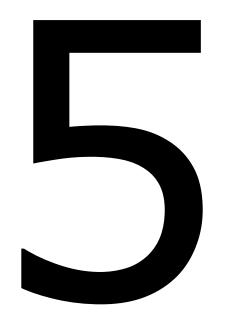


Foundational Numeracy





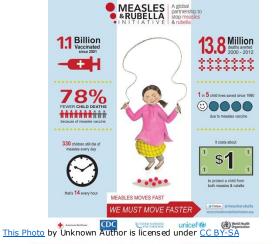
The Number System: Place Value Lesson 1



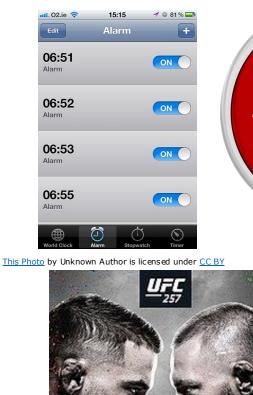




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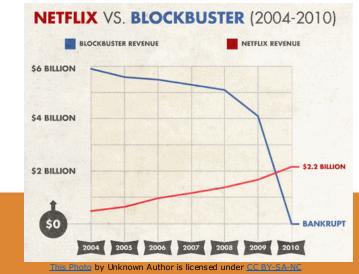


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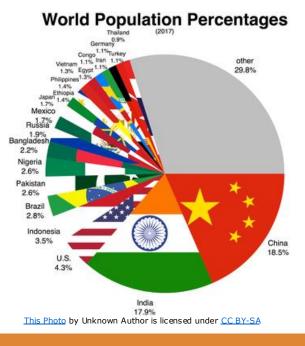
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What are numbers?

- A number is a mathematical object used to:
 - <u>Count</u>
 - <u>Measure</u>
 - <u>Label</u>
- Can be represented by symbols called *digits*
 - Ex) The digit "5" is a symbol that represents the number five)
- Most commonly used numbering system: **Decimal (Base10) System**
 - Digits being used: 0, 1, 2, 3, 4, 5, 6, 7, 8, 9
- Numbers help humans make better sense of the world
 - Why?
 - How?
 - Through numeracy: the ability, confidence, and willingness to engage with "math" in order to make informed decisions in all aspects of daily-life



COUNT: Apple vs Samsung (2020)



Apple Inc.

Headquarters: Cupertino, California

- 206,000,000 units sold worldwide in 2020
 - 16% of ALL phones sold in 2020 were Apple iPhones



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The Samsung Group

Headquarters: Seoul, South Korea

- 267,000,000 units sold worldwide in 2020
 - **21%** of ALL phones sold in 2020 were Samsung phones



MEASURE: And Chill?



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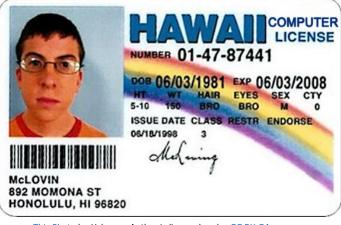
- Netflix added nearly 26,000,000 paid subscribers in early 2020
- Disney+ added nearly 25,000,000 paid subscribers in early 2020

Class Discussion

- 1. Why was Netflix and Disney+ able to attract so many new customers in 2020?
 - What can this information be used for?



LABEL: Why do we label with numbers?



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Your order number is 165	
Welcome to McDonald's Bourke&Russell St Restaurant Number 1865 Email: 1865@au.stores.mcd.com ABN: 16 931 660 461 TAX INVOICE	Seried was Galled was
ORD #65 -REG #1- 25/12/2017 14:14:26 QTY ITEM TOTA 1 Soft Serve Cone 0.0 1 Hot Apple Pie 2.0 1 Sml Coffee Frap 3.000	50 30 Gentled freeh
Take-Out Total (incl GST) 6	85 Twee backs .85 King proven .85 Councey up to receive and at Councey up to receive and at Councey up to receive and at receive and a
TOTAL INCLUDES GST OF	1.62 Aly own Palency
This Photo by Unknown Author is licensed under C	<u>C BY-NC</u> Feriewed (Gournet T)
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SUMBAY MONDAY TUESDAY MODELEN MODELEN (4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 21 23 24 25 26 27 28 29 30 31

