

## Multicultural Curriculum - Fifth Grade Science/Math Lesson Plan Egyptian Hieroglyphs

**Content/Theme:** Hieroglyphs and Mathematics

**Grade:** Fifth

**Textbook Connection:** Harcourt: Grade 5 *Math* Chapter 1, pages 1-18, and Chapter 2, Pages 20-34

**Old Benchmark:**

- MA.A.2.2.2 The student recognizes and compares the decimal number system to the structure of other number systems such as the Roman numeral system or bases other than ten.

**Time:** 1-2 Class Periods

**Objectives:**

1. The student will identify aspects of Ancient Egyptians and Hieroglyphs
2. The student will compare and contrast Egyptian Hieroglyphs with the Decimal Number System.

**Differentiated Instruction Activities:** Teachers may choose to do one or more of the student-centered activities in this lesson. Activities cover elements of Bloom's taxonomy.

**Teacher Preparation/Materials:** Reading Passage, Student Handouts/Transparencies: Egyptian Hieroglyphs and Hieratic Numerals, Egyptian Vocabulary, Mathematics Worksheet, Group Work Directions, Rubric, Chart Paper

**1. Pre-reading Activities:**

- Tell students they are going to look at an ancient way of writing numbers. Long ago, people created societies, housing and farming, languages, calendars, and numbers in order to succeed in daily and monthly tasks. Tell students that long ago, ancient civilizations developed their own way of telling stories and keeping records and they are going to learn about the Ancient Egyptian way of writing.
- Tell students to do a one minute Quick Write. Have students write for one minute to the following question: How do you think people in Egypt wrote numbers and words hundreds of years ago? Have volunteers report.
- Show the location of Egypt on the map. Show students that a civilization around the Nile River was successful because it was an area around water with good farmland. Ask students what they think Egypt is famous for (pyramids, mummies). Ask students if they have ever have seen the drawings on the outside of mummies' tombs or inside of walls in a pyramid. Tell students these are called hieroglyphs or hieroglyphic writing. Ask a student to try to write a hieroglyph on the board.

**2. During Reading Activities**

- Distribute the reading passage to students. Tell students that as they read, they are to do two things:

- Stop and write (when the teacher directs) an interesting fact about what they have just read. Stop and write three times.
- Underline four vocabulary words that are new to them.
- Have volunteers read the passage aloud. When finished, ask students to volunteer their comments and compile them on chart paper.

### 3. After Reading Activities:

- **Discussion:**
  - Why would a society need to write things down? Why would a society need symbols for numbers? Why would you need to use numbers? What kind of symbols did the Egyptians use to represent numbers? Why did the writing change over time? What are some of the similarities with the decimal number system and the ancient hieroglyphics? What are some of the differences?
- **Compare/Contrast:** Show the transparency that shows the Decimal Number System compared to Egyptian Hieroglyphs and Hieratic Numerals. Ask student volunteers to come up to the board and practice writing the numbers 3, 7, 10, and 100 in Hieroglyphs.
- **Group Work:**
  - Place the class in groups of four. Assign a chairperson, recorder, reporter, and artist.
  - Explain directions and rubric for assessment to the class.
  - Assign each group to reread two specific paragraphs aloud and then develop two multiple-choice questions from their paragraphs. The chair will read, the recorder will write, the reporter will report out to the class, and the artist will draw an illustration for the quiz.
  - Vocabulary: in addition to the quiz, students will be responsible for four vocabulary words to define. Tell students to first try to define the words by looking back at the reading passage, and then they may look it up in the dictionary. Create four flash cards with illustrations. Groups/Individuals will exchange flashcards. Display the flash cards around the room.
  - Math: Groups will come up with 4 math questions in hieroglyphs to place on their quiz.
  - Groups will exchange quizzes/flashcards and use the passage to complete it.
  - Reporters will report the answers to their quizzes aloud.
- **Math Worksheet:** First, complete some examples with the class, and then have students complete the worksheet. Students may use the handout/transparency of hieroglyphic symbols to help them complete their worksheet.

