RUNNING HEAD: BASE OF PUBLIC KNOWLEDGE

The Base of Public Knowledge in a Kindergarten Classroom

Courtney Foley

Michigan State University

The Base of Public Knowledge in a Kindergarten Classroom

The field of mathematics is an intricate and ever-changing discipline. With the influx of new technology and concepts, it is imperative that students studying mathematics have a firm grasp on the tools and strategies necessary for success. One such measure of success is the standardized test. Many teachers, therefore, have begun to focus only on those concepts questioned on the high stakes test for their state or district. However, instilling topical knowledge of current problems can not ensure success in future mathematical endeavors. Students must be trained on how to approach unknown mathematical problems. This training takes place through the teaching of mathematical reasoning.

Mathematical reasoning is a process by which students use an accepted knowledge base to make conjectures about a new or unfamiliar problem. Students approach the problems in a similar manner to that of a scientist testing out a scientific theory. First, students observe a pattern. Then, they explore the pattern using a variety of different types of numbers. Next, students make a conjecture based upon their observations. This conjecture is then shared with peers. Following this, the mathematical community works together to prove or disprove the conjecture based on their prior mathematical knowledge, as well as, new observations. Finally, the mathematical community will either accept or disprove the conjecture based on their findings.

Allowing students to engage in the process of mathematical reasoning may not produce immediate visible results on high stakes testing, but it will do much to improve the likelihood of success in future mathematical undertakings. Implementing mathematical reasoning into the classroom, however, can produce a multitude of challenges for teachers. One such challenge is determining the accepted knowledge base for the classroom. In a study of mathematical reasoning, Ball & Bass (2003) state that teaching mathematical reasoning to elementary students requires the establishment of an accepted base of student knowledge from which to build upon. Specifically, these authors state

> We argue that this idea of a base of public knowledge is useful in understanding the work of a class of elementary school students as well, where this base of public knowledge comprises the expanding set of publicly established ideas and shared knowledge that can be used by the class in explanation or justification. (p.31)

This statement implies that determining the base of public knowledge is a complex and sometimes difficult task for all grade levels. And, as always, the primary grades offer their own unique set of challenges.

In order to assess what kindergarten students know, one must have an idea of what incoming kindergarten students are supposed to know. Then, one must determine the best assessment tool to administer in order to discover the current knowledge of students. Finally, the students must be assessed and this data must be analyzed. Only then, can a classroom knowledge base be established. This is the challenge I was faced with in my current kindergarten classroom. If I planned to teach my current kindergarten students how to "do" mathematical reasoning, I would need to determine the accepted knowledge base for our classroom. Unfortunately, there were no current methods in place to do that in my new teaching assignment. Therefore, I set out to find the preferred strategy for testing incoming kindergarten students, test my students, and then state our accepted knowledge base.

As stated above, the first step in establishing a classroom knowledge base is to ascertain what kindergarten students should know and use an appropriate assessment tool to verify what they actually do know. To do this, I first turned to the current research. I began by reviewing articles that addressed the question of school readiness. What I found was a bit discouraging considering my question. What I found was a consensus of confusion among scholars regarding the issue of school readiness. This research helped to formulate a more “answerable” research question and some effective strategies for collecting further data within my classroom.

First, I took a look at an article entitled Assessing School Readiness in Hawaii by Shelli Aiona. The goal in researching this article was to see how readiness assessments were conducted in other states and apply these methods to my current situation. However, this article highlighted the readiness debate mentioned above. Specifically, Aiona states that school readiness is a result of “trickle down academics” (p.47). In the 1980’s, the requirements for kindergarten students became much more demanding due to an increase in high stakes test taking in the upper grades (Aiona, 2005). This academic shift created a large kindergarten population deemed unprepared for the newly required rigorous curriculum of kindergarten. This occurrence led to a well known legislative movement; The Goals 2000; Educate America Act. This Act, signed into law ten years ago, states that “all children in America will start school ready to learn” (PL 103-227). However, many scholars continue to debate what the term school readiness actually means.

Aiona’s study explained the origin of school readiness and emphasized the need for a clear definition of school readiness. Without this piece of the kindergarten puzzle, I’m unable to determine where my student’s academic knowledge is expected to be upon entering kindergarten. If there is no accepted model of readiness, I am not able to clearly define what I should be assessing in order to determine the base of knowledge for my current classroom.