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DIN	INER
	ENU - maler from 6.00pm
Bread Warm norselough roll with olive oil, our oalt and Seville reasonse \$4.00	Main Courses Routed humers, boby opmach, marmared for file party needed with red cogneron success
Oysters Freshty shacked Feet Scychens synars: red manned week eccludes and warber serges accessing on the wide \$3.50 each Constances (1) Red wish my own mechadronic boson and hispatrick same	Chier ringger and son sub round port catler, I shoulder and cobbage rails and cranam quind appler \$36,00 Onion rounced lamb law, none milited applies p and drives appropriate coholor and anchery cannot \$36,00
53.50 each (minimum 2) SOUP m and ayard hapen mith a splath of broady and a have of common 311.00	Corn fiel chickers with sage and ownes angling massed pumplen, however and lefter \$3 Sourced filler of scient rever with resulted an support in chire error with corns and hely claim chouse \$35,00
ly som county syle socied park and iptu pos soop \$11.00 Onf's cognorian socy of the day \$11.00	Confit duck lay on consuminat with of and and tatter, toward body borts, hazalance, watereen # and tomardad jus \$16,00
Startets Bid finh webne with Heinermone grown, sould hely quark, mentional frits, white achieves and lenses 320.00	Filler of Human Valley bod wrapped in ap own water kigfler and body possible and red wine machenen par 339.00 Desserts
mergener annage, crosse whopped Parts much, mastard fours and some regioner \$20,00	True of perine builder, pearant, where chevala him-yearsh with a fairy flow wand \$17.
re haled goats chime weiffie, spice possibed baby figs, rochet and gorgounda crosss same \$20.00	Soft central Source chocolars pudding, bench logis and intranel ice crosses \$14,00
g prown and reef fish boxernl showers, snawend and me solut, oweet say and Sachnam chop ohop \$20,00	Banness' sortingue tarit, burnermosch sonor, pona and toffer spring \$14.00 Gerentar and shrep's milli yoghust parasa
ety style park and wild madroom texture wropped in my own bacon with tomate and shall jum and organic cubacts \$20,00 w Polyty routed dack salad, citip etce needles, Asian	ponograma granita gul arange compose Tromitos fede with vanille ceram «offic taille detache \$14.00

Local and Australian chanse with growt plan jury 3 nended By SMH Good Food Guide 2009 & 2008

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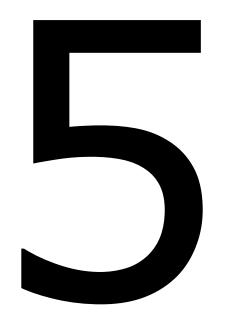
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An ISBN is an International Standard Book Number



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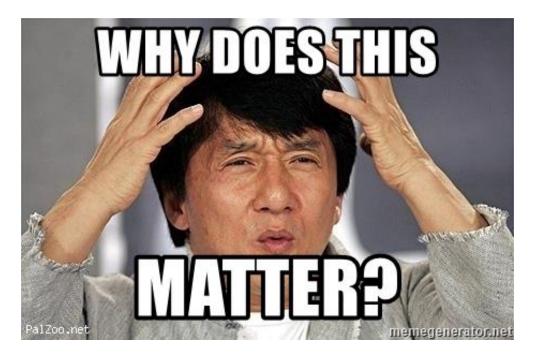








Class Discussion:



• Do order & placement matter? Why or why not?





Do the 8s above represent the same *value*?



PLACE VALUE

- The *position* of each digit in an entire number determines its **place value**
- Place value gives more meaning and context to the digits within the #

Periods:	Billions			Millions			Thousands			Ones		
PLACE VALUE:	Hundred-billions	Ten-billions	Billions	Hundred-millions	Ten-millions	Millions	Hundred-thousands	Ten-Thousands	Thousands	Hundreds	Tens	Ones
Example:												



Why is Place Value important?



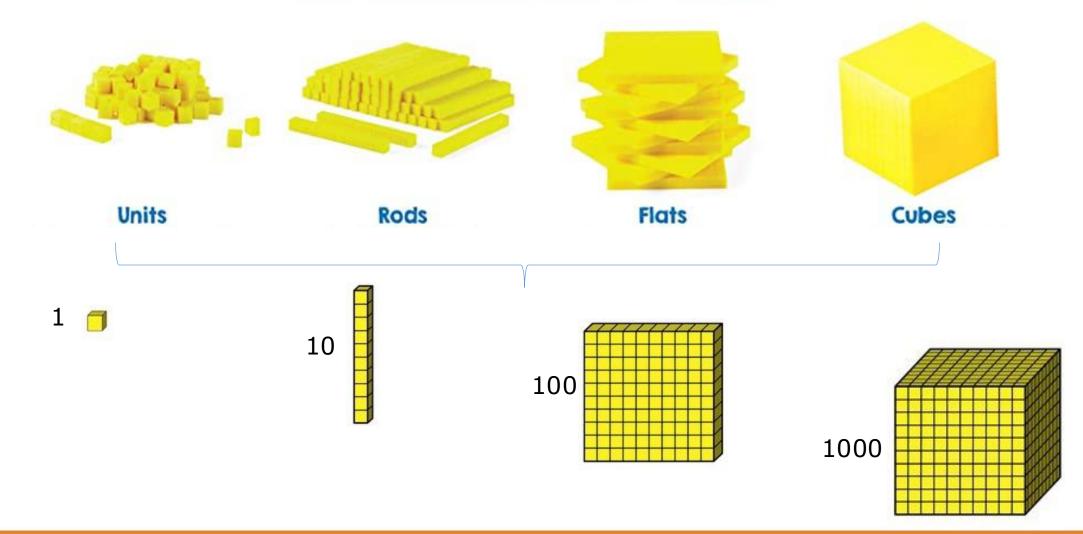
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Place Value allows us to:

- Determine the value of any digit within a number
- Convert Standard Form numbers to
 - **Picture Form** (Base-10 Blocks)
 - Expanded Form
 - Word Form
- Successfully perform operations (+, -, ×, ÷) on these numbers
- Understand the reason why 500 > 50 > 5



PLACE VALUE: Picture Form & Expanded Form LEARNING ABOUT BASE TEN BLOCKS





Place Value Builds Number Sense

243

Standard Form

- Standard Form is the actual number
 - 243

Word Form

- How you would recite/say the word
- DO NOT use "and"

"Two hundred forty three"

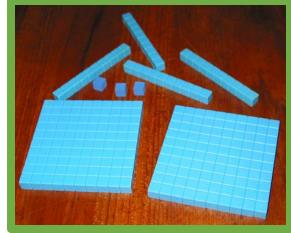
Expanded Form

- Show the value of <u>each</u> digit within the number
 - In this example, we have 3 digits.
 Therefore, we will have 3 values in expanded form

243

Picture Form

 Most commonly shown through math `manipulatives'

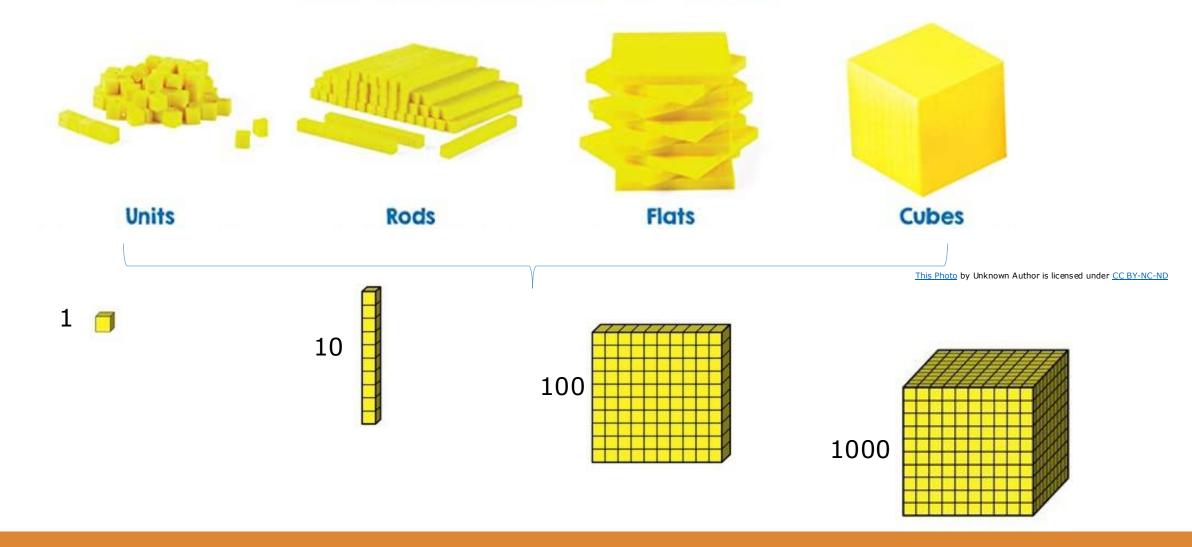


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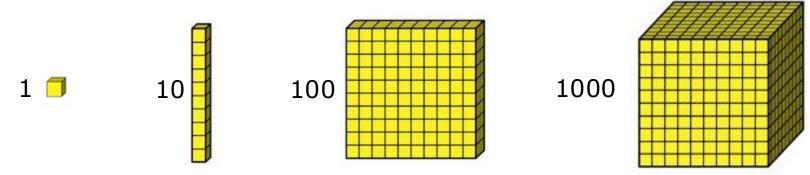
200 + 40 + 3 = 243



