



KENTUCKY CENTER
FOR MATHEMATICS

Focus on Place Value with Julie Adams

Place Value to 10: A Landscape of Learning

Welcome!



Your host

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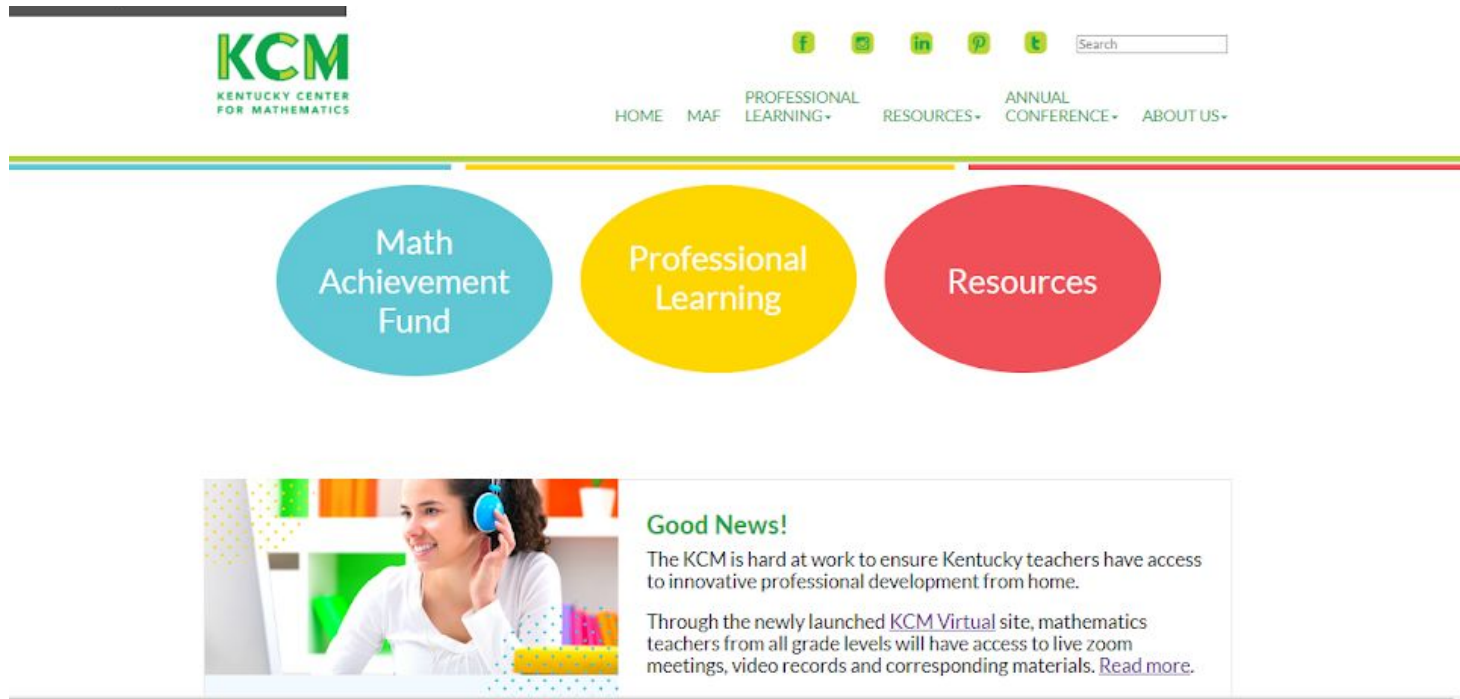
About me!

2 TRUTHS
AND 1 LIE

- I was in a TV series.
- I got a perfect score on the math portion of the ACT.
- I have dined and dashed!



KCM Website



<https://www.kentuckymathematics.org/>

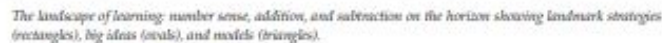
Agenda

- Place Value Standards
- Landscape of Learning
- Unitizing
- Assessing Place Value Understanding
- Addressing Misconceptions
- Activities to Support Place Value Understanding



