas.

Variables - Is a value that may change within the scope of a given problem or set of operations

Constant - Is a special number, usually a real number, that arises naturally in mathematics.

Chemistry - The science of matter at or near the atomic scale.

B – *WRITING*

GRAMMAR: *Modal*

Modal Verbs:

CAN	COULD	MAY	MIGHT	WILL	WOULD
SHALL	SHOULD	OUGHT TO	MUST	NEED	DARE

When do we use modals?

- **To talk about someone's ability (or inability) to do something**

  example: "We can find your house without the street plan."
            "She can't have a daughter that old!"
- **To talk about an action that is necessary (or impossible, or not necessary)**

  example: "You must always have your driver's licence when you are driving your car."
            "You needn't carry your passport around with you."
- **To talk about a situation that is possible (or impossible)**

  example: "Do be careful with that glass, the baby might knock it over"

A modal verb always has the same form:	There is no past form (**-ed**), no present participle (**-ing**) and no 3rd persons singular (**-s**).
Modal verbs come before the subject in questions:	example: "May I come to your house for tea?"
Negative forms:	Modal verbs have **n't** or **not** after them in the negative. example: "mustn't" – "needn't".

PRESENT FORM	PAST FORM
can	could
may	might
will	would
shall	should
must	-
ought to	-
need	-

- Complete the sentences. Use modal verbs:

01 - She tried to contact me, but the phone . …. . (be) busy.

02 - I . .... . (go) for a swim if I'd wanted to.

03 - I . .... . (not say) such a terrible thing.

04 - I don't know who wrote that letter. It . …. . (not be) Mrs Johnson, as she wasn't in the office that day.

05 - I . .... . (not leave) my keys at home - I'm sure they were in my pocket.

06 - I think you . .... . (tell) your parents you were going to be late. They were very worried.

07 - We don't know who took the money. The office was full of people, it . .... . (be) any of them.

08 - …........ (you not be) just a little more polite?

09 - You …........ (apologize) for being late.

C – *LISTENING*

🔊 ***Listen and practice :***

Ordinal Numbers

|			
1 st first	11 th eleventh	21 st twenty-first	31 st thirty-first
2 nd second	12 th twelfth	22 nd twenty-second	
3 rd third	13 th thirteenth	23 rd twenty-third	
4 th fourth	14 th fourteenth	24 th twenty-fourth	
5 th fifth	15 th fifteenth	25 th twenty-fifth	
6 th sixth	16 th sixteenth	26 th twenty-sixth	
7 th seventh	17 th seventeenth	27 th twenty-seventh	
8 th eighth	18 th eighteenth	28 th twenty-eighth	
9 th ninth	19 th nineteenth	29 th twenty-ninth	
10 th tenth	20 th twentieth	30 th thirtieth	

- Write the following ordinal numbers in full:

a)   36   _____

b)   55   _____

c)   62   _____

d)   77   _____

e)   84   _____

f)   91   _____

STUDY TIP I

In English, the **digraph <th>** represents in most cases one of two different **phonemes**: the **voiced dental fricative** /ð/ (as in **th**is) and the **voiceless dental fricative** /θ/ (**th**ing). More rarely, it can stand for /t/ (**Th**ailand) or the **consonant cluster** /t.h/ (ligh**th**ouse) or, in some dialects, even the cluster /tθ/ (eigh**th**).
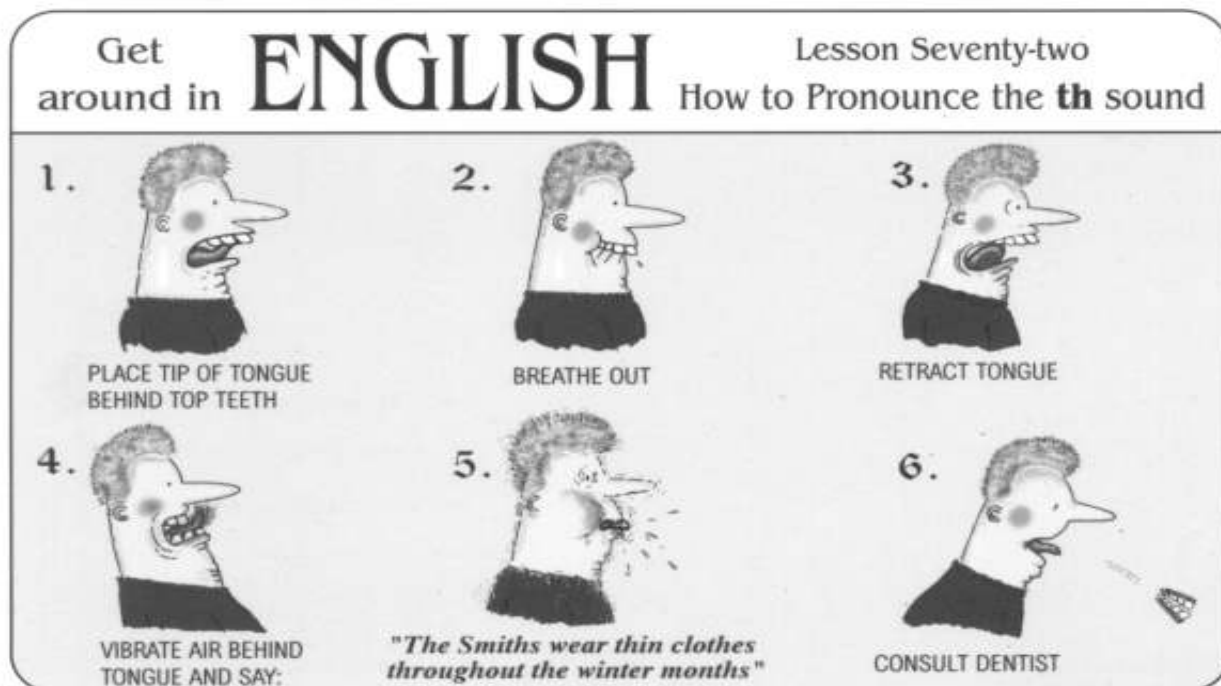
D – SPEAKING

- **Pronunciation: "th" Ordinal numbers**

Spelling of Ordinal Numbers

Just ad th to the cardinal number:

four - fourth

eleven – eleventh

- **Exceptions:**

one - first

two - second

three – third

five – fifth

eight - eighth

nine - ninth

twelve - twelfth

In compound ordinal numbers, note that only the **last** figure is written as an ordinal number:

421st = four hundred and twenty-**first**

5,111th = five thousand, one hundred and **eleventh**

- Figures:

When expressed as figures, the last two letters of the written word are added to the ordinal number:

fir**st** = 1**st**

seco**nd** = 2**nd**

thi**rd** = 3**rd**

four**th** = 4**th**

twenty-six**th** = 26**th**

hundred and fir**st** = 101st

- Titles:

In names for kings and queens, ordinal numbers are written in Roman numbers. In spoken English, the definite article is used before the ordinal number:

Charles **II** - Charles the Second

Edward **VI** - Edward the Sixth

Henry **VIII** - Henry the Eighth

## Roman Numbers

Roman Numeral Table

1 I	**14** XIV	**27** XXVII	**150** CL
2 II	**15** XV	**28** XXVIII	**200** CC
3 III	**16** XVI	**29** XXIX	**300** CCC
4 IV	**17** XVII	**30** XXX	**400** CD
5 V	**18** XVIII	**31** XXXI	**500** D
6 VI	**19** XIX	**40** XL	**600** DC
7 VII	**20** XX	**50** L	**700** DCC
8 VIII	**21** XXI	**60** LX	**800** DCCC
9 IX	**22** XXII	**70** LXX	**900** CM
10 X	**23** XXIII	**80** LXXX	**1000** M
11 XI	**24** XXIV	**90** XC	**1600** MDC
12 XII	**25** XXV	**100** C	**1700** MDCC
13 XIII	**26** XXVI	**101** CI	**1900** MCM

A Brief History of Roman Numerals

What is the history of Roman Numerals? Roman numerals, as the name suggests, originated in ancient Rome. No one is sure when roman numerals were first used, but they far predate the middle ages. Theories abound as to the origins of this counting system, but it is commonly believed to have started with the ancient Etruscans. The symbol for one in the roman numeral system probably represented a single tally mark of the kind people would notch into wood or dirt to keep track of items or events they were counting.