**ESOL Strategies:** Small Learning Groups, Modeling, Read Aloud

**Assessment:** Student Participation, Group Work, Worksheet

**Resources:** Roehrig, C. (1990) Fun with Hieroglyphs, Metropolitan Museum of Art, Viking, NY

<http://www.ancientegypt.co.uk/time/explore/main-wri.html>

<http://greatscott.com/hiero/>

[http://www.egyptvoyager.com/hieroglyph\\_archives.htm](http://www.egyptvoyager.com/hieroglyph_archives.htm)

[http://www-history.mcs.st-andrews.ac.uk/HistTopics/Egyptian\\_numerals.html](http://www-history.mcs.st-andrews.ac.uk/HistTopics/Egyptian_numerals.html)

Map provided by the Oriental Institute of The University of Chicago:

<http://oi.uchicago.edu/OI/MUS/ED/TRC/EGYPT/egyphome.html>

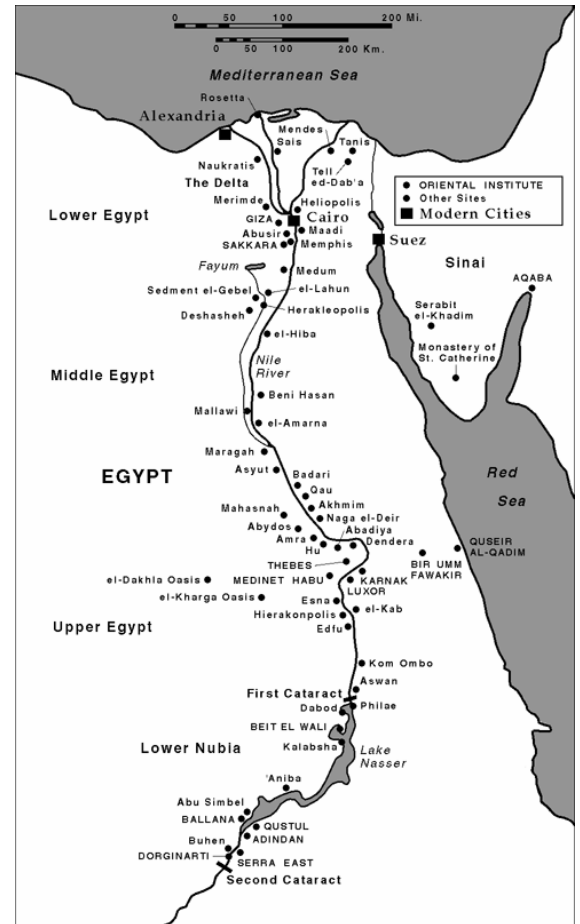


## Egyptian Math and Hieroglyphics

Long ago, a civilization arose called Egypt. Egypt was located along the Nile River where there was very fertile land.

Ancient Egyptians had a civilized life with farming, housing, and places to worship. They invented many useful items for everyday use.

Ancient Egyptians developed a writing system with pictures, called hieroglyphs. They used these pictures, at first, for special occasions to tell about what happened in their history. Later, they used hieroglyphs for everyday records of numbers and counting. They would use the walls of buildings, leather, and papyrus (a form of paper made from a plant) to write upon. They would write down when floods and droughts occurred, what foods were grown, and which foods were needed. They would write down when rulers changed, and when important events happened.



For centuries, historians have studied ancient Egyptian hieroglyphs. They have found this picture writing on the insides of pyramids, on 18-foot papyrus rolls, and on pieces of leather. They believe Egyptians have used hieroglyphs since before 3000 B.C.

Egyptians used pictures for letters and numbers. They developed their own mathematical symbols. A specific sign represented a number. The larger number was always placed in front of the smaller number and numbers were read from the top line down. Egyptian numbers were written from right to left.

The ancient Egyptian civilization lasted for approximately 2,000 years. During this time, hieroglyphs changed in some ways. After the Egyptians began using papyrus to write on, their writing changed from hieroglyphs pictures to Hieratic letters and numbers. This new way of writing was similar to hieroglyphs, but it allowed numbers to be written in a faster and more compact way. But it also required memorization of more symbols. Numbers could be formed using only a few *symbols* instead of *hash*

marks. The hieratic system of numerals permitted symbols to be in any location – there was no place value.

Ancient Egyptian mathematics and numerals proved to be highly advanced. The Rhind (or Ahmes) papyrus and the Moscow papyrus are two documents that show proof that ancient Egyptians did complicated math problems with these symbols like adding, subtracting, multiplying, and dividing. We know that Egyptians were advanced in math and computation because of the tremendous ancient pyramids and the sphinx in Egypt.