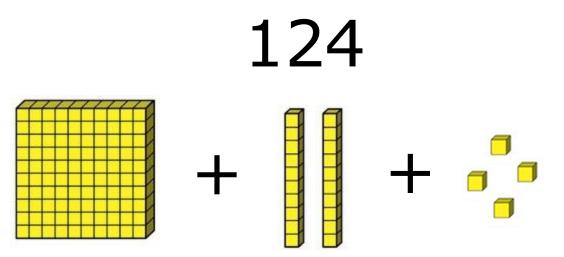
PLACE VALUE: Picture Form & Expanded Form LEARNING ABOUT BASE TEN BLOCKS





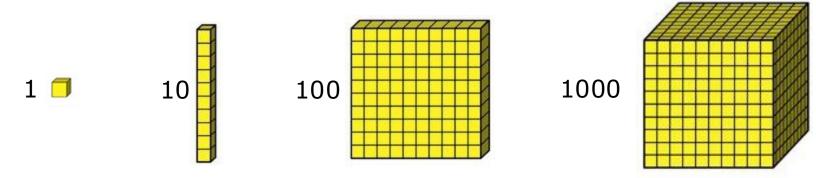


Use Base-10 blocks to represent the following number:



Expanded Form: 100 + 20 + 4 = 124



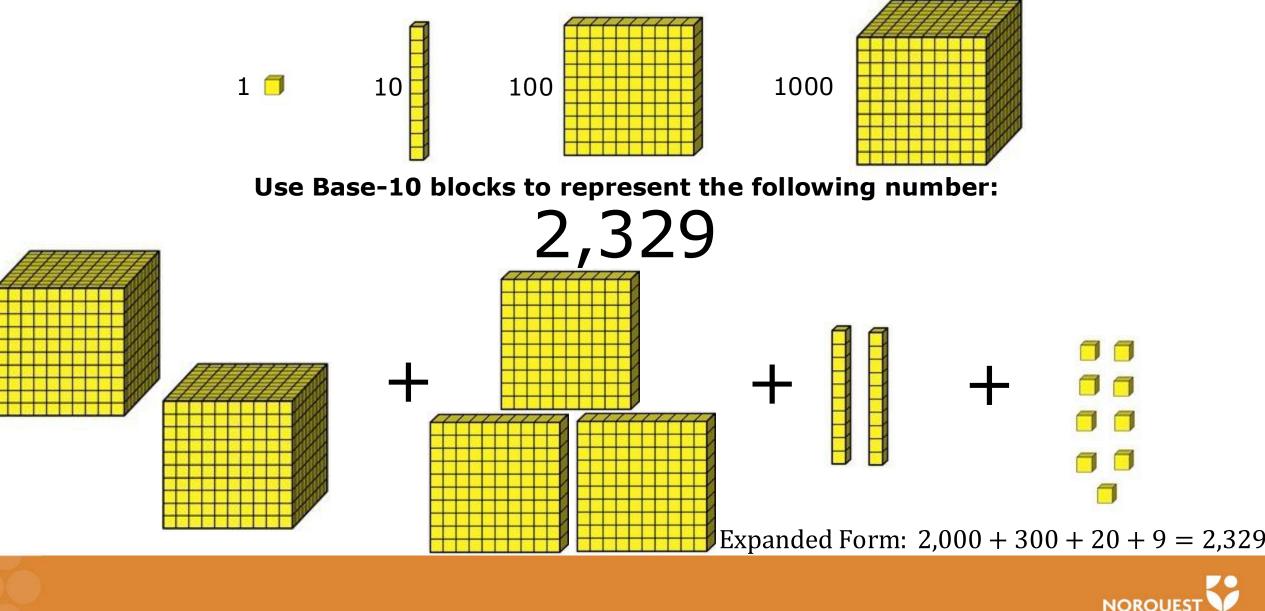


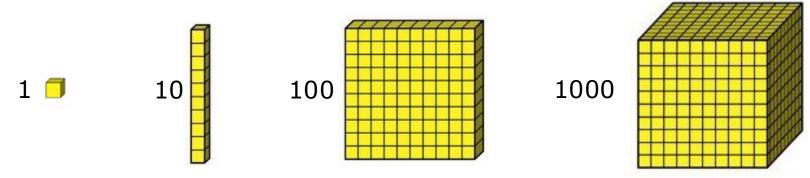
Use Base-10 blocks to represent the following number:

97

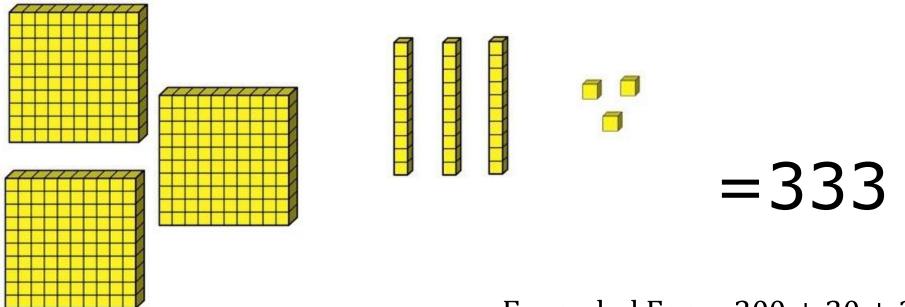
Expanded Form: 90 + 7 = 97





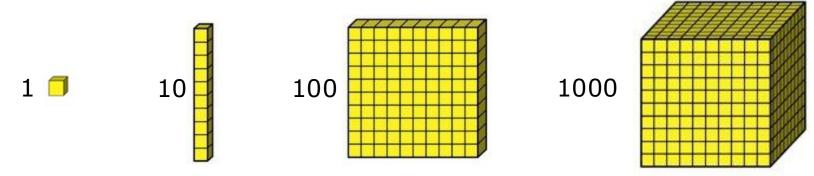


What number do the following Base-10 blocks represent?

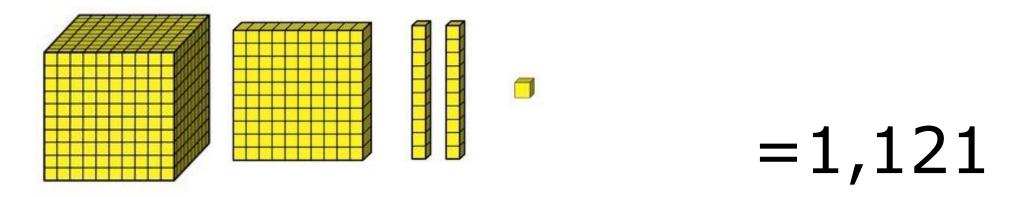


Expanded Form: 300 + 30 + 3 = 333



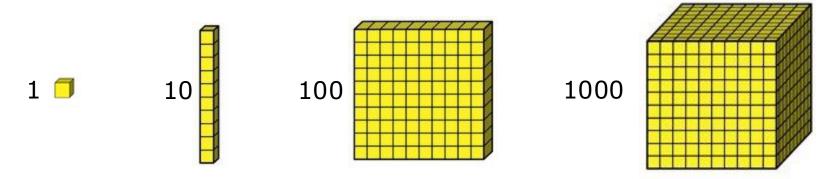


What number do the following Base-10 blocks represent?

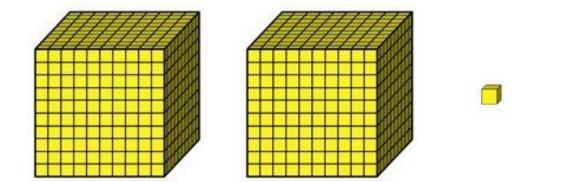


Expanded Form: 1000 + 100 + 20 + 1 = 1,121





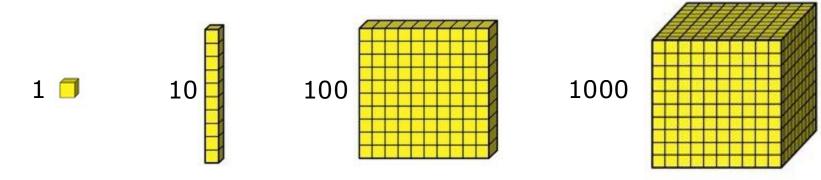
What number do the following Base-10 blocks represent?



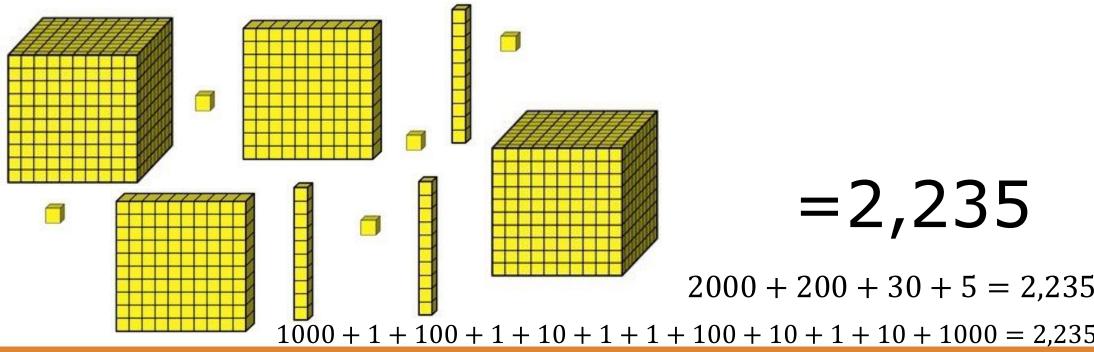


Expanded Form: 2,000 + 1 = 2001Why are there 0's ?



