

This Week at Central Academy

December 22, 2009

One of the things I have always loved about Central Academy is the responses visitors frequently get when they ask our students what their favorite subjects are. While we still get some of the expected responses of recess and phys ed, we also very often get responses of math and science. Almost all of our students seem to love math. That speaks volumes to me about the way in which we teach those subjects.

This edition of TWAC is all about math, and how that subject is handled in each of our classes. In the past few years, the district has adopted programs that are very aligned with our philosophy of asking students to problem-solve and think. These programs also encourage students to use manipulatives to extend their understanding of mathematical processes. This couldn't be closer to Central's philosophy of hands-on learning.

I'd invite you to visit us at any time to observe a math lesson at any level. You will see students who are engaged and excited about their abilities to solve problems, who listen to each other as they discuss their strategies, and who truly think of themselves as mathematicians. In fact, many of our teachers refer to their students as mathematicians.

This certainly is a far cry from the ways in which most of us learned math – and from how most of us felt about math. Please take a minute to read through the various articles. It will give you a bird's-eye view of what I see each day as I make my way through our classrooms.

Finally, with the holidays upon us (and where did this fall go!?!), I sincerely wish each of you a love-filled and blessed holiday and new year.

Dianne

Central Academy's Website

Find out what's going on at Central by frequently visiting our website. The website includes:

Important Dates Newsletters Classroom Web pages

Pictures of Students (**You can search by student's first name, teacher name, or by level!**)

www.middletowncityschools.com

(click on Central Academy)

IMPORTANT DATES

Dec. 23	Day of Giving
Dec. 24	Winter Break Begins
Jan. 6	Students return from Break
Jan. 12	TEAM Bd. Mtg. – 6:30
Jan. 13	Early Release – 2:00
Jan. 18	ML King Day, No School

EARLY PRIMARY CLASSROOMS

Math takes place throughout the day and in several