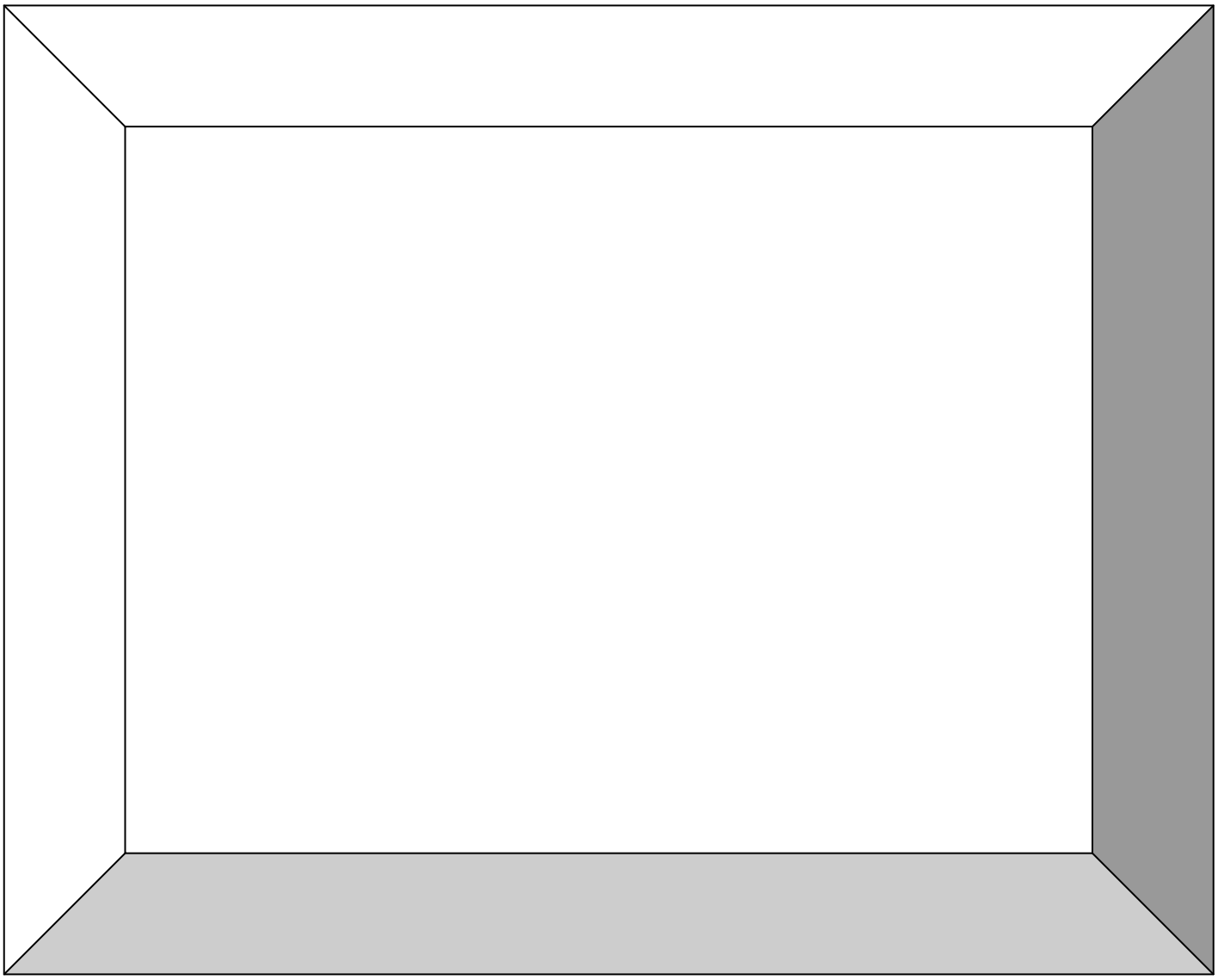

6. *The teacher should be to guide students in understanding & making sense*

–Does this make sense?‖ or they may try another strategy.

discussions involving questions like –How did you get that?‖ and –Why is that true?‖
their thinking to others and respond to others' thinking.

sequence is one more. When counting by tens, the next number in the sequence is –ten
ore‖ (or one more group of ten). In addition, students continually check their work by
, –Does this make sense?‖

Summary of Standards for Mathematical Practic	Questions to Develop Mathematical Thinking
1. Make sense of problems and persevere in solving the • Interpret and make meaning of the problem to find a starting point. Analyze what is given in order to explain to themselve meaning of the problem. • Plan a solution pathway instead of jumping to a solution. • Monitor their progress and change the approach if necessary. • See relationships between various representations. • Relate current situations to concepts or skills previously learned and connect mathematical ideas to one another. • Continually ask themselv 19: < /'34)*3 -$+'3'.3'9= Can understand various approaches to solutions.	How would you describe the problem in your own words? How would you describe what you are trying to find? What do you notice about...? What information is given in the problem? Describe the relationship between the quantities. Describe what you have already tried. What might you change "$,+ -'4)2/5()4)'34'038/5;6'53'& to this point. What steps in the process are you most confident about? What are some other strategies you might try? What are some other problems that are similar to this one? How might you use one of your previous problems to help you begin? How else might you organize...represent... show...

2. Reason abstractly and quantitatively

- Make sense of quantities and their relationships.
- Decontextualize (represent a sitf(z)-2(e)(o)-3()-2(08b3(g t)-3()

Summary of Standards for Mathematical Practice

In Kindergarten, instructional time should focus on two critical areas: (1) representing and comparing whole numbers, initially with sets of objects; (2) describing shapes and space. More learning time in Kindergarten should be devoted to number than to other topics.

