

Base Ten Place Value System (Arabic Number) VS Base Ten System (Numeral)																								
Case of English																								
BTPVS Arabic	1	2	3	10	11	...	14	...	19	20	21	...	30	...	99	100	101	...	110	111	...	114	121	
En.	O	T	T	T	E	...	F	...	N	T	T	...	T	...	N	H	H	...	H	H	...	H	H	...
	n	w	w	w	t	...	e	...	i	w	w	...	h	...	i	u	u	...	u	u	...	o	o	...
	e	h	e	e	e	...	e	...	e	e	e	...	r	...	n	n	n	...	n	n	...	n	n	...
						y	...	e	d	d	...	d	d	...	d	d	...
					
					
					
					
					
					
					
					
					
					
					
					
					
					
					
					
					
					
					
					
					
					
					
	</																							

Base Ten Place Value System (Arabic Number) VS Base Ten System (Numeral) Case of Japanese																								
BTPVS Arabic	1	2	3	---	9	10	11	12	---	20	21	---	30	---	99	100	101	---	110	111	---	121	---	
I c h i	N a n		S a n		K y u	J y u	J y u	J y u		N i- j y u	N i- j y u		S a- n- j y u		K y u- U	H y a k U	H y a k u		H y a k u	H y a k u		N i- j y u		H y a k u
						I c h i		N i		I c h i				K y u			I c h i		J y u		I c h i		I c h i	
						10	10 -1			2-10 1	2-10 1		3-10 1		5-10 9	100	100 1		100 10	100 10 1		100 2-10 1		100 2-10 1

What is the number?

We usually teach:

- Existence and necessity
Cardinal (Set) Number
- Order/Larger or Smaller/
Greater or Less

How do we teach the number more than ten.

- Operations


Review:

How would you teach?
Make sense?
Acquisition of proficiency?

For what?
Number sense?

In Japan:
Make sense (understand meaning)
Think about how to calculate/operate/find the easier way to answer
Acquisition of proficiency

Try to teach how to extend the number




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When do you teach count by two and five?

Why we need the line of number?

How it set the task sequence?


1 Let's count.



How many are there?

_____ strawberries

2



How many are there?


_____ chocolates

4 Write the answers in the box.



10 and 2 makes _____



10 and 8 makes _____

10 and 5 makes 13.








5 Which number is larger?





1)  or 

2)  or 

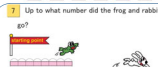
6 Where should you put these cards?



1)    

2)    

7 Up to what number did the frog and rabbit go?




0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20

Numbers Larger than 20


1 How many acorns did they pick up?

Tasha






The number of acorns Tasha picked up is _____

Helen




The number of acorns Helen picked up is _____

2 Put the acorns in ascending order.


1)  boxes with 10 acorns,  boxes with 10 acorns,  more acorns.

Look for Numbers


Let's look for pairs around us.




socks




gloves




pens/pencils



shoes in a hallway



gas burners




glasses


For what?

Let's look for groups of 3 and 4.

Group of 3




wheels of a tricycle




a traffic light


Group of 4



legs of a chair




legs of a dog



wheels of a car

Let's count things in school.

☐ First grade teachers



There are steps on the school playground.

References

Masami Ioda, Raimundo Olivos edited (2020). *Teaching Multiplication with Lesson Study: Japanese and Ibero-American Theories for international Mathematics Education*. Cham, Switzerland: Springer. (Open Access)

Masami Ioda, Aki Murata (2020). *Study with your friends: Mathematics for Elementary School (12 vols.)*. Tokyo, Japan: Gakko Toshio.

Masami Ioda, Aki Murata, Aida Yap (2015). *Study with your friends: Mathematics for Elementary School (12 vols.)*. Tokyo, Japan: Gakko Toshio.

Masami Ioda, David Tall (2019). *Mathematics for Junior High School (3 vols.)*. Tokyo, Japan: Gakko Toshio.

Dominador Dizon-Benago, Nur Jahan Ahmad, Masami Ioda edited (2017). *SEAMEO basic education standards (SEA-BES): Common core regional learning standards (CRLS) in mathematics and science*. Penang, Malaysia: SEAMEO-QITEP in Mathematics. <https://www.seameo-qitep.org/my/sub-see-bes/images/docs/SEA-BES4L-ACB-curriculum-2017.pdf>

Maitree Inprasitha, Masami Ioda, Patsy Wang Iverson, Ban Har Yap (2015). *Lesson Study: Challenges in Mathematics Education*. New Jersey, USA: World Scientific

Masami Ioda, Shigeo Katagiri (2012). *Mathematical Thinking: How to develop it in the classroom*. New Jersey, USA: World Scientific

TEH Kim Hong, ISODA Masami, GAN Teck Hook (in printing). *Mathematics Challenges for Classroom Practices at the Lower Primary Level*. Penang, Malaysia: SEAMEO-RECSAM

ISODA Masami, TEH Kim Hong, GAN Teck Hook (in printing). *Mathematics Challenges for Classroom Practices at the Upper Primary Level*. Penang, Malaysia: SEAMEO-RECSAM

GAN Teck Hook, ISODA Masami, TEH Kim Hong (20aug21). *Mathematics Challenges for Classroom Practices at the Lower Secondary Level*. Penang, Malaysia: SEAMEO-RECSAM

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