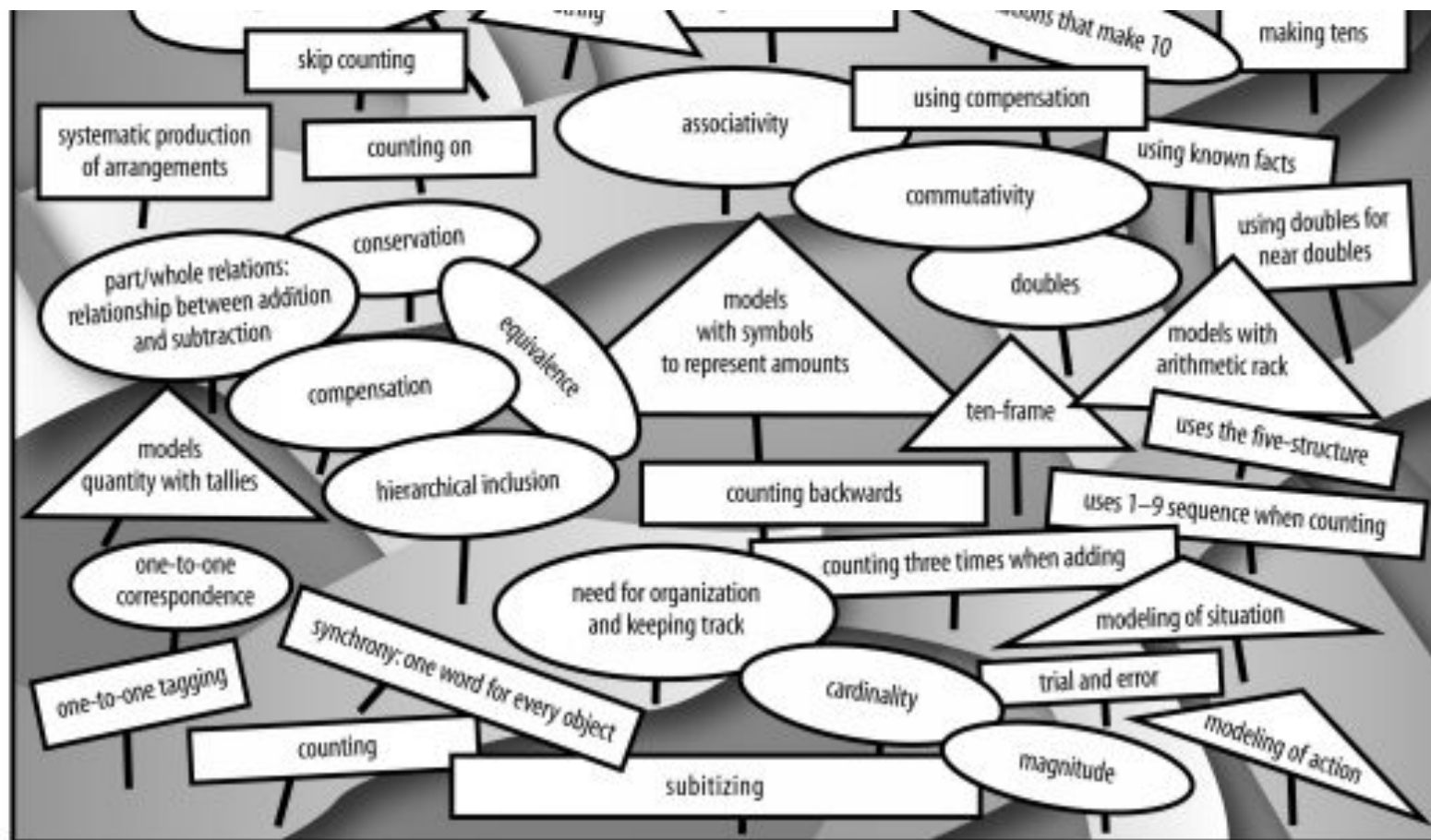
Standards

- KY.K.NBT.1 Compose and decompose numbers from 11 to 19 using quantities (numbers with units) of ten ones and some further ones. Understand that these numbers are composed of ten ones and one, two, three, four, five, six, seven, eight, or nine ones.
- KY.1.NBT.2 Understand the two-digits of a two-digit number represent amounts of tens and ones. Understand the following as special cases: a. 10 can be thought of as a bundle of ten ones — called a “ten.” b. The numbers from 11 to 19 are composed of a ten and one, two, three, four, five, six, seven, eight or nine ones. c. The numbers 10, 20, 30, 40, 50, 60, 70, 80, 90 refer to one, two, three, four, five, six, seven, eight or nine tens (and 0 ones).
- KY.1.NBT.3 Compare two two-digit numbers based on meanings of the tens and ones digits, recording the results of comparisons with the symbols $>$, $=$, and $<$.
- KY.2.NBT.1 Understand that the three digits of a three-digit number represent amounts of hundreds, tens and ones. Understand the following as special cases: a. 100 can be thought of as a bundle of ten tens — called a “hundred.” b. The numbers 100, 200, 300, 400, 500, 600, 700, 800, 900 refer to one, two, three, four, five, six, seven, eight, or nine hundreds (and 0 tens and 0 ones).
- KY.2.NBT.5 Fluently add and subtract within 100 using strategies based on place value, properties of operations and/or the relationship between addition and subtraction.
- KY.2.NBT.6 Add up to four two-digit numbers using strategies based on place value and properties of operations.
- KY.2.NBT.8 Mentally add 10 or 100 to a given number 100–900 and mentally subtract 10 or 100 from a given number 100–900.
- KY.2.NBT.9 Explain why addition and subtraction strategies work, using place value and the properties of operations.