–

counting by tens, the next number in the sequence is –ten more‖ (or one more group of ten).

hey are only expected to master counting on the decade (0, 10, 20, 30, 40 …). This

kindergarteners. Support students' ability to make meaning and mathematize the process of seeing and focusing on the mathematical aspects and ignoring the nonmathematical aspects. Mathematizing in K indergarten: Sol ving problems, Communicating or showing their thinking, Connecting and Representing Ideas)

uch as –How do you know?‖ –How did you figure that out?‖

- x
- x
- x Counting groups of ten such as –fingers in the classroom‖ (ten fingers
- x
- x

–).

Classify objects
and count the number of objects in each category Add and subtract within 20
Extend the counting sequence

x

x

–14,ll students should count out fourteen objects using one

connect the representation to the symbol –14

Classify objects and count the number of objects in each category

Add and subtract within 20

Count to answer –how many?‖ questions about as many as 20 things _

Work with numbers 11 - 19 to gain foundations for place value

Count to tell the number of objects.	Count to – ‡ Ž Ž ò • *f* • › ó quantity	Count to tell the number of objects.

Cluster

4. Understand the relationship bie>* ns.

more take away left

take away

students' ideas using the words minus subtract

left

Note on vocabulary: The term –total‖ should be used instead of the term –sum‖. –Sum‖ sound the same as –some‖, but has the opposite meaning. –Some‖ is used to describe problem situations with one or both addends unknown, so it is better in the earlier grades to use –total‖ rather than –sum‖. Formal vocabulary for subtraction (–minuend‖ and –subtrahend‖) is not needed in Kindergarten. (–total‖ and –addend‖ are sufficient for classroom discussion).

The student snaps ten cubes together to make a –train.‖

- Student breaks the –train‖ into two parts. S/he count
- Student breaks the –train into two parts. S/he counts how many are in one part and determines how
-

kindergarteners. A variety of situations can be found in children's literature books. Students then model the

struggle at first, teachers should encourage them to try writing the equations. " ing the Q " A " s.s.

Traditional flash cards or timed tests have not been proven as effective instructional strategies for developing fluency.

x

concept and the symbol that represent each teen number. For example, when focusing on the number –14,‖ symbol –14.‖ Students should recognize the

a ten

a ten

10 ones make 1 ten

groupable

a ten

a ten

which object has –more of‖/–less of‖ the attribute, and describe the difference. For example, directly compare the heights of two children and describe one child as taller/shorter.

Measure lengths indirectly and by iterating length units

up two blocks and say, –This block is a lot longer than this one.‖ St

When making direct comparisons for length, students must attend to the –starting point‖ of each

the idea that .... ³ 6 Rmetimes this block is *longer than* W K L V R Q H D Q G V R P H W L P H V L V (depending on how I O D \ W K H P V L G H E \ V L G H R N D Q G ³ W K D W ‖ E O R F N L V D O Z D \ E O R F N Z L W K H D F K H Q G O L Q H G X S D S S U R S U L D W H O \ ´

_____: The blue block is longer than the plain block when they are lined up like this. But when I move the blocks around, sometimes the plain block is longer than the blue block.

_____: I have to line up the blocks to measure them.

(Conservation of Length: includes understanding that if an object is moved, its length does not change; an important concept when comparing the lengths of two objects).

(Limit category counts to be less than or equal to 10)
Know number names and the count sequence Count to tell the number of objects Represent and interpret data

Common Core State Standards	Essence	Extended Common Core
Describe and compare measurable attributes.	Measureable attributes of length	Describe and compare measurable attributes.

Cluster

1. Describe measurable attributes of objects, such as length or weight. Describe several measurable attributes of a single object.
2. Directly compare two objects with a measurable attribute in common, to see ™ Š ‹ … Š ‘ „ Œ ‡ … – Š ƒ • ò • ‘ ” ‡ ‘

Resources:

dimensional (lying in a plane, – Ⅱ) or three dimensional (– Ⅱ).
Analyze, compare, create and compose shape Reason with shapes and their attributes

x *two*

x *three*

shapes’ attribu

Just Two Triangles

cube square

other –FLATǁ material.

Arizona, Ohio & NC DOE

Compose simple shapes to form larger shapes. For example, –Can you join these two triangles with full sides touching to make a rectangle?‖

Common Core State Standards	Essence	Extended Common Core
Identify and describe shapes (such as squares, circles,		

TABLE 1. Common addition and subtraction situations.[34]

		Two bunnies were sitting on the grass. Some more bunnies hop there. Then there were five bun How many bunnies hopped ove the first two? 2 + ? = 5	Some bunnies were sitting on th grass. Three more bunnies hop there. Then there were five bun How many bunnies were on the grass before? ? + 3 = 5
Take from	Five apples were on the table. I two apples. How many apples on the table now? 5 − 2 = ?		

[34] Adapted from Box 4-2 of Mathematics Learning in Early Childhood, National Research Council (2009, pp. 32, 33).

[35] These take apart situations can be used to show all the decompositions of a given number. The associated equations, which have the equal on the left hand side and the total on the right hand side, help children understand that the = sign does not always mean makes or results but always does mean is the same number as.

[36] Either addend can be unknown, so there are three variations of these problem situations. Both Addends Unknown is a productive extension of this basic situation especially for small numbers less than or equal to 10.

[37] For the Bigger Unknown or Smaller Unknown situations, one version directs the correct operation (the version using the words more or less for the bigger unknown and less for the smaller unknown). The other versions are more difficult.