In another study, Debra J. Ackerman and W. Steven Barnett (2005) also address the issues and questions surrounding school readiness. Ackerman & Barnett, like Aiona concluded that the definition of readiness is yet undefined. Readiness is directly related to the demands that will be placed upon a student in a kindergarten program (Ackerman & Barnett, 2005) These demands, while outlined in state standards, are not mandated by any form of government. Therefore, it is almost impossible to offer a clear cut definition of readiness with regards to children entering kindergarten.

However, with the Goals 2000 Act in place, there is already a need to determine school readiness. Ackerman & Barnett noted that one method to determine readiness is kindergarten cut off ages. The study shows that cut off ages vary from state to state. At the time of the study, most states selected a cut off date in the month of September. This is a change from the time period before the Goals 2000 Act when most schools implemented cut off dates in December and January (2005). This change suggests that schools are recognizing the problem of school readiness and addressing it by moving the entrance age cut off date (Ackerman & Barnett, 2005).

Parents, too, have taken it upon themselves to address the issue. The practice of "redshirting" holds younger students out of kindergarten in order to give them another year to mature and become ready (Ackerman & Barnett, 2005). This practice is troublesome for two reasons. One, the practice does not have evidence to back up its merit. In fact, Ackerman & Barnett mentioned that other studes suggest that older kindergarten students are actually more likely to have behavior problems in school (2005). The second reason is that this practice causes an even bigger gap with regards to age and abilities within the kindergarten classroom.

So, if we can not assess readiness by age, what assessments can be utilized effectively? According to this study, readiness assessment tools have been utilized since the 1900's.

However, there is not sufficient evidence that these forms of assessment are reliable predictors of readiness for several reasons. Ackerman & Barnett suggests that in order for assessment tools to be reliable predictors of school readiness, the following standards must be met:

1. The assessments must be used to measure what they were designed to assess.
2. Test administrators and interpreters should be formally trained in testing procedures.
3. Research should defend the reliability of the assessment method.

Even with these guidelines in place, Ackerman and Barnett reiterate that without a clear definition of school readiness, it is an impossible task to assess it in incoming students. They conclude that due to the variance of perceptions of readiness among teachers, parents, students, and administrators, there is a need for an accepted definition of readiness, a description on how to improve said readiness, and the development of programs to help children achieve school readiness.

Again, the lack of definition for school readiness has halted my attempts to gather the necessary data to determine the base of public knowledge in my classroom. Ackerman and Barnett's research suggest that not only is there no clear definition for readiness, there is also no identified assessment tool that is accepted as reliable for use in determining kindergarten readiness. The current research is not conclusive enough on the topic of school readiness and subsequent assessment methods. Therefore, it may be necessary to alter my original question in response to the lack of definitions and accepted testing methods.

In a third study, Elizabeth Graue (2006) addresses some of the gaps in the readiness discussion. She recognizes the importance of focusing on school readiness, but emphasizes that the discussion is lacking in some key areas. This research, like that of Ackerman & Barnett, also suggests that students, parents, and teachers all have a different answer to the readiness question. In fact, Graue sates that not even kindergarten and preschool teachers agree on the definition of this elusive term (Graue, 2006). Graue suggests that in order to intelligently discuss school readiness one must possess knowledge of the following:

- Clear definition of readiness
- Who is doing the measuring
- What is being measured
- How it is being measured
- The diversity among those being compared

Graue's article, like the other two, reiterates the flaws behind the concept of school readiness and readiness testing. There is simply not enough research and information provided to educators to identify a completely effective strategy to determine school readiness. This article articulates that there is too much variability among incoming students for one such strategy to exist.

While the research discussed here is representative of the majority of research on the topic of school readiness, it is by no means exclusive. The list of articles addressing this issue is extensive. But, time restricts me from addressing them all. In addition, while much of the readiness debate is still ongoing, the bulk of research is centered around the passing of The Goals 2000 into law almost 11 years ago. Perhaps more current statistics would offer a more conclusive solution for my research question, if not a more detailed explanation of my topic's origins.