STUDY TIP II

Roman Numbers are still used today in a variety of applications. If you are creating an outline for a story or report, you will be expected to use Roman Numerals. They are also commonly used on clocks and watches to number book chapters, films and big events. Monarchs and Popes are usually numbered with this system as are guitar chords and the cranial nerves.
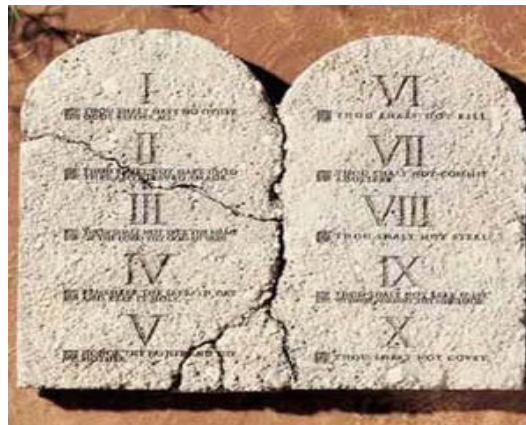
- Write in Roman numeral form:

a) MCDXXXVI + DLXXXVII = _____

b) DCCXCVIII + CCIV = _____

c) CMXVIII + CDLXXVI = _____

d) CCCLXXXIV + LXXVI = _____

e) CMX + CCCXX = _____

TEACHER'S GUIDE

Use drawings or other illustrations to accompany word problems when possible. A picture of key objects in the story problem or a simple graph might help students to picture what is being talked about, so they can focus on what is being asked.

Strategies to Help ESL Students Understand Math Word Problems in English Explicitly teach key words and phrases that students will encounter in math story problems. For example, teach what is meant by the phrases, "how many all together," "how many now," or "how many are left."

Start by using the same story problem templates repeatedly, inputting different numbers. Then change one or two parameters of the problem. For instance, for younger students if the problems involve how many books are being added or taken away, change the subject of the problem. Slowly make the problems more complex, taking the time to discuss the changes in language and what they mean.

Write math story problems by committee – a committee of students! Let ESL students have a role in creating the story problems to be used by the class. The students can help construct the details of the problem; the teacher can input appropriate numbers later.

Students may need coaching in how to discern what is being asked in various problem types. Discuss the problems with individual students to ensure they understand what they are reading. Encourage students to think out loud when reading and solving word problems in English.

When teachers learn to tweak their math story problems to meet the needs of ESL students and when they devise strategies for English language learners to better understand math story problems in English, they may find that all students – ELLs and native English speakers alike – will benefit from these adaptations.

TEST BOOKLET

Question 1

Fill in the missing number:

a. 5,902 - (   ) = 5,329   **b.** (   ) + 37 = 3,537

c. 33,622 - (   ) = 33,617   **d.** (   ) - 3 = 64,441

Question 2

Choose the correct answer for each question.

I need some stamps. I _____ to the post office.

  a. mustn't go

  b. must buy

  c. must go

  d. mustn't forget

Question 3

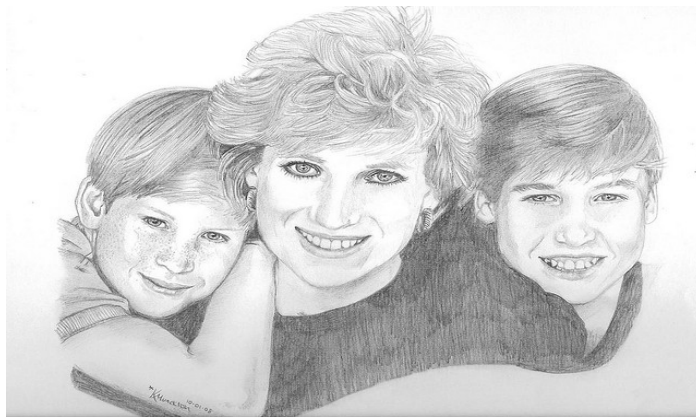Helen is in the number 9 position in line. She is _____ in line.