Catherine Twomey Fosnot, Contexts for Learning Mathematics

Landscape of Learning



NUMBER SENSE, ADDITION, and SUBTRACTION



Student Continuum of Numeracy Development: Addition and Subtraction

PHASES

STRATEGIES

KEY IDEAS

Direct Modelling & Counting

Counting More Efficiently & Tracking

Working with the Numbers

Proficiency

Subitizing

Counting three times

Counting on/
counting back

Skip-counting

Counting on from
the larger number

Using trial and error

Using the five- or
ten-anchor

Using near
doubles

Using a known fact

Using up/down
over 10

Taking jumps of 10
forward or backward

Getting to a decade number
and taking jumps of 10
forward or backward

Taking from 10

Splitting

Using overshoot
and return

Using constant
difference

Using automatic
retrieval

Using strategic,
efficient
methods

Using alternative or
standard algorithm

One-to-one correspondence

Cardinality

Part-whole relationship (A & S)

Hierarchical inclusion

Commutative and associative properties (A & S)

Equivalence (A & S)

Unitizing (A & S)

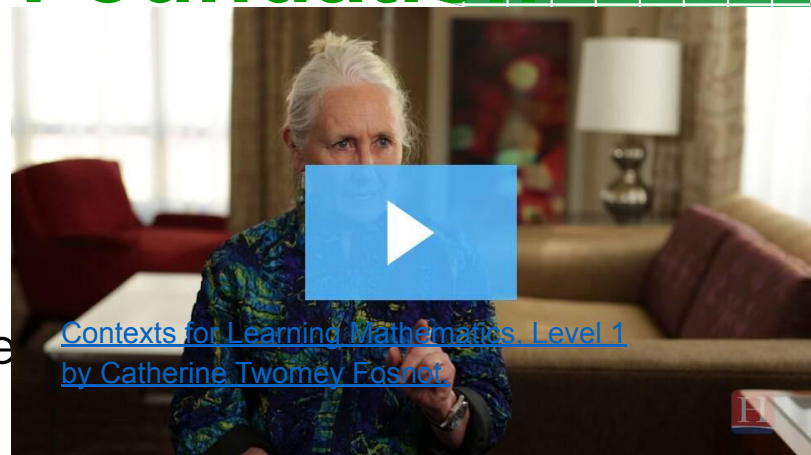
Place value (A & S)

What's missing?



Big Ideas that Support Foundation of Place Value

- Cardinality
- One-to-One Correspondence
- Hierarchical Inclusion
- Compensation and Equivalence
- Unitizing
- Commutativity & Associativity
- The relationship between Addition & Subtraction



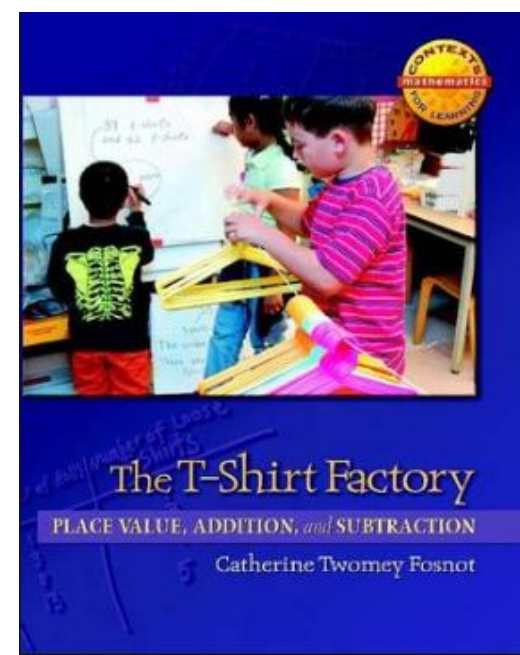
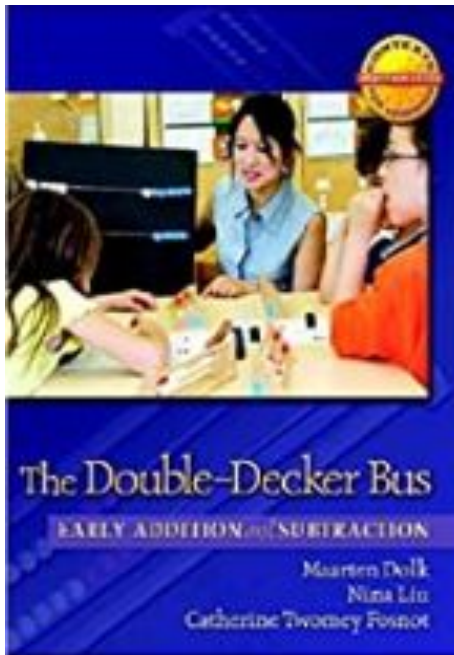
Strategies that Support Foundation of Place Value