Even with these limitations, I am compelled by the research to altar my original research question. Since I am unable to find a concise definition for school readiness, I need to find another standard by which to assess my students. Fortunately, I am currently teaching in Michigan, a state with a well known set of standards organized by subject and grade level. These standards are used as an assessment tool to measure what skills students have mastered by the end of kindergarten or any such grade level. Utilizing them at the beginning or midpoint of the year will serve a dual purpose. First, I will be able to identify those skills that have already been mastered by the majority of students. This knowledge will allow for flexible planning offering time for more in depth studies of the mastered concepts. Second, this assessment will highlight areas in which students are lacking knowledge. Thus, concepts in need of more direct instruction and more focused study will be identified.

With this in mind, I determine to use the Grade Level Content Expectations listed for kindergarten mathematics to assess my students. My original research plan included the use of a standardized test commonly used to assess kindergarten readiness. However, the review of the research states that this would not be the most effective method since there is not a clear definition of readiness, nor have I been formally trained to administer such an assessment. In addition, time and financial constraints would have prevented the use of a formal standardized assessment even if there was one accepted to use.

Therefore, I created an interview assessment in which each expectation is addressed with a specific task or tasks for students to perform. Some expectations require tangible items and tools including, but not limited to, cubes, number cards, pencil, and paper, while others require a one-on-one interview. While this method of interview assessment may not be feasible in most classrooms, the extremely small class size of my current teaching assignment allows for such a method. My three kindergarten students were given the assessment interview found in Appendix A.

This assessment interview was created with several key factors in mind. First, it will serve as a baseline assessment for students entering the classroom, as well as, a mid-year and end of the year assessment used to monitor progress and measure growth throughout the year. I also took into consideration the limited experience and abilities of students entering kindergarten when creating the questions. Each was created to allow for the student to communicate an answer in a manner that would accurately reflect his/her abilities without placing unnecessary demands upon the student.

As stated earlier, there are a variety of kindergarten readiness assessment tools that are currently used in the United States. Ackerman & Barnett state that in 2005, “There (were) currently over 35 tests, the majority of which are standardized, that teachers or other school personnel might use to assess kindergarteners.”(Ackerman & Barnett, 2005 p.5) However, time constraints and lack of funding made these assessments virtually impossible to utilize for this study.

The interview assessment was administered to students over the course of several days. This was done for two reasons. First, the cognitive demands for some expectations included in the assessment were quite challenging. This fact coupled with the relatively short attention spans typical of kindergarten age students persuaded me to administer the assessment in four different sessions. The second reason involved our classroom schedule. I teach a multiage classroom comprised of both kindergarten and young five’s kindergarten students. Kindergarten students attend school all day Monday through Friday. Young five’s kindergarten students attend school all day Monday, Wednesday, and Friday only. This schedule allowed for two math sessions per week to be designated for the assessment interview.

The interview assessment was also administered to students individually. This was possible due to my current class size of three kindergarten students. Therefore, on designated days, a portion of the interview assessment was administered to individual students while the remainder of the class was engaged in other math related activities such as tan grams, patterning, and counting games. In order to provide appropriate supervision to all students, the assessment was administered in the same room with the other students. However, in an attempt to create an atmosphere conducive to assessment, the student being assessed was separated from the other students. Again, due to class size, this seemed an appropriate way to ensure accurate assessment, while still providing for the other students in the classroom.

Once students were assessed, each task or question was analyzed. If all three students were able to provide a correct response, the expectation associated with that task or question was considered part of the base of public knowledge for the classroom. If only one or two students were able to provide a correct response, then the associated expectation was not included.

The following table created from the Michigan Curriculum Framework's Grade Level Content Expectations for Kindergarten (2006) lists all the expectations for kindergarten students in the state of Michigan. Those expectations which can be included in our classroom base of public knowledge are highlighted. The table identifies those concepts that have been mastered by students. Therefore, they can be accepted publicly without further need for explanation. This knowledge will serve as the foundation for future mathematical reasoning within our classroom.