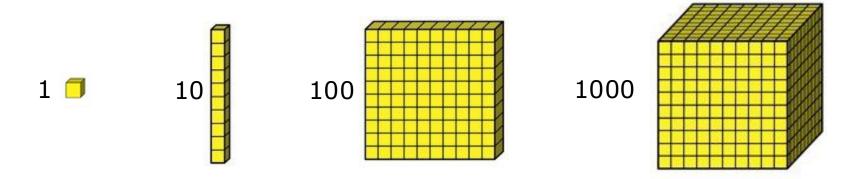


What number do the following Base-10 blocks represent?





PLACE VALUE: Picture Form



What would come next?

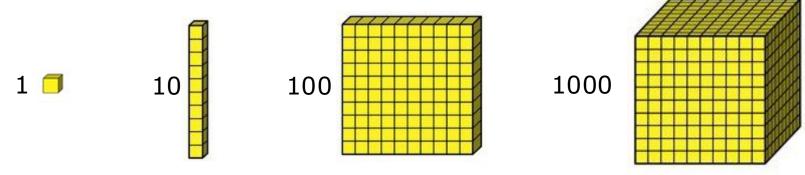
...And after that?

10,000



NORO

PLACE VALUE: Picture Form

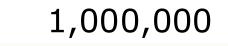


WHAT IS THE PATTERN?

- Each 'set' is 10x larger than the previous set
 - Or simply, you attach a 0 to the <u>next</u> number/set
 - The digits 0-9 are used
 - <u>Exceeding 9 in any position initiates</u> <u>counting in the next highest position</u>

10,000

100,000



10,000,000



Periods:	Billions			N	Millions			Thousands			Ones		
PLACE VALUE:	Hundred-billions	Ten-billions	Billions	Hundred-millions	Ten-millions	Millions	Hundred-thousands	Ten-Thousands	Thousands	Hundreds	Tens	Ones	
Example:													



Periods:	Billions			Millions			Thousands			Ones			
PLACE VALUE:	Hundred-billions	Ten-billions	Billions	Hundred-millions	Ten-millions	Millions	Hundred-thousands	Ten-Thousands	Thousands	Hundreds	Tens	Ones	Start at the most right
Example:													

- When writing numbers in Standard Form, we typically use commas to separate the number into groups of (3) digits
 - Ex) 1000000 vs 1,000,000

Each group of 3 forms a **period**

- Ones
- Thousands
- Millions
- Billions

The period you're in dictates how you will write/say it

1,245

Periods:	Billions			Millions			Thousands			Ones		
PLACE VALUE:	Hundred-billions	Ten-billions	Billions	Hundred-millions	Ten-millions	Millions	Hundred-thousands	Ten-Thousands	Thousands	Hundreds	Tens	Ones
Example:									1	2	4	5

"one **thousand**, two hundred forty five"



21,245

Periods:	Billions			N	fillion	IS	Thousands			Ones		
PLACE VALUE:	Hundred-billions	Ten-billions	Billions	Hundred-millions	Ten-millions	Millions	Hundred-thousands	Ten-Thousands	Thousands	Hundreds	Tens	Ones
Example:								2	1	2	4	5

"Twenty one **thousand**, two hundred forty five"



421,245

Periods:	Billions			N	lillion	IS	Th	ousar	ıds	Ones		
PLACE VALUE:	Hundred-billions	Ten-billions	Billions	Hundred-millions	Ten-millions	Millions	Hundred-thousands	Ten-Thousands	Thousands	Hundreds	Tens	Ones
Example:							4	2	1	2	4	5

"Four hundred twenty one **thousand**, two hundred forty five"



23,421,245

Periods:	Billions			Millions			Thousands			Ones		
PLACE VALUE:	Hundred-billions	Ten-billions	Billions	Hundred-millions	Ten-millions	Millions	Hundred-thousands	Ten-Thousands	Thousands	Hundreds	Tens	Ones
Example:					2	3	4	2	1	2	4	5