- Using Synchrony & One-to One Tagging
- Counting Three Times
- Counting On & Counting Back
- Using the Five & Ten Structures
- Using Trial & Error Vs. Systematic Exploration
- Using Double & Near Doubles
- Using Compensation
- Making 10

[Contexts for Learning Mathematics, Level 1](#)
[by Catherine Twomey Fosnot.](#)



Resources to Support Conceptual Understanding



Unitizing

Bunk Bed Problem



Materials: counters, numeral cards 5-12, pencils, blank paper

1. Turn over a numeral card and use it to complete the following number story:









___ children sat on a bunk bed. Some sat on the top bunk and some sat on the bottom bunk. How many sat on the top bunk? How many sat on the bottom bunk?

2. Record as many different solutions to the problem as you can using pictures, numbers or words.

The Bunk Bed Problem

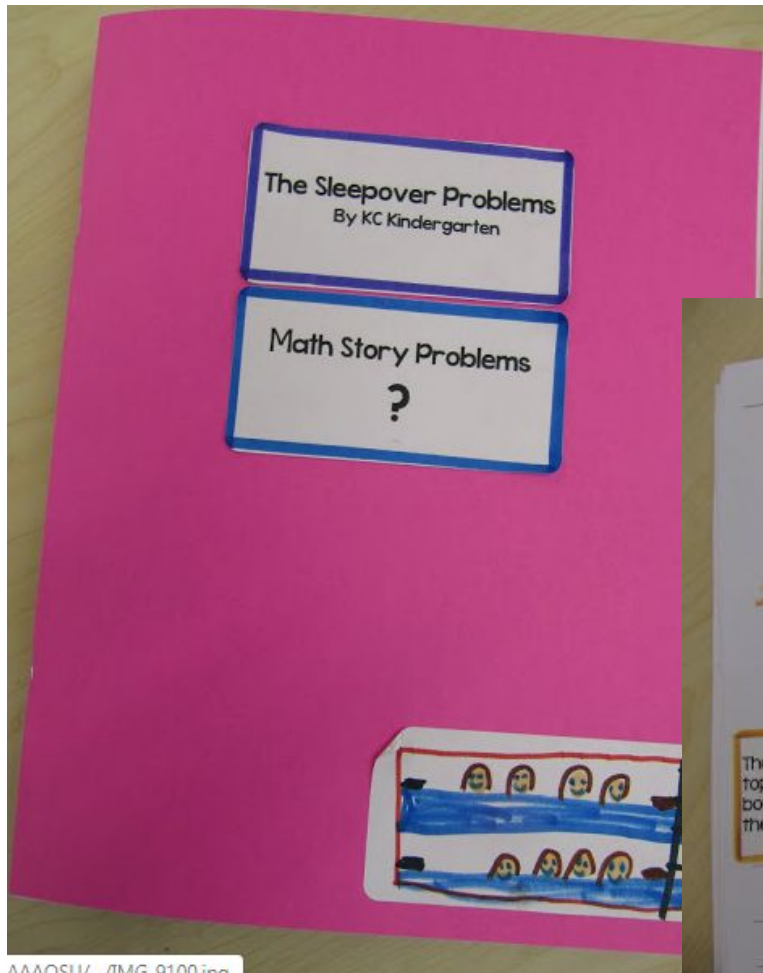
How many ways can the kids trick Aunt Kat