1. **N.ME.00.01 Count objects in sets up to 30.***
2. **N.ME.00.02** Use one-to-one correspondence to compare and order sets of objects to 30 using phrases such as "same number", "more than", or "less than"; use counting and matching.
3. **N.ME.00.03** Compare and order numbers to 30 using phrases such as "more than" or "less than."
4. **N.ME.00.04** Read and write numbers to 30 and connect them to the quantities they represent.*
5. **N.ME.00.05** Count orally to 100 by ones. Count to 30 by 2's, 5's and10's using grouped objects as needed.
6. **N.ME.00.06** Understand the numbers 1 to 30 as having one, or two, or three groups of ten and some ones. Also count by tens with objects in ten-groups to 100.
7. **N.MR.00.07** Compose and decompose numbers from 2 to 10, e.g., 5 = 4 + 1 = 2 + 3, with attention to the additive structure of number systems, e.g., 6 is one more than 5, 7 is one more than 6.*
8. **N.MR.00.08** Describe and make drawings to represent situations/stories involving putting together and taking apart for totals up to 10; use finger and object counting.
9. **N.MR.00.09** Record mathematical thinking by writing simple addition and subtraction sentences, e.g., 7 + 2 = 9, 10 - 8 = 2.
10. **N.MR.00.10** Create, describe, and extend simple number patterns.
11. **M.UN.00.01** Know and use the common words for the parts of the day (morning, afternoon, evening, night) and relative time (yesterday, today, tomorrow, last week, next year).
12. **M.TE.00.02** Identify tools that measure time (clocks measure hours and minutes; calendars measure days, weeks, and months).
13. **M.UN.00.03** Identify daily landmark times to the nearest hour (lunchtime is 12 o'clock; bedtime is 8 o'clock).
14. **M.UN.00.04** Compare two or more objects by length, weight and capacity, e.g., which is shorter, longer, taller?
15. **M.PS.00.05** Compare length and weight of objects by comparing to reference objects, and use terms such as shorter, longer, taller, lighter, heavier.
16. **G.GS.00.01** Relate familiar three-dimensional objects inside and outside the classroom to their geometric name, e.g., ball/sphere, box/cube, soup can/cylinder, ice cream cone/cone, refrigerator/prism.
17. **G.GS.00.02** Identify, sort, and classify objects by attribute and identify objects that do not belong in a particular group.
18. **G.GS.00.03** Create, describe, and extend simple geometric patterns.

From the table, the base of public knowledge can be extracted. First, all students in the classroom are able to identify and compare numbers 1-30. Each student was also able to identify that a number was more or less based on the number's placement when they count. Furthermore, all students demonstrated a sufficient level of understanding of number patterns. These facts coupled with the student's ability to orally count and write numbers to at least 30, allows for us to add these numbers and the theory that higher counting numbers are larger than lower counting numbers to our base of public knowledge.

In addition to the counting numbers, students also demonstrated the ability to sort items based on a variety of different attributes including size, shape, and color. Therefore, this knowledge can be added to the base of public knowledge. This knowledge paired with the ability to recognize, name, and extend geometric patterns will allow students to extend their understanding of geometry later on in the year using mathematical reasoning.

In addition to identifying those concepts to add to the base of public knowledge, this assessment helps to identify those areas of teaching in need of further attention. For example, the standard named M.UN.00.05, requires students to have a basic understanding of terms such as heavier, lighter, longer, shorter, and taller. Once students are able to identify the definition of these terms, they should be able to use them to describe and compare objects. As seen in the assessment results in Appendix B, only one student was unable to demonstrate an understanding of one portion of this concept. Student C was unable to identify a lighter object when comparing an apple and a watermelon. However, the student did demonstrate an understanding of all the other terms. As a teacher, this issue could be addressed within the classroom to further student c's understanding so that this item could also be included in the base of public knowledge. In this way, the base of public knowledge can be more representative of the entire class.

As explained earlier, this interview assessment was administered to three students over a period of several (three-four) days. While this is an acceptable time period for my class, it would not be an efficient assessment method for the average kindergarten class in the United States, 20.3 (National Center for Educational Statistics, 2009). Furthermore, since only three students were assessed, I required that all students demonstrate understanding of an expectation in order to include it in the base of public knowledge for the classroom. However, in an average size class, this may not be as feasible considering the diversity of student knowledge and understanding. In addition to these limitations, without formal training in assessment development, it was difficult to create questions and tasks designed to allow for students to demonstrate mastery of the given expectations. The created assessment allowed for a limited number of questions or tasks for each expectation. Increasing the number of opportunities for students to demonstrate mastery of a given expectation would be more indicative of student understanding.

Another limitation to this study was the method of assessing students. Students were interviewed by the classroom teacher in the regular classroom setting. The other activity surrounding the students may have served as a distraction that affected the results of the assessment. In further assessments, limiting the distractions could alter the results.