"Twenty three **million**, four hundred twenty one **thousand**, two hundred forty five"



3,823,421,245

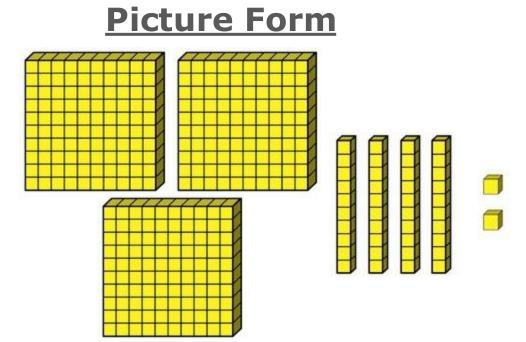
Periods:	Billions			Millions			Th	ousar	nds	Ones		
PLACE VALUE:	Hundred-billions	Ten-billions	Billions	Hundred-millions	Ten-millions	Millions	Hundred-thousands	Ten-Thousands	Thousands	Hundreds	Tens	Ones
Example:			3	8	2	3	4	2	1	2	4	5

"Three **billion**, eight hundred twenty three **million**, four hundred twenty one **thousand**, two hundred forty five"



342

Expanded Form



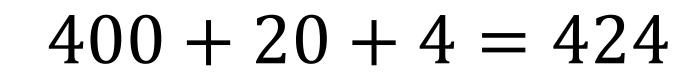
300 + 40 + 2 = 342

"Three hundred forty two"



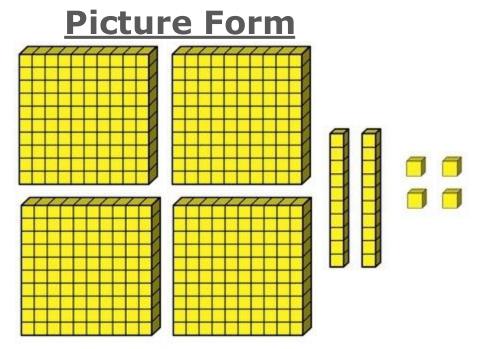
424

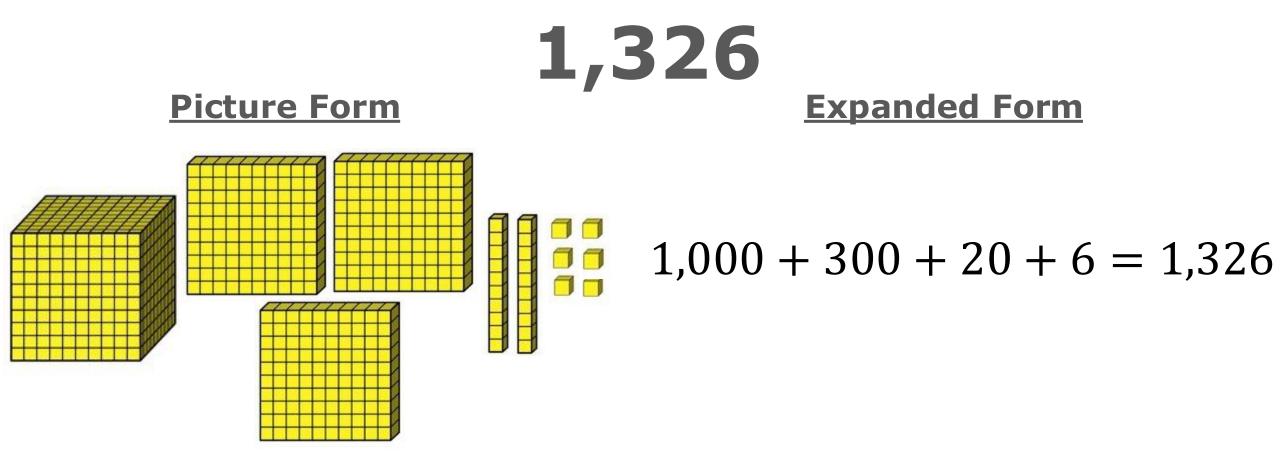
Expanded Form











Word Form

"One thousand, three hundred twenty six"



12,123 <u>Expanded Form</u>

This could take awhile...