$8+0=4+4=5+3=6+2=7+1$

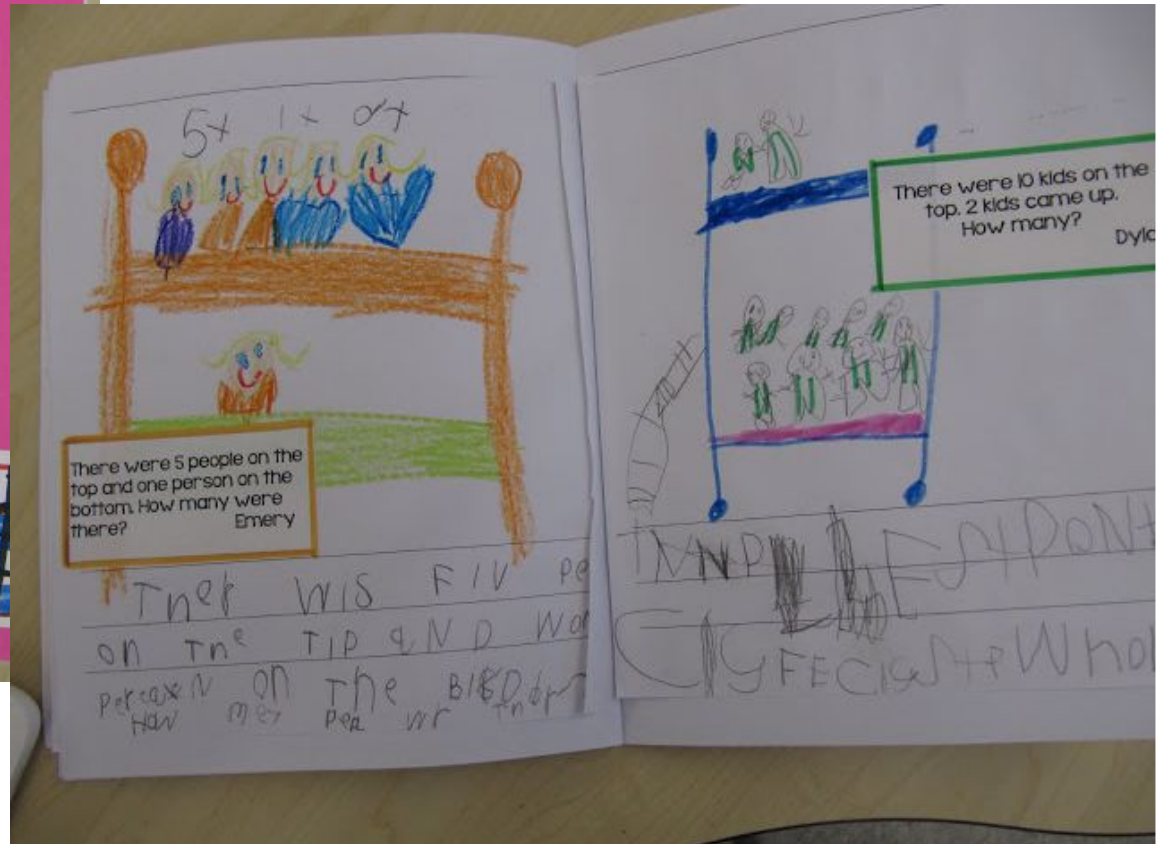
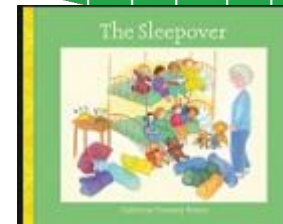
 $8+0=8$	 $7+1=8$
 $4+4=8$	 $0+8=8$
 $5+3=8$	 $1+7=8$
 $6+2=8$	 $2+6=8$