Even with these limitations, I felt that the assessment was able to provide our classroom with the information necessary to determine our base of public knowledge. At this point in the year, our mathematical community can accept the concepts afore mentioned as true and use them to reason through new mathematical concepts. While the assessment interview may not be an appropriate tool when applied to other, more traditional classrooms, it served its purpose for my current teaching assignment. Our mathematical community of four can now begin the process of conducting mathematical reasoning in order to acquire knowledge of the remaining concepts to be addressed in kindergarten.

To follow up this study, I plan to reassess students at the mid-year point just prior to January 21st. This interview assessment will ask the same types of questions, but will include different numbers, objects, etc. to ensure valid results. In addition, another interview assessment will be administered towards the end of May in order to measure growth in the area of mathematics throughout the year.

However, after this, I think it is imperative to conduct more research on end of the year assessments used in kindergarten and re-evaluate the interview assessment tool with the findings. The initial review of the research addressed only readiness testing. Therefore, it is necessary to reevaluate current research on the topic of end of the year assessments for mathematics in kindergarten. If the research shows that end of the year assessments are an effective method to identify student knowledge, the next step is to develop a more formalized assessment tool with standard questioning strategies that are also backed by current research. The goals would remain the same; to determine a base of public knowledge at the beginning of the year, to monitor student progress and update the base of public knowledge at the mid-year point, and to measure student progress at the end of the year. However, the reevaluation should confront some of the limitations that were addressed earlier. Future assessments would be administered in a setting free of distractions, such as other students. I would also attempt to create an assessment tool that addresses the Michigan Grade Level Content Expectations in a more efficient and comprehensive manner.

As more technology and research is introduced, the field of mathematics will continue to change and grow. But, if I can develop a strategy to determine a base of public knowledge within my classroom, I will be able to implement a mathematics curriculum focused on mathematical reasoning. This curriculum will allow students to apply their mathematical knowledge to the new and unique situations of the future (Ball & Bass, 2002). In other words, an appropriate assessment tool will be the spring board to a classroom devoted to producing successful mathematicians for the future.

References

Ackerman, D.J. & Barnett, W.S. (2005). Prepared for Kindergarten: What Does "Readiness" Mean?. National Institute for Early Education Research Policy

Aiona, S. (2005). Assessing School Readiness in Hawaii. *Educational Perspectives, v.38* no.1, 47-40

Ball, D.L., & Bass, H. (2003). Making Mathematics Reasonable in School. In G. Martin (Ed.) *A Research Compendiumfor the principles and Standards for School Mathematics*. (pp.27-44). Reston, VA: National Council of Teachers of Mathematics

Graue, E. The Answer Is Readiness – Now What is the Question?. *Early Education and Development v.17,* no.1 (2006). P. 43-56

Michigan Department of Education. (2006). Kindergarten Mathematics Grade Level Content Expectations v.12.05. retrieved from http://www.michigan.gov/documents/Math_00(K)_87399_7.pdf

National Education Association. (2010). Common Core State Standards Initiative. Retrieved from http://www.corestandards.org

Appendix A

Interview Assessment

1. Count the sets (show 8 cubes, 16 cubes, 23 cubes, and 30 cubes) – N.ME.00.01

2. Compare two groups of cubes (7 and 11, 13 and 19) and tell which has more or less using one-to-one correspondence (also include two groups that have the same number - 12) – N.ME.00.02

3. Compare number cards and tell which number is more less or the same (use 5 and 8, 16 and 18, 24 and 14) – N.ME.00.03

4. Write numbers to 1-30 – N.ME.00.04

5. Match beans to numbers 1-30 written in bottom of egg carton – N.ME.00.04

6. Count to 100 by 1's – N.ME.00.05

7. Count to 30 by 2's – N.ME.00.05

8. Count to 30 by 5's -– N.ME.00.05

9. Count to 100 by 10's – N.ME.00.05/N.ME.00.06

10. Show the number using base 10 blocks 14, 20, 28, 16) – N.ME.00.06 (originally I showed groups and asked students which group showed the given numbers-all of the students just counted the cubes individually in order to answer)

11. Write various names for numbers 2-10 using addition problems, tally marks, roman numerals, number words, etc – N.MR.00.07