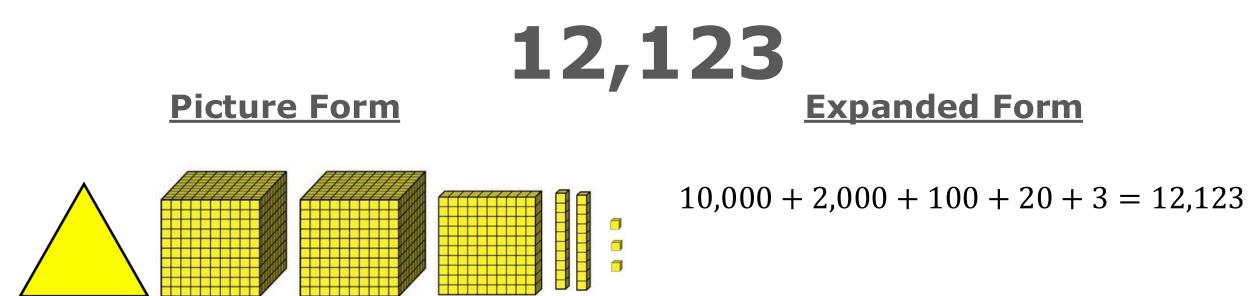
Picture Form

10,000 + 2,000 + 100 + 20 + 3 = 12,123

Word Form

"Twelve thousand, one hundred twenty three"





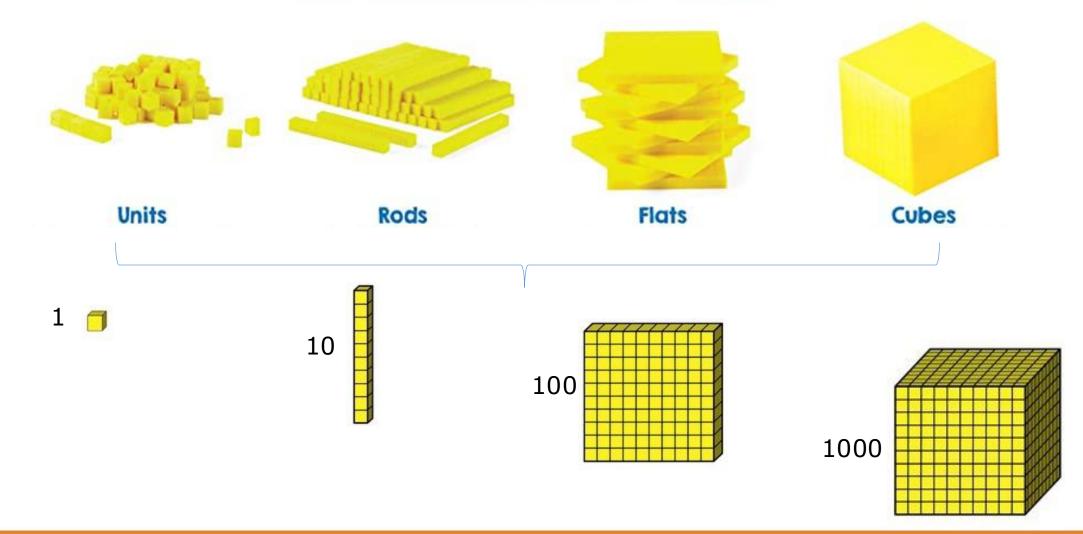
Word Form

WHY?

"Twelve thousand, one hundred twenty three"



PLACE VALUE: Picture Form & Expanded Form LEARNING ABOUT BASE TEN BLOCKS

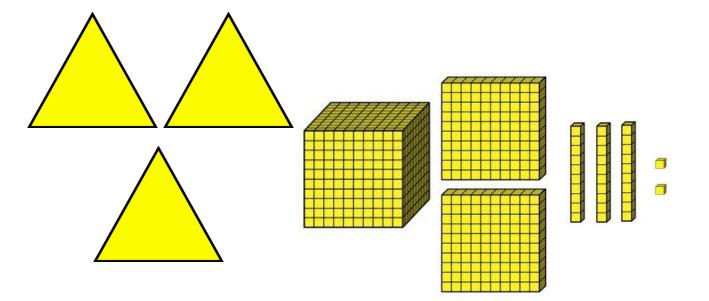




31,232

Picture Form

Expanded Form



30,000 + 1,000 + 200 + 30 + 2 = 31,232

Word Form

"Thirty one thousand, two hundred thirty two"



The People of Foundational Literacy: Robert Kyle Mendoza III



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Robert is a data analyst who works for Google at the company's headquarters (The Googleplex) in Santa Clara County, California.

As a data analyst, he is responsible for the retrieval, gathering, and organization of data in order to reach meaningful conclusions and inform decision making.



The People of Foundational Literacy: Robert Kyle Mendoza III

Robert is currently compiling statistics and data into a report that he needs to present to a team of software engineers. These engineers are looking to improve the functionality of a recently developed app, and **Robert's** research will help aid this effort.

Assignment #1



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