Mathematics Monthly (K-5)

West Genesee Central School District

MAY 2013

Welcome to the May edition of *Mathematics Monthly!* Please make sure that you read the information pertaining to the grade levels with which you work as you will find important information in those sections.

I think I heard a collective sigh of relief around 11:30 last Friday across the district when most of you were handing in Book 3. We made it! We prepared them as best we could and we now have a better sense of what is expected of our students so they will be even better prepared next year. I was pleased with what was asked of the students; I thought the tests were very fair. Thank you for all of your efforts and patience in implementing these new Common Core Standards. I know it's been a rough ride, especially in terms of the resources. Thank you for your perseverance and to those of you who have shared all of the great resources and teaching strategies that you have found this year. As they say in *High School Musical*, we're all in this together!

Using Essential Questions in Math

Jay McTighe and Grant Wiggins, backwards design gurus, have a great new book out titled, *Essential Questions: Opening Doors to Student Understanding*. In the book they further explain the use of essential questions and provide a lot of examples. Here are some math examples from the book:

- When and why should we estimate?
- What do good problem solvers do, especially when they get stuck?
- How accurate (precise) does this solution need to be?
- How does *what* we measure influence *how* we measure? How does *how* we measure influence *what* we measure (or don't measure?)
- How can we turn unknowns into knowns?

Wiggins and McTighe believe good essential questions have seven key characteristics: 1) They are open-ended; there isn't a single final, correct answer. 2) They are thought-provoking and intellectually engaging, often sparking discussion and debate. 3) They call for higher-order thinking—analysis, inference, evaluation, and prediction. 4) They point toward important, transferable ideas within (and sometimes across) disciplines. 5) They raise additional questions and encourage further inquiry. 6) They require support and justification, not just an answer. 7) They beg to be revised over time.

Wiggins and McTighe do not believe that essential questions should be posed at the beginning of every lesson. They believe they are designed for the curriculum *unit*; they are "too complex and multifaceted to be satisfactorily addressed within a single lesson. Essential questions are meant to focus on long-term learning and thus be revisited over time, not answered by the end of a class period. Not only would it be difficult to come up with a new essential question for every lesson; the predictable result would be a set of superficial (leading) or, at best, guiding questions."

Essential questions, according to Wiggins and McTighe, " . . signal that inquiry is a key goal of education, make it more likely that the unit will be intellectually engaging, help clarify and prioritize standards, provide transparency for all students (*Where are we going with all this*?), encourage and model metacognition, provide opportunities for intra– and interdisciplinary connections, and support meaningful connections. They are also important in professional learning community discussions of interim assessment results and student work." Just some food for thought!

(Information taken from Marshall Memo 481 and *Essential Questions: Opening Doors to Understanding*.)

INSIDE:

Kindergarten

Everyone should have received the Study Island practice test in April. Please make sure you follow the directions for administration. The test should be administered in your library on May 20th or 21st. Remember to have at least two other adults in the room circulating to make sure students are on the right question. The purpose of the practice test is to not only give the students practice, it is to let us know whether or not we need to make changes to the test, both in the format of the test as well as in the administration of the test. I will need your feedback no later than May 23rd in order to make the necessary changes.

As we wind up (or is it down?) for the rest of the year, our attention turns to geometry in kindergarten. I mentioned a book from the Responsive Classroom series in an earlier newsletter called, *Doing Math in Morning Meeting*. The following activity, called *Attribute Train*, comes from that book:

For this activity you can use pre-made shapes, or you can make your own playing pieces. You will need enough pieces for each student, plus yourself, to have one. For the pieces, make several shapes. For instance, for a class of twenty-five students you might make five circles, five squares, five rectangles, five triangles, and six trapezoids. Among each shape, vary the color, size, and thickness. For example, among the five circles, two can be blue, and three can be red; one can be large, and four can be small; three can be thick and two can be thin. Give each student and yourself a shape. Place your shape on the floor close to you. Let students know that the next shape should have one, but only one, thing that is different from yours. Otherwise, it needs to be the same. Ask students, "*Does anyone think they have a shape that is different from mine in only one way*?" As students offer suggestions, guide them to check whether theirs will work by looking at what is the same between their shape and yours and what is different. For instance, if you have a large, blue, thick rectangle, a student might want to add her large, blue, thin rectangle. You might say, "*Are they the same shape? Color? Thickness? Size?"* For this first turn, try out several possibilities to demonstrate the way the activity will work. Once you select a second shape, place it on the floor touching the first shape. Subsequent shapes should be placed next to each preceding shape, so that a "train" is created. Continue playing, but subsequent turns should be quicker. As you call out students to share suggested next shapes, take the first shape that will work. Play until each student has been able to place his or her shape and/or the students get "stuck." If the group gets stuck—that is, comes to a point in the chain when none of the shapes will work—ask students to think about how you can solve this problem. (Most of the time, shapes can be added at some earlier point in the train or you can start a new train.)

1st Grade

Please see the kindergarten section above for information regarding the Study Island Practice Tests as the same exact information applies to 1st grade, including the dates. The 3rd Quarter assessment should have been given the last week in April. Please remember to forward me your feedback sheets about this assessment, as well as about the pacing of April, by May 10th. I appreciate those of you that do this on a consistent basis each month as it will help us to make the necessary changes for next year. There will not be a 4th Quarter assessment due to the Study Island test given at the beginning of June (June 10th or 11th).