Bunk Bed Mat





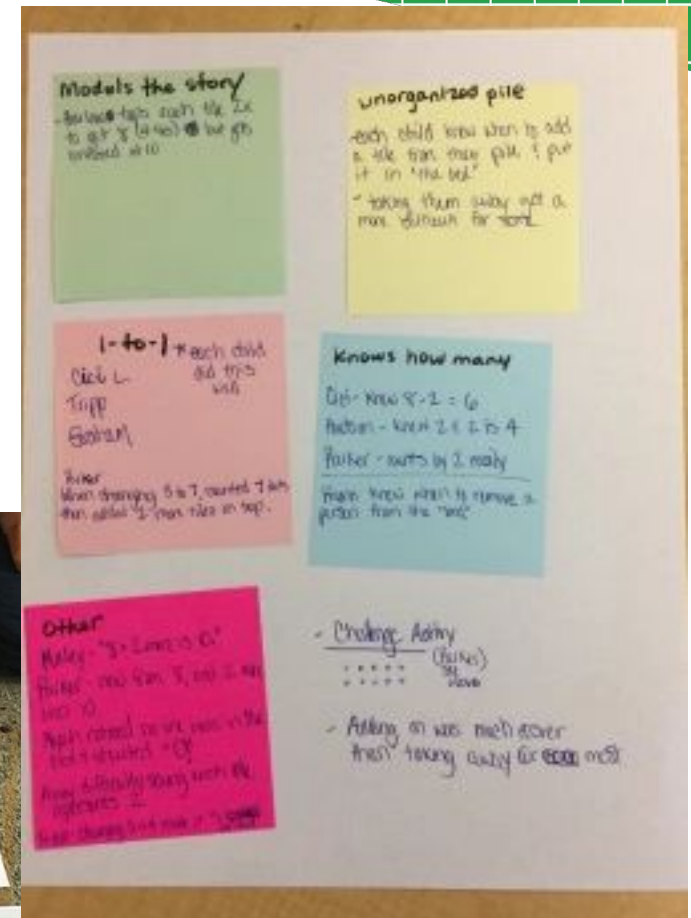
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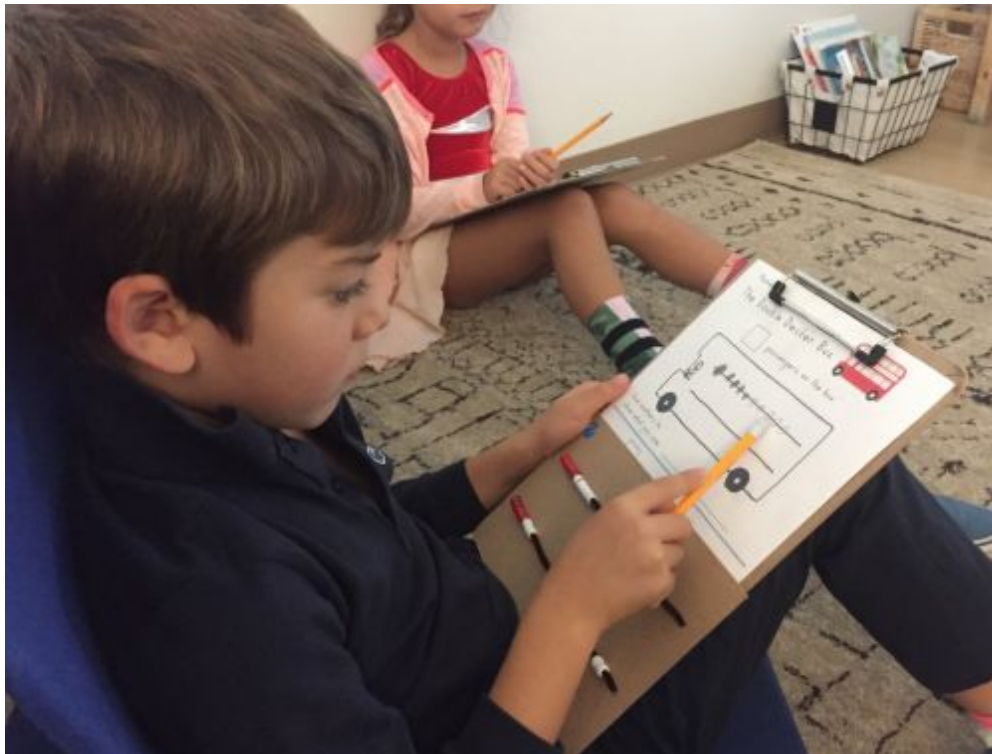
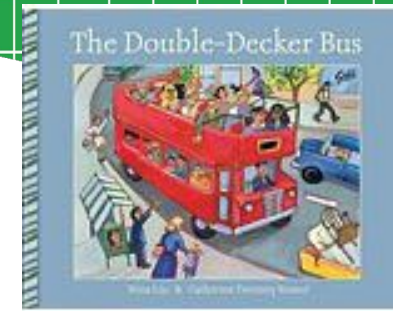
Apple Ten Frame



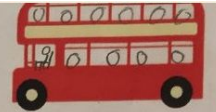
A ten frame is a 2x5 grid used for counting. In this image, the ten frame is filled with 10 apples. The first 8 slots (top row of 5 and bottom row of 3) contain red apples. The last 2 slots (bottom row of 2) contain green apples.



The Double-Decker Bus



The Double Decker Bus:
Easy and Hard Arrangements



1.