12. Represent an addition or subtraction story problem using pictures and solve using finger or object counting. (7 Birds in a nest. 2 more flew in. How many in all? 5 frogs in the pond. 1 frog hopped home. How many are left?) – N.MR.00.08

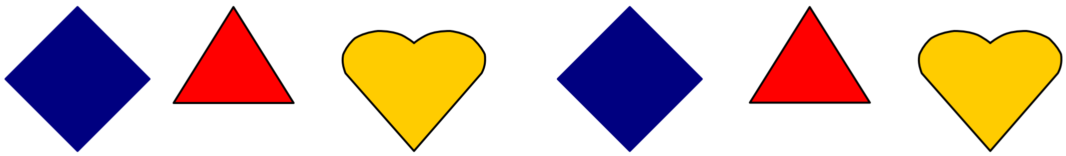
13. Answer the following addition and subtraction problems: - N.MR.00.09

    a. 3+1 =
    b. 5-2=
    c. 7+2=
    d. 8+1=
    e. 5+4=
    f. 2-2=
    g. 9-6=
    h. 5+3=

14. Show an AB pattern using pattern blocks – G.GS.00.03

15. Show and AAB pattern using pattern blocks – G.GS.00.03

16. Name this pattern. What shape should come next? – G.GS.00.03



17. Identify activities that occur, occurred, or will occur at these different times – N.UN.00.01

    a. morning
    b. afternoon
    c. evening
    d. night
    e. yesterday
    f. today
    g. tomorrow
    h. last week
    i. last year

18. Circle the pictures that help us measure time (show pictures of scale, clock, thermometer, and calendar) – N.TE.00.02

19. Tell the time shown on the clock (show times to the nearest hour on an analog and digital clock) – N.UN.00.03

20. Choose the item that is longer. (show two worms) – M.UN.00.04

21. Choose the item that is shorter (show two trees) - M.UN.00.04

22. Choose the item that is lighter (show apple and watermelon) - M.UN.00.04

23. Choose the item that is taller (show two people) - M.UN.00.04

24. Choose the item that is heavier (show truck and cat) - M.UN.00.04

25. If the marker is longer than the crayon, is your pencil longer or shorter than the crayon? – M.PS.00.05

26. Name the shapes (show sphere, cube, cylinder, cone, rectangular prism) – G.GS.00.01
27. Sort the attribute blocks by color – G.GS.00.02

28. Sort the attribute blocks by size - G.GS.00.02

29. Sort the attribute blocks by shape - G.GS.00.02

30. Which item doesn't belong? (show 3 writing utensils and 1 eating utensil, show three things to wear and 1 thing to read) -= G.GS.00.02

31. Put the numbers in order (7, 8, 9, 10, then 21, 22, 23, 24, then 2, 4, 6, 8, 10) - N.MR.00.10

32. Find the missing numbers in the following patterns (5, 10, 15, ?, 25, 30 then 10, 20, 30, ?, 50, 60 then 75, 6, ?, 8, 9 - N.MR.00.10

33. What number should come next in the following patterns? Counting by 1's
    3, 4, 5, __ 21, 22, 23, __ - N.MR.00.10

Appendix B

Interview Assessment with Student Responses

1. Count the sets (show 8 cubes, 16 cubes, 23 cubes, and 30 cubes) – N.ME.00.01

   Student A – pointed to each cube and counted
   Student B– sorted cubes into lines, then pointed to each as he counted
   Student C – moved cubes into a line as she counted

2. Compare two groups of cubes (7 and 11, 13 and 19) and tell which has more or less using one-to-one correspondence (also include two groups that have the same number - 12) – N.ME.00.02

   A – counted each group and compared the numbers (11 is a bigger number than 7)
   B – counted and lined up cubes and said 19 is a larger number and 13 is a smaller number)
   C – counted each group and then said that 11 is a higher number than 7

3. Compare number cards and tell which number is more less or the same (use 5 and 8, 16 and 18, 24 and 14) – N.ME.00.03

   A – "5 is less than 8", "18 is more than 16"," 14 is less than 24"
   B –8 is more than 6, 16 is less than 18, saw 41 instead of 14
   C – 5 is less than 8, 8 is more than 6, couldn't identify 14 and 24