Like all cultures, the ancient Egyptians grew into a larger civilization that was influenced by different people and cultures around the area. Thus, their written and spoken language changed throughout the years. This timeline shows many of the different written languages that evolved throughout the years in this area of the world. It is important to note that one language did not replace the other immediately, but were used for different purposes, and made some letters, numbers and sounds easier to write. Eventually, scripts of the ancient past would be replaced by influences of the modern world. There is so much to learn from studying letters and numbers of the past!

|                            |                        |           |           |                       |                     |                      |                      |
|----------------------------|------------------------|-----------|-----------|-----------------------|---------------------|----------------------|----------------------|
| <b>Hieroglyphic Script</b> | <b>Hieratic Script</b> |           |           | <b>Demotic Script</b> | <b>Greek Script</b> | <b>Coptic Script</b> | <b>Arabic Script</b> |
| 3000 B.C.                  | 2600 B.C.              | 1600 B.C. | 1000 B.C. | 700 B.C.              | 300 B.C.            | 100 A.D.             | 600 A.D.             |



### EGYPTIAN HIEROGLYPHS



This single stroke picture is used to represent numbers 1-9.



This cattle hobble is used to Represent the number 10.



This coil of rope is used to represents the number 100.



This lotus flower represents the number 1000.



This finger represents the number 10,000.



This frog or tadpole represents the number 100,000.























This Egyptian man with arms out represents one million.

Here are more examples of Hieroglyphs and Hieratic Numbers:

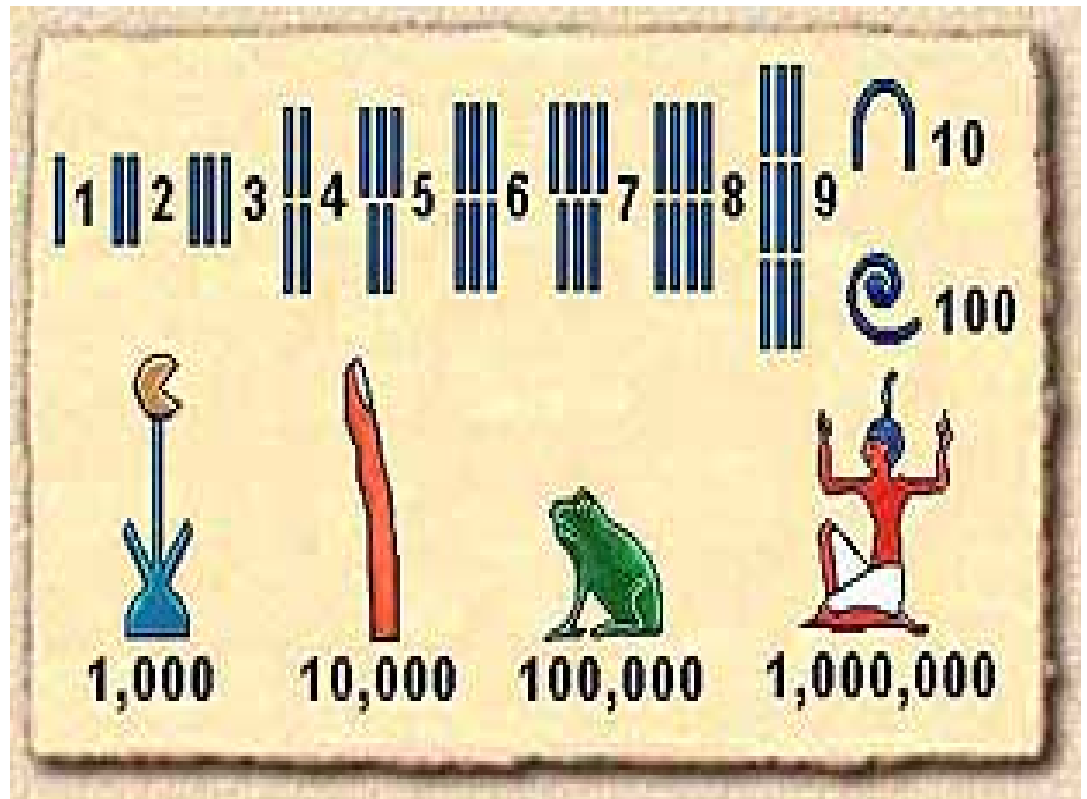
|   |  |    |  |     |  |      |  |
|---|--|----|--|-----|--|------|--|
| 1 |  | 10 |  | 100 |  | 1000 |  |
| 2 |  | 20 |  | 200 |  | 2000 |  |
| 3 |  | 30 |  | 300 |  | 3000 |  |
| 4 |  | 40 |  | 400 |  | 4000 |  |
| 5 |  | 50 |  | 500 |  | 5000 |  |
| 6 |  | 60 |  | 600 |  | 6000 |  |
| 7 |  | 70 |  | 700 |  | 7000 |  |
| 8 |  | 80 |  | 800 |  | 8000 |  |
| 9 |  | 90 |  | 900 |  | 9000 |  |