10 people on the bus

The **EASY** way:

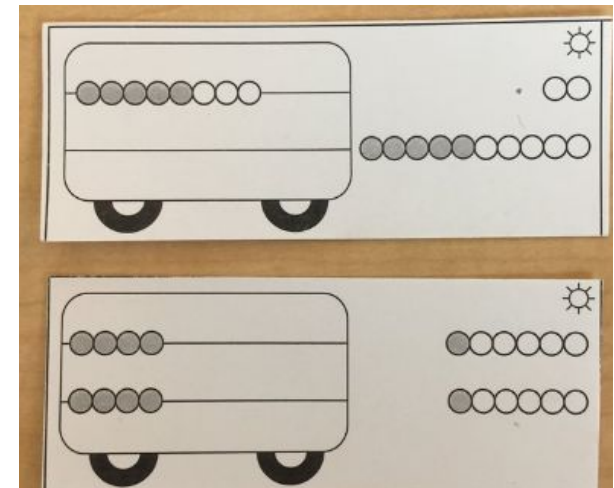
The **HARD** way:

5 people on the top

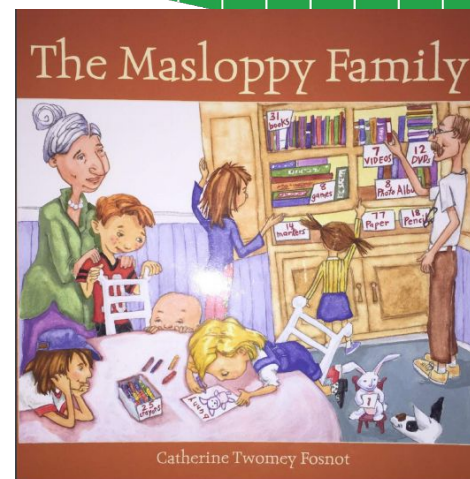
6 people on the top

5 people on the bottom

4 people on the bottom




Moving to Larger Numbers



Contextual Unitizing

Grandma Eudora's T-Shirt Factory



BY SIMMONS

Small	Medium	Large	Tens	Ones
17	35		1 ten	7 ones
				75




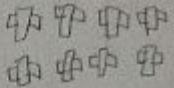


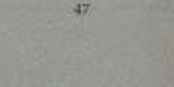


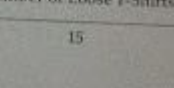
How many t-shirts altogether?
The number is 75 because we found out the number is 75 because we counted the ones then we counted the tens.

Small	Medium	Large	Tens	Ones
17	35		2 tens	3 ones
				75

How many t-shirts altogether?
The number is 75 because we found out the number is 75 because we counted the ones then we counted the tens.



Put the T-shirts in the boxes. How many ways can you find?

Number of Rolls	Number of Loose T-Shirts
  	38 
 	47 
 	15 






75

How to assess student understanding?

Quarter 3

Name _____

Place Value Assessment

	18 is 10 and _____ ones.
	Fifteen is ten and _____ ones.
	10 and 9 ones is _____.
	Ten and four ones is _____.
	Represent 12 within a ten frame.

Name: _____ Date: _____

NBT.B.1 #9 Score: _____

I can name 10s & 1s.

Directions: Write the correct number.

3 tens 9 ones	2 tens 8 ones
_____	_____
7 tens 2 ones	6 tens 5 ones
_____	_____

Name: _____ Date: _____

NBT.B.1 #9 Score: _____

I can name 10s & 1s.

Directions: Write the correct number.







3 tens 9 ones	2 tens 8 ones
_____	_____
7 tens 2 ones	6 tens 5 ones
_____	_____

CCSS.2.NBT.1 Understand place value
Primer, Prerequisite

Name: _____

Place Value

Directions: Write how many tens and ones. Then write the number.

 _____ tens _____ ones _____ + _____ = _____	 _____ tens _____ ones _____ + _____ = _____
 _____ tens _____ ones _____ + _____ = _____	 _____ tens _____ ones _____ + _____ = _____
 _____ tens _____ ones _____ + _____ = _____	 _____ tens _____ ones _____ + _____ = _____