  a. ninth

  b. ninetieth

  c. nineteenth

  d. nine

Question 4

November is the _____ month of the year.

  a. second

  b. sixteenth

  c. eleventh

  d. twenty-first

Question 5

Write T (true) or F (False) for the following statementes:

  a. Willian is the second heir to the throne after Queen Elizabeth II. (   )

  b. Prince Charles IX is King of England. (   )

  c. The Queen Elizabeth II is mother of Prince Willian. (   )

  d. D.Pedro I is President of Brasil. (   )

  e. D.Pedro II was responsible for Brasil's independence. (   )

Question No	Answer
1	a.573 b.3,500 c.5 d.64,444
2	c
3	a
4	a.T b.F c.F d.F e.T
5	c

UNIT 03

Fractions

A **fraction** (from the Latin *fractus*, broken) is a number that can represent part of a whole. The earliest fractions were reciprocals of integers: ancient symbols representing one part of two, one part of three, one part of four, and so on. A much later development were the common or "vulgar" fractions which are still used today (½, ⅝, ¾, etc.) and which consist of a **numerator** and a **denominator**, the numerator representing a number of equal parts and the denominator telling how many of those parts make up a whole. An example is 3/4, in which the numerator, 3, tells us that the fraction represents 3 equal parts, and the denominator, 4, tells us that 4 parts make up a whole.

A still later development was the fraction, now called simply a decimal, in which the denominator is a power of ten, determined by the number of digits to the right of a decimal separator, the appearance of which (e.g., a period, a raised period (•), a comma) depends on the locale. Thus for 0.75 the numerator is **75** and the denominator is 10 to the second power, *viz.* **100**, because there are two digits to the right of the decimal.

A third kind of fraction still in common use is the percentage , in which the denominator is always 100. Thus 75% means 75/100.

Other uses for fractions are to represent ratios, and to represent division. Thus the fraction 3/4 is also used to represent the ratio 3:4 (three to four) and the division 3 ÷ 4 (three divided by four).

In mathematics, the set of all (vulgar) fractions is called the set of rational numbers, and is represented by the symbol **Q**.

→object whole

→ **object part (1/8 and 7/8)**

Comprehension

- Mark <u>yes</u> or <u>no</u> according to the text:

	Yes	No
a) A fractus is a number that can represent part of fraction.	[ ]	[ ]
b) The numerator representing a number of equal parts and the denominator telling how many of those parts make up a whole.	[ ]	[ ]
c) 75% means 75/1000.	[ ]	[ ]
d) Other uses for fractions are to represent numerators.	[ ]	[ ]
e) In mathematics, the set of all (vulgar) fractions is called the set of rational numbers.	[ ]	[ ]

- Write the following in fractions:

6 parts out of 13 parts: _____

2 parts out of 10 parts: _____

6 parts out of 14 parts: _____

5 parts out of 9 parts: _____

VOCABULARY:

Earliest - Near the beginning of a course, process, or series.

Ancient - Is the study of the written past.

Ratios - Is a relationship between two numbers of the same kind.

Rational numbers - A number that can be expressed as a ratio of two integers.

B – *WRITING*

GRAMMAR: *Simple past tense*

The simple past tense is used to talk about actions that happened at a specific time in the past. You state when it happened using a time adverb.
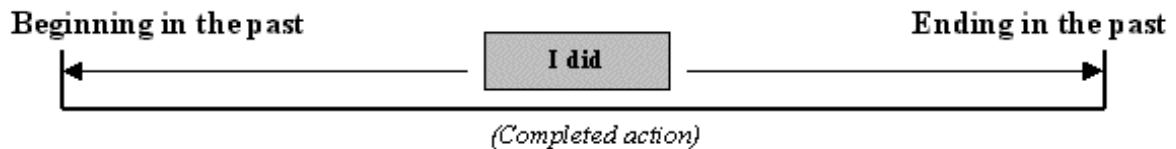
You form the simple past of a verb by adding -ed onto the end of a regular verb _but, irregular verb forms have to be learned.

