Teacher Guide to Clarification

**K.CC.6**

**Compare numbers**

K.CC.6 Identify whether the number of objects in one group is greater than, less than, or equal to the number of objects in another group, e.g., by using matching and counting strategies. (Include groups with up to ten objects)

**Matching and Counting Strategies**

**Matching Strategies**

Students can use pictures or manipulatives to represent numbers. They then **physical match** these objects together (or **draw lines** to match items) until they run out of matches. The item that remains unmatched is then part of the greater than group. Example: 5 stars and 4 smiley faces

One star remains unmatched. Therefore there are more stars than smiley faces. So 5 is greater than 4.

A student can also match items **by removing** them. If all the items are together, the student takes one of each and puts them away. Eventually the student will only be left with items from one group. That group then has more items. In the example above the student would have been left with 1 star. Thus there are more stars than smiley faces.

**Counting Strategy**

Students count the items in each group. They then compare the cardinality of each. In this situation a student recognized that 5 is greater than 4. Thus there are more stars
than smiley faces.

Students must have a firm understanding of cardinality for numbers through 10 to use this counting strategy.

Students are not expected to use symbols to represent greater than or less than.

This is not the time to add mnemonic devices or “cute” names, for example, the alligator mouth eats the bigger number.

As children develop meaning for numerals, they also compare these numerals to the quantities represented and their number words. Modeling numbers with manipulatives such as dot cards and five- and ten-frames are tools for such comparisons. Children can look for similarities and differences in these different representations of numbers. They begin to see the relationship of one more, one less, two more and two less, leading to the concept that successive numbers name quantities where one is larger. In order to encourage this idea, children need discussion and reflection of pairs of numbers from 1 to 10. Activities that utilize anchors of 5 and 10 are helpful in securing understanding of the relationships between numbers. This flexibility with numbers will greatly impact children’s ability to break numbers into parts.

**Coherence and Connections: Need to Know**

Children demonstrate their understanding of the meaning of numbers when they can justify why their answer represents a quantity just counted. This justification could merely be the expression that the number said is the total because it was just counted, or a proof by demonstrating a one-to-one match, by counting again or other similar means (concretely or pictorially) that makes sense. An ultimate level of understanding is reached when children can compare two numbers from 1 to10 represented as written numerals without counting.

Kansas Association of Teachers of Mathematics (KATM) Flipbooks. Questions or to send feedback: melisa@ksu.edu. Retrieved from: <http://katm.org/wp/wp-content/uploads/flipbooks/KFlipBookedited.pdf>

The standards about comparing numbers **K.CC.6**, K.CC.7 focus on students identifying which of two groups has more than (or fewer than, or the same amount as) the other. Students first learn to match the objects in the two groups to see if there are any extra and then to count the objects in each group and use their knowledge of the count sequence to decide which number is greater than the other (the number farther along in the count sequence). Students learn that even if one group looks as if it has more objects (e.g., has some extra sticking out), matching or counting may reveal a different result. Comparing numbers progresses in Grade 1 to adding and subtracting in comparing situations (finding out “how many more” or “how many less”1.OA.1 and not just “which is more” or “which is less”).

Common Core Standards Writing Team. (2013, September 19). *Progressions for the Common
 Core State Standards in Mathematics(draft). K-5 Counting and Cardinality and
 Operations and Algebraic Thinking.* Tucson, AZ: Institute for Mathematics and
 Educations, University of Arizona.

“Students can use shapes as a setting in which to compare numbers (see **K.CC.6**; e.g., count to see which has more vertices, an octagon or a hexagon – see K.G.4).

*PARCC Draft Model Content Frameworks: Mathematics Grades K-2* (2013, December).
 Retrieved May 10, 2014, from <http://parcconline.org/sites/parcc/files/PARCCMCFMathematicsNovember2012V3_FINAL_0.pdf>

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| --- | --- |
| Grade-Level | Grade Above |
| K.CC.4K.CC.5**K.CC.6**K.CC.7K.MD.3 | 1.NBT.31.MD.4 |

Select appropriately differentiated slides for your class (2-4 a day) and have meaningful discussion on which group have more than, fewer than, or the same amount. Allow students to explain their reasoning. See if other students solved it differently. Compare strategies.

**Classroom Resource**

 K.CC.6 Daily Discourse

Teacher facilitated discussion around the PowerPoint is important. If one student provides an answer it is important for the teacher to continue the discussion on this problem by prompting students to see what other ways they can answer it. For example: if a slide says compare the numbers 2 and 3. One student may say the 2 is less than 3 and provide a strategy to prove it. Another student may same the same thing but use a different strategy. But also what we want to hear is a student say 3 is greater than 2 and provide proof based on a strategy. It is up to the teacher to facilitate this in the discussion thus providing students the opportunity to see the relationship in comparisons.

**Developing an understanding for the big idea of comparison is the focus, vocabulary is not!**

Students will need, however, plenty of time in class to work tasks alone or in small groups to truly be successful at this standard.

**HOT Questions**

1. Give students different sets of objects and have them discuss the comparisons using strategies to provide proof of their answer. You can use hands-on manipulatives or pictures/drawings on worksheets. It is important to work individually with students if assessing this standard. Look for their ability to use strategies effectively, compare all 3 ways (greater than, less than, equal to), and student’s ability to recognize the relationship between the comparisons. Can a student make a statement both ways, i.e. 2 is less than 3 and 3 is greater than 2.

Encourage students to move beyond counting each time and explain their reasoning.

1. Have students create comparisons by drawing them. Put those drawings in a protective sheet (write and wipe pockets) and pass them around. Let classmates discuss each other’s comparisons. This can also be used as pair work.
2. Use dominoes and have students compare the two numbers on each domino.

**Additional Resources**

Illustrative Mathematics
<http://www.illustrativemathematics.org/illustrations/1210>

<http://www.illustrativemathematics.org/illustrations/453>

<http://www.illustrativemathematics.org/illustrations/683>

Illinois Math Shift Kit Task
http://education.illinoisstate.edu/downloads/casei/math/6.%20K%20Rolling%20a%20Number%20Cube%20Task.pdf

Hawaii Tasks
<http://standardstoolkit.k12.hi.us/graphing-sort-k-md-3k-cc-3k-cc-5k-cc-6/>

<http://standardstoolkit.k12.hi.us/sorting-buttons-k-md-3k-cc-3k-cc-5k-cc-6/>

Inside Mathematics
<http://www.insidemathematics.org/problems-of-the-month/pom-movinngroovin.pdf>

<http://www.insidemathematics.org/problems-of-the-month/pom-pickapocket.pdf>

<http://www.insidemathematics.org/problems-of-the-month/pom-throughthegrapevine.pdf>