4. Write numbers to 1-30 – N.ME.00.04

   A – numbers written correctly and in the right order
   B – numbers written correctly and in the right order
   C – numbers 1-19 written in the correct order but some are written incorrectly

5. Match beans to numbers 1-30 written in bottom of egg carton – N.ME.00.04

   A – 0, 1, 2, 3, 5, 7, 9, 10, 13 no 4, 6, 8, 11, 12, 14, 15, 16, 17, 24, 28, 23, 18, 19, 21, 30, 20, 27, 25, 31, 32
   B – 0-12 only
   C – ONLY 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11

6. Count to 100 by 1's – N.ME.00.05

   A – 1-100
   B -1-89
   C – 1-39

7. Count to 30 by 2's – N.ME.00.05

   A- 2-30 – slowly
   B – 2, 10, 12, 20
   C – I can't do that

8. Count to 30 by 5's -– N.ME.00.05

   A – 5-30
   B – 5, 10, 15, 20, 25, 30 - 100
   C – I don't know how to count by 5's

9. Count to 100 by 10's – N.ME.00.05/N.ME.00.06

   A – 10 – 100 – with song
   B – 10-100
   C – 10-100 – with song

10. Show the number using base 10 blocks 14, 20, 28, 16) – N.ME.00.06 (originally I showed groups and asked students which group showed the given numbers-all of the students just counted the cubes individually in order to answer)

    A – did not recognize groups of tens and ones. He counted cubes individually and was able to give the right answer
    B –counted cubes individually to show 23
    C – I don't know what you mean

11. Write various names for numbers 2-10 using addition problems, tally marks, roman numerals, number words, etc – N.MR.00.07

    A - nothing
    B - nothing
    C - nothing

12. Represent an addition or subtraction story problem using pictures and solve using finger or object counting. (7 Birds in a nest. 2 more flew in. How many in all? 5 frogs in the pond. 1 frog hopped home. How many are left?) – N.MR.00.08

    A – wrote down numbers on a sheet of paper and added them mentally and responded "9 birds", second problem "6 frogs"
    B – very detailed picture with birds, nest, tree, grass, flowers, and clouds – forgot what to do when he finished the picture. When I restated the question he counted the birds he had

drawn in response "7 birds". Did not ever add the 2 that flew in. Much simpler drawing for frog picture. Oval frogs on an oval pond – responded with "6 frogs"
C – simplistic drawing with oval nest and 7 birds, then two more birds in air, then counted all and said "9 birds" Used same picture method with frogs, but still counted all for the subtraction problem so response was "6 frogs"

13. Answer the following addition and subtraction problems: - N.MR.00.09

a. 3+1 =
b. 5-2=
c. 7+2=
d. 8+1=
e. 5+4=
f. 2-2=
g. 9-6=
h. 5+3=

A – added all numbers – correctly – did not subtract anything
B – completed 3 out of 4 addition problems correctly, unable to do subtraction
C – completed addition problems correctly, added subtraction problems one incorrectly

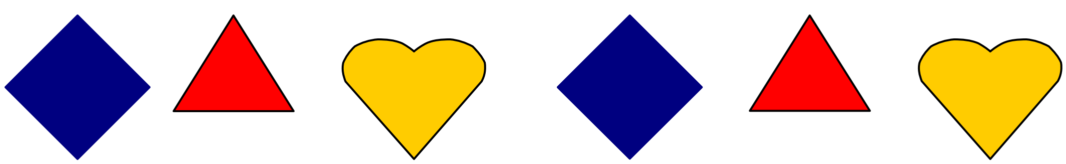
14. Show an AB pattern using pattern blocks – G.GS.00.03

A – octagon, trapezoid, octagon, trapezoid
B – trapezoid, diamond (as long as the table)
C – square, diamond (as long as the table)

15. Show and AAB pattern using pattern blocks – – G.GS.00.03

A – square, square, triangle, square, square, triangle
B – trapezoid, trapezoid, octagon, (as long as the table)
C – little diamond, little diamond, big diamond (as long as the table)

16. Name this pattern . What shape comes next – – G.GS.00.03



A – ABC – blue diamond
B – ABC – blue diamond
C – diamond, triangle, heart, so... ABC - diamond

17. Identify activities that occur, occurred, or will occur at these different times – N.UN.00.01

    a. morning
    b. afternoon
    c. evening
    d. night
    e. yesterday
    f. today
    g. tomorrow
    h. last week
    i. last year