To be Statements +	To be Statements -	Questions ?
I was.	I wasn't.	Was I?
He was.	He wasn't.	Was he?
She was.	She wasn't.	Was she?
It was.	It wasn't.	Was it?
You were.	You weren't.	Were you?
We were.	We weren't.	Were we?
They were.	They weren't.	Were they?

Regular Verb (to work) Statements +	Regular Verb (to work) Statements -	Questions	Short answer +	Short answer -
I work**ed**.	I didn't work.	Did I work?	Yes, I did.	No, I didn't.
He work**ed**.	He didn't work.	Did he work?	Yes, he did.	No, he didn't.
She work**ed**.	She didn't work.	Did she work?	Yes, she did.	No, she didn't.
It work**ed**.	It didn't work.	Did it work?	Yes, it did.	No, it didn't.
You work**ed**.	You didn't work.	Did you work?	Yes you did.	No, you didn't.
We work**ed**.	We didn't work.	Did we work?	Yes we did.	No, we didn't.

		Did they work?	Yes they did.	No, they didn't.
They work**ed**.	They didn't work.			

Simple Past Timeline

Beginning in the past — I did — Ending in the past

(Completed action)

For example:

"Last year I took my exams."

"I got married in 1992."

It can be used to describe events that happened over a period of time in the past but not now.

For example:

"I lived in South Africa for two years."

The simple past tense is also used to talk about habitual or repeated actions that took place in the past.

For example:

"When I was a child we always went to the seaside on bank holidays."

- Choose "was" or "were" to complete these sentences correctly:

You _____ my best friend when we _____ children.

a) was / was

b) was / were

c) were / were

d) were / was

They _____ not in Los Angeles when I _____ there.

    a) was / was
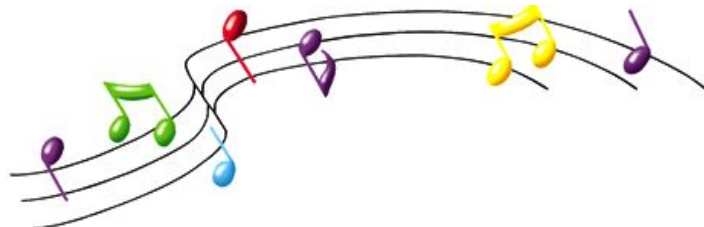
    b) were / were

    c) were / was

    d) was / were

Jim _____ in the bedroom when the match _____ on TV.

    a) were / were

    b) was / were

    c) were / was

    d) was / was

C – *LISTENING*

🔊 *Listen -* **Math song**

That's Mathematics !
By Tom Lehrer

Counting
Sheep, When
You're trying
to Sleep

Being fair,
When there's
something to
share

Being neat,
When you're
folding a sheet

That's
Mathematics

When a ball,
bounces off of
a wall

When you
cook, from a
recipe book

when you
know, how
much money
you owe

That's
Mathematics

How much gold
can you hold in
an elephant's
ear?

When its noon
on the moon
then what time
is it here?

If you could
count for a
year...

Would you get
to infinity?
Or somewhere
in that vicinity?

When you
choose, how
much postage
to use

When you
know, wath's
the chance it
will snow

When you bet,
and you end
up in debt

Oh try as you
may, you just
can't get away
From
Mathematics!

Andrew Wyles,
Gently Smiles,
Does his thing
and voila!

QED we agree
and we all
shout "hurrah!"

As he confirms
wath Fermat,
Jotted down in that
margin, which
could've used
some enlargin'

Tap your feet,
keep in time to
a beat

Of a song,
while you're
singing along

Harmonise,
with the rest of
the guys

Yes try as you
may, you just
can't get away

From
MATHEMATICS !