Hieratic numerals

# COMPARE AND CONTRAST

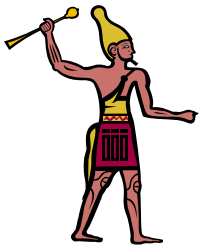
| Decimal Numerals | Egyptian Hieroglyphs  | Egyptian Hieratic   |
|------------------|---|---|
| 1                |    |    |
| 2                |    |    |
| 3                |    |    |
| 4                |    |    |
| 5                |    |    |
| 6                |  |  |
| 7                |  |  |
| 8                |  |  |
| 9                |  |  |
| 10               |  |  |

## Egyptian Hieroglyph Symbols



## Egyptian Hieratic Symbols

|                   |      |    |      |     |      |      |      |
|-------------------|------|----|------|-----|------|------|------|
| 1                 | 𐎁    | 10 | 𐎃    | 100 | 𐎄    | 1000 | 𐎅    |
| 2                 | 𐎁𐎁   | 20 | 𐎃𐎃   | 200 | 𐎄𐎄   | 2000 | 𐎅𐎅   |
| 3                 | 𐎁𐎁𐎁  | 30 | 𐎃𐎃𐎃  | 300 | 𐎄𐎄𐎄  | 3000 | 𐎅𐎅𐎅  |
| 4                 | 𐎁𐎁𐎁𐎁 | 40 | 𐎃𐎃𐎃𐎃 | 400 | 𐎄𐎄𐎄𐎄 | 4000 | 𐎅𐎅𐎅𐎅 |
| 5                 | 𐎁𐎃   | 50 | 𐎃𐎄   | 500 | 𐎄𐎅   | 5000 | 𐎅𐎆   |
| 6                 | 𐎁𐎄   | 60 | 𐎃𐎅   | 600 | 𐎄𐎆   | 6000 | 𐎅𐎇   |
| 7                 | 𐎁𐎅   | 70 | 𐎃𐎆   | 700 | 𐎄𐎇   | 7000 | 𐎅𐎈   |
| 8                 | 𐎁𐎆   | 80 | 𐎃𐎇   | 800 | 𐎄𐎈   | 8000 | 𐎅𐎉   |
| 9                 | 𐎁𐎇   | 90 | 𐎃𐎈   | 900 | 𐎄𐎉   | 9000 | 𐎅𐎊   |
| Hieratic numerals |      |    |      |     |      |      |      |



Name \_\_\_\_\_ Date \_\_\_\_\_

MATCH THESE HIEROGLYPHS WITH THE CORRECT NUMBERS:

32



233



1224



2240



11,221



210,021



1,000,000



COMPUTE THE FOLLOWING PROBLEMS AND ANSWER IN BOTH NUMBERS AND HIEROGLYPHS

- |                     | NUMBER | HIEROGLYPH |
|---------------------|--------|------------|
| 1. $200 \times 5 =$ | _____  |            |
| 2. $31 \times 5 =$  | _____  |            |
| 3. $15 + 56 + 3 =$  | _____  |            |

4. Charles had **|||** cats that loved to tease the **|** dog in the neighborhood. Miguel had **∩** parrots that loved to tease Charles' cats. Ana had **∩|||** fish that were afraid of the cats. All together, how many pets are there?

Answer:                      Number \_\_\_\_\_                      Hieroglyph:



# EGYPTIAN GROUP WORK

## Group Member Names and Assigned Roles

Chairperson \_\_\_\_\_

Recorder \_\_\_\_\_

Reporter \_\_\_\_\_

Artist \_\_\_\_\_

Your group will be assessed on the following:  
1 is the lowest and 5 is the highest score:



**Participation**

1.....2.....3.....4.....5



**Following Directions**

1.....2.....3.....4.....5



**Note Taking**

1.....2.....3.....4.....5



**Content Question/Answer**

1.....2.....3.....4.....5



**Vocabulary (Definitions, Flash Cards)**

1.....2.....3.....4.....5



**Review on Reading Passage and Vocabulary**

1.....2.....3.....4.....5



**Four Math Problems and Answers**

1.....2.....3.....4.....5

TOTAL POSSIBLE POINTS \_\_\_\_\_35\_\_\_\_\_

TOTAL POINTS \_\_\_\_\_