A

    j. morning – get breakfast
    k. afternoon – say a prayer
    l. Evening – what is the evening?
    m. Night – go to bed
    n. Yesterday – played with a Santa Claus puzzle
    o. Today – I did the baby Jesus puzzle
    p. Tomorrow – play in the gym
    q. last week – went to church
    r. last year – read a book

B

    s. morning – I made a picture
    t. afternoon - play
    u. evening - play
    v. night – go to sleep
    w. yesterday – play Xbox
    x. today – put Christmas tree up
    y. tomorrow – put deer up outside
    z. last week – put Santa Claus outside
    aa. last year – I did puzzle

C

    bb. morning – wake up and get ready for school
    cc. afternoon – eat lunch
    dd. evening – I don't know what evening means
    ee. night - Mom reads us a story and I go to sleep
    ff. yesterday – I went to school
    gg. today – I am coloring right now
    hh. Tomorrow – I don't know what I'm going to do tomorrow. What is something that you might do tomorrow? I might make a tea party with juice
    ii. last week – played with my cat

jj. last year – served lunch at the school with mom, go with mom, Luke and Luke's mom and Owen to listen to stories my mom tells to other classes

18. Circle the pictures that help us measure time (show pictures of scale, clock, thermometer, and calendar) – N.TE.00.02

A -- clock
B – clock and scale
C – clock only

19. Tell the time shown on the clock (show times to the nearest hour on an analog and digital clock) – N.UN.00.03

A – unable to say any time
B – unable to say any time
C – I don't know

20. Choose the item that is longer. (show two worms) – M.UN.00.04

A – longest chosen
B – longest chosen
C – longest chosen

21. Choose the item that is shorter (show two trees) - M.UN.00.04

A – shorter chosen
B – shorter chosen
C – shorter chosen

22. Choose the item that is lighter (show apple and watermelon) - M.UN.00.04

A - apple
B – apple
C - watermelon

23. Choose the item that is taller (show two people) - M.UN.00.04

A – taller chosen
B – taller chosen
C – taller chosen

24. Choose the item that is heavier (show truck and cat) - M.UN.00.04

A - truck
B - cat
C - truck

25. If the marker is longer than the crayon, is your pencil longer or shorter than the crayon? – M.PS.00.05

A - longer
B - longer
C - longer

26. Name the shapes (show sphere, cube, cylinder, cone, rectangular prism) – G.GS.00.01

A – sphere, cube, cylinder
B – cone, “dice”, “ball”, “box”, others unknown
C – sphere, rectangular prism (with prompting), cone, cube, cylinder = unknown

27. Sort the attribute blocks by color – G.GS.00.02

A – red, yellow, blue, green, orange, white, tan
B – red, yellow, blue, green, orange, white, tan
C – red, yellow, blue, green, orange, white, tan

28. Sort the attribute blocks by size - G.GS.00.02

A – big, medium, small - no problems
B – big, medium, small - no problems
C – big, medium, and small - no problems

29. Sort the attribute blocks by shape - G.GS.00.02

A – with ease
B – with ease
C – with ease

30. Which item doesn’t belong? (show 3 writing utensils and 1 eating utensil, show three things to wear and 1 thing to read) -= G.GS.00.02

A – fork, newspaper
B – fork, newspaper
C – fork, newspaper

31. Put the numbers in order (7, 8, 9, 10, then 21, 22, 23, 24, then 2, 4, 6, 8, 10) - N.MR.00.10

A – 7, 8, 9, 10, 11	21, 22, 23, 24, 25	2, 4, 6, 8, 10
B – 7, 8, 9, 10, 11	21, 22, 23, 24, 25	6, 4, 8, 2, 10
C – 7, 8, 9, 10, 11	22, 23, 24, 21, 25	2, 4, 6, 8, 10

32. Find the missing numbers in the following patterns (5, 10, 15, ?, 25, 30 then 10, 20, 30, ?, 50, 60 then 75, 6, ?, 8, 9 - N.MR.00.10

A – 20, 30, 5
B – 11, 12, 5
C-5, 10, 8

33. What number should come next in the following patterns? Counting by 1’s
3, 4, 5, __ 21, 22, 23, __ - N.MR.00.10

A – 6, 24
B – 3, 4
C – 3, 21,