VOCABULARY:

Neat - Free from dirt and disorder.

Bounces - To cause to rebound or be reflected**.**

Recipe - A set of instructions for making something from various ingredients.

Vicinity - A surrounding area or district.

Debt - The amount of interest and sinking fund payments due annually on long-term debt .

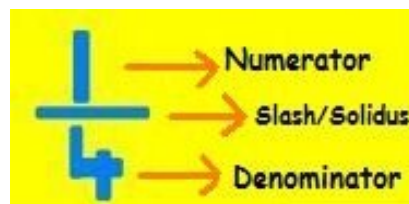**Margin** - To provide with an edging or border.

Harmonise - To play or sing in harmony.

QED - The abbreviation thus signals the completion of the mathematical proof.

D – SPEAKING

- Pronunciation: **Parts of a fraction**

    1/2 a half or one half
    1/3 a third or one third
    1/4 a quarter or one quarter

    1/12 one twelfh
    1/16 one sixteenth

2/3   two thirds
3/4   three quarters
9/10   nine tenths

More complex fractions

26/78 twenty-six over seventy-eight
41/164 forty-one over one six four/one hundred and sixty-four*

Whole numbers and fractions

2½ *two* **and** *a half*
5¾ *five* **and** *three quarter*

TEACHER'S GUIDE

Math is said to be a universal language. That may be true when working with naked numbers. But putting math into the context of stories or real life questions for problem solving elevates the language needs of ESL students to an entirely different level.

Students who are learning English as their second language can and do solve word problems. Some students may well be proficient in solving math story problems in their first language. But expecting teachers to translate story problems into languages other than English may not be practicable. Rather, ESL students will benefit from scaffolding both in terms of how math story problems are written and of their own learning strategies for understanding what the English problems are asking.

Encourage Math Development in ESL Students' First Language
Research shows that students who develop proficiency in math in their primary language will have greater success in becoming proficient in math in the second language. Whenever possible, it is a good strategy to teach math skills in ESL students' primary language at the same time that they are learning these concepts in English.

Parents of ESL students should be encouraged to teach math concepts to their children in their home language. Homework, while presented in English, can be discussed in the home language in order to broaden knowledge acquisition in the primary language.
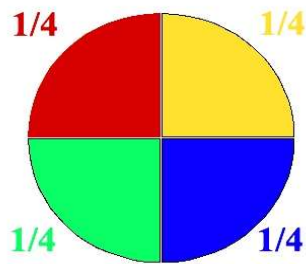
TEST BOOKLET

Question 1

Match the following fractions with their corresponding expressions:

    a. 1/2   (   ) One fifth

    b. 1/4   (   ) One tenth

    c. 1/5   (   ) Half

    d. 2/3   (   ) Two thirds

    e. 1/10   (   ) One quarter

Question 2

What fraction does this figure represent?

    a. (   )   Thirds

    b. (   )   Fourths

    c. (   )   Halves

    d. (   )   Half

Question 3

Which fraction is the biggest ?

a. (   )   1/4   **b.** (   ) 1/2.   **c.** (   ) 1/8

d. (   )   1/5   **e.** (   ) 1/6   **f.** (   ) 1/9

Question 4

Solve the problems below:

Two students are growing bamboo plants in science class. Tatum's bamboo grew 2/3 of a centimeter last week and Miles's bamboo grew 1/3 of a centimeter. How much more did Tatum's bamboo grow than Miles's?

_____ Centimeters

Castroville's zoo has two elephants. The male elephant weighs 5/6 of a ton and the female elephant weighs 2/6 of a ton. How much more does the male weigh than the female?

_____ Tons

Question 5

What is this fraction in the simles term?
50/100

a. 1/3   **c.** 1/2

b. 10/20   **d.** 1/30

Question 6

Choose the corret sig for the brackets:
1/2 is (   ) 10/20

  a. =

  b. >

  c. <

  d. -

Question No	Answer
1	c.e.a.d.b
2	b
3	b
4	1/3 . 3/6
5	c
6	a

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Maria Cecilia Villaça Lima