

HOMEWORK: 1 – 37 ODD**OBJECTIVES:**

- ❖ Compare and Contrast different numeration systems
- ❖ Convert numerals (in our number system) to other number systems
- ❖ Convert numerals in other number systems to our number system

- A. Symbols for numbers are called **numerals**. A number is a quantity.
- B. Some number systems use a **base**; this means a new symbol replaces a group of symbols. The Egyptian system is a base system that is **additive**. For example to write the number 203, the Egyptians use (2) 100 symbols and (3) 1 symbols. See page 103. The Egyptians later shorten their notation by creating more symbols. See page 104. Note: There is an “early” and “later” Egyptian systems. We will just use the “Early” system.
- C. At about the same time in history, the Babylonians developed a number system based on **place value**. In a place value system, the value of a numeral changes according to its position. This is similar to our number system. For example, consider the number 777. The right most 7 represents 7 ones, the middle 7 represents 7 tens, and the leftmost 7 represents 7 hundreds.
- D. Experimentation with the number systems.

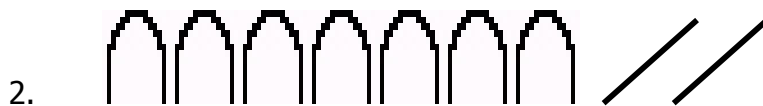
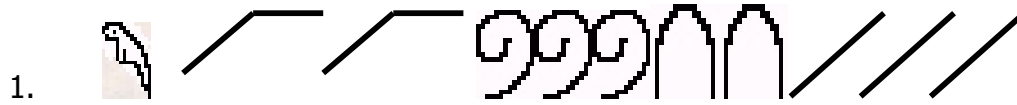
Egyptian Numeration System (table page 103)**Babylonian Numeration System (page 105)**

The Babylonians used place value (for numbers > 59), a base of 60, and two symbols. Since the Babylonians did not clearly mark zero place values, certain numerals were indistinguishable. They later began to use a symbol for zero in the middle of the numbers, but not at the end of a number.

Mayan Numeration System (page 105) We will only go up to place value 20.**Roman Numeration System (page 106)****Hindu-Arabic Numeration System (ours)**

- E. Modeling Place Value: Proportional vs. Nonproportional models
- E.g. Proportional base-ten blocks vs. different colored uniform size blocks or chips
- F. Counts and Counting Units: The count is the number of elements in the set. The counting unit is the element you are counting.
1. The number of letters in the alphabet
 2. The number of states in the USA.
- G. Measures and Measuring Units: Counting units must stay whole. Units of measure can be split into smaller parts. Some examples of units of measure are pound, hours, meters, and inches.
- H. Rounding Whole Numbers
- A number is always rounded to a specific place i.e. tens, hundreds, thousandths, etc.
 - To round a number to a specific place, locate the place then check the digit to the right. Round up if the digit is 5 or more, round down if the digit is 4 or less.
 - Rounding is not always done to the nearest. In buying supplies you have to round up.

Convert to Hindu-Arabic Numeration System (ours)



Convert to the Egyptian Numeration System

4. 1, 543

5. 20, 062

Convert to Hindu-Arabic Numeration System (ours)

6. <<< ∟ ∟

7. < ∟ << ∟ ∟ ∟

Convert to the Babylonian Numeration System

8. 1, 543

9. 20, 064

Convert to Hindu-Arabic Numeration System (ours)

10. $\frac{\cdot \cdot}{\cdot}$

11. $\frac{\cdot}{\cdot \cdot \cdot \cdot}$

12. $\ddot{\omega}$

Convert to the Mayan Numeration System

13. 14

14. 27

15. 60

Convert to Hindu-Arabic Numeration System (ours)

16. MMVI

17. MCMLXVII

Convert to Roman Numerals

18. 4

19. 24

20. 1998