

Math 1350: Math for Elementary School Teachers

Professor: Dr. Alm

4 Exams and Final Exam

→ 1st Exam: Thursday of 3rd week (9/13)

Every Tuesday HW will be assigned which is due the following Tuesday.

There will be a daily understanding Quiz.

Course Philosophy: "To know a fact in Mathematics means:

- a) to know that it is true
- b) to know why it is true
- c) to know why it matters
- d) to know context of the fact

Ch. 1.1: How to Count

0 1 2 3 4 5 6 7 8 9 (Hindu - Arabic Numerals)

Original 10 Symbols

00 01 02 03 04 05 06 07 08 09

10 11 12 13 14 15 16 17 18 19

20

↓ leading value specifies how many rows have been completed;

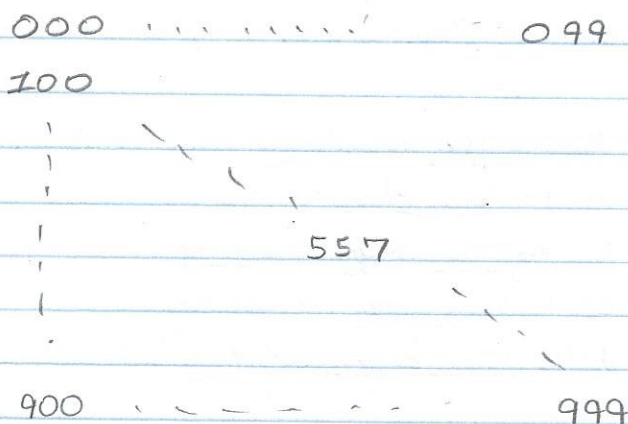
90 91 92 93 94 95 96 97 98 99

What would the symbol $\textcircled{48}$ mean in the number grid from 00 to 99?

→ The leading 4 indicates that 4 complete rows must be counted before arriving at the 8 column that holds the value $\textcircled{48}$.

What if we wanted to describe a number larger than 99?

Another symbol place holder must be introduced.



In the number 557, the right-most digit is called the ones digit, the next digit to the left is the tens digit, and the next is hundreds.

5	5	7
↑	↑	↑
Hundreds	Tens	Ones

Alien race with only 1 hand with 3 fingers,

Suppose they have a counting system comprised of symbols: 0 1 2

How many numbers come before 21?

- Answer: 7

3	00	01	02
+3	10	11	12
+1	20	(21)	
7			

What if the Aliens evolved to have 2 hands? (So, 6 fingers total.)

How many numbers come before 32?

- Answer: 20

6	00	01	02	03	04	05
+6	10					
+6	⋮					
+6	30					
+2						(32)
20						

The whole numbers are all the numbers you get by counting, starting at zero.

Step - going to the next number.
0 → 1 → 2 → 3 → 4 → 5 → ...

Marker Example:

2 black and 3 blue

How can we add these markers without using the word add or symbol '+'?

- Answer: Use the counting steps!

black markers blue markers
0 → 1 → 2 → 3 → 4 → (5) total!

"2 + 3" means the number you arrive at when you start at 2 and count 3 more steps.

In general, if m and n are any two whole numbers, we define $m+n$ to be the number you arrive at by starting at m and counting n steps.

The equal sign:

When we write $4 + 5 = 9$, we mean "4+5" and "9" are the same number.

$$1 + 2 + 3 = ??$$

$1 + 2 = 3 + 3 = (6) \rightarrow$ Correct answer but false mathematical statement!

$$1 + 2 \neq 3 + 3$$

$$3 \neq 6$$

Assigned HW: Ch. 1 - 1, 3, 4, 9, 10, 13

Due Sept. 4th!

Next Tuesday

★ Explain the reasoning behind the answer!! ★