A More Reliable Way to Assess

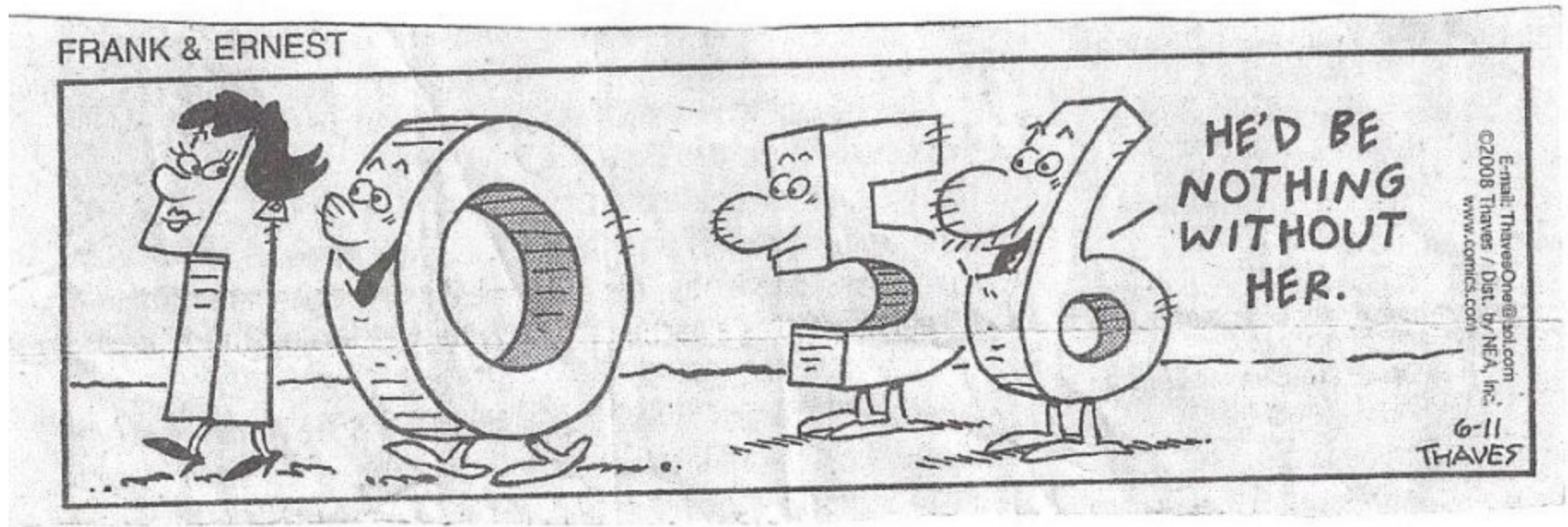


Place Value Interview

- On a sheet of paper, put out 16 cubes. ***"Here are 16 cubes."***
- Ask the student to write the number 16.
- Gather 6 of the cubes next to the 6 in the 16. ***"These cubes show what the '6' in the number 16 means?"***
- Ask the student: ***"Show with the cubes what the '1' in the number 16 means?"***

<http://www.marilynburnsmathblog.com/place-value-how-to-assess-students-understanding/>

Would your students understand this comic?



Upcoming Virtual Professional Learning

APRIL 13 - 17
2:00-2:30 PM EST



Focus on Place Value!

w/ KY Math Leaders

Monday, April 13 - Place Value to 10

Tuesday, April 14 - Place Value to 100

Wednesday, April 15 - More Place Value to 100

Thursday, April 16 - Place Value with Multi-digit Numbers

Friday, April 17 - Place Value with Decimals

Visit Our Website

https://www.kentuckymathematics.org/kcm_virtual.php#elementary



Good News!

The KCM is hard at work to ensure Kentucky teachers have access to innovative professional development from home.

Through the newly launched [KCM Virtual](#) site, mathematics teachers from all grade levels will have access to live zoom meetings, video records and corresponding materials. [Read more.](#)

[Elementary: Make 'n Take Supporting Number Sense and Fluency - Mar. 23-27](#)

[Middle: Fractions, Decimals & Percents - Mar. 30-Apr. 3](#)

[High: Algebra & Geometry - Thursdays, Mar. 26 - Apr. 16](#)

[Math Intervention Expert Talks - Apr. 6 - Apr. 10](#)

[Focus on Place Value - Apr. 13 - Apr. 17](#)

[KCM Favorites - Apr. 20 - Apr. 24](#)

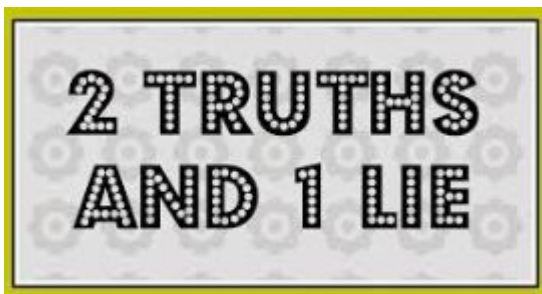
KCM is here to support you!



Contact me:

Julie Adams

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**I did not get a perfect score on the math
portion of the ACT!**