In a previous newsletter I mentioned a book from the Responsive Classroom Series called, *Doing Math in Morning Meetings*. Look at the activity explained in the kindergarten section above as it may apply to first grade as well. Here's another activity called *Make a Shape*. Teach the students the following (or your own chant):

Triangle, rectangle, rhombus, square; Shapes around us everywhere
Two shapes together may make one; Find a friend and start the fun

Give each student a shape. Examples are triangles, squares, rectangles, trapezoids, and rhombuses. You will need shapes that have at least one side equal to a side of the other shapes and can be put together to make new shapes. As they recite the chant, they walk around the circle, holding their shapes. When students get to the end of the chant ("*start the fun*"), they should find a nearby classmate. Each set of partners should sit down right where they are and find a way to combine their two shapes, but let them know that they may only join shapes on an equal side. Together they should decide what new shape they have found. Call on several pairs to share what they have found. Repeat several times. If you notice some pairs having difficulty deciding what their new shape is, show them how to quickly trace around it on a piece of scrap paper, as seeing only the outer edges may help them identify the shape. Variation: Give some students bigger shapes that could be composed of two smaller shapes. Instead of finding one partner, students should find two people whose shapes equal their own.

2nd Grade

The 2nd Grade 3rd Quarter Common Assessment should have been given by the end of April. Please make sure you return your feedback sheet to me by May 10th. There will not be a 4th quarter assessment as all second grade students will be taking the Study Island test on the computer at the beginning of June.

I saw this activity in the book, *Doing Math in Morning Meetings*, and I thought I would pass it on as I know the focus for second grade is now on geometry. This activity is called*, It Could Be a . . .*

Before beginning Morning Meeting, write a sentence frame on the chart: "I know this is a _____ (shape), but it could be a _____." Place two to four two– or three– dimensional shapes in the center of the circle. (Choose shapes that fit what you have been studying in prior geometry lessons.) Let students know that today they will be imagining what these shapes could be. Choose one and model what sharing will look like. Example: "I know this is a *cylinder*, but it could be *my new tube of lipstick*." Give students time to think of their sentences. Alert the group to be listening, as you will play a challenging game at the conclusion of sharing. Go around the circle and allow each student to share. For each shape, see how many different things students can remember that people suggested and list those on a chart. Encourage students to keep thinking about the possibilities. Extensions during a later math lesson: Return to the brainstormed list during math time and see if students have thought of any other items to add. Find several items that students named and bring those into class. Compare them to your geometric examples and discuss how they are similar or different, emphasizing distinctive properties of the shapes. For instance, you might hold up the tube of lipstick and a cylinder shape and ask, "How are these two shapes similar?" Check out the 1st grade activity as well as it may apply.

Monthly Feedback Sheets

Please remember to return your monthly feedback sheets to me by the 10th of each month. The information you provide on these sheets will be helpful as we adjust our pacing and add resources to the map for next year. Thank you!

3rd Grade

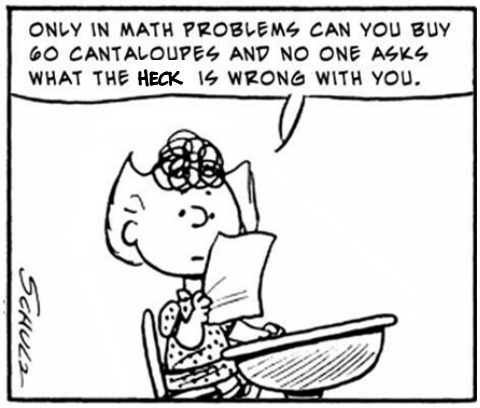
Later this month you will receive the 4th Quarter Assessment which will need to be given in June. This assessment will be based primarily on the Post-Test Standards (3.MD.4, 3.MD.8, 3.G.1.) You will need to complete a feedback sheet and turn this sheet, along with your completed assessments, in to your principal by June 21st. The assessments will not go home with the students.

Last summer I handed out an article called, *Perimeter and Beyond*. It was a short, 4-page article that aligns well with standard 3.MD.8. If you need another copy of the article, please let me know and I will email you a copy. It came from NCTM's *Teaching Children Mathematics* Journal.

4th Grade

Later this month you will receive the 4th Quarter Assessment which will need to be given in June. This assessment will be based primarily on the Post-Test Standards (4.NF.5, 4.NF.6, 4.NF.7, 4.MD.1, 4.MD.2.) You will need to complete a feedback sheet and turn this sheet, along with your completed assessments, in to your principal by June 21st. The assessments will not go home with the students.

Standards 4.NF.5, 4.NF.6, and 4.NF.7 all have illustrative tasks on the illustrative mathematics website. I think they are definitely worth a look. Just click on the K-8 Standards tab, then Number and Operations - Fractions, then 4th grade.



5th Grade

Later this month you will receive the 4th Quarter Assessment which will need to be given in June. This assessment will be based primarily on the Post-Test Standards (5.G.1, 5.G.2.) You will need to complete a feedback sheet and turn this sheet, along with your completed assessments, in to your principal by June 21st. The assessments will not go home with the students.

The post-test standards both involve graphing points on the coordinate plane to solve real-world and mathematical problems. Standard 5.G.1, outlined below, has a great illustrative task/game (Battleship) on the illustrative mathematics site. Check it out when you get a minute.

5.G.1: Use a pair of perpendicular number lines, called axes, to define a coordinate system, with the intersection of the lines (the origin) arranged to coincide with the 0 on each line and a given point in the plane located by using an ordered pair of numbers, called its coordinates. Understand that the first number indicates how far to travel from the origin in the direction of one axis, and the second number indicates how far to travel in the direction of the second axis, with the convention that the names of the two axes and the coordinates correspond (e.g., x-axis and x-coordinate, y-axis and y-coordinate).

By playing this game the students will be able to demonstrate understanding of ordered pairs.

Have a great month! We're in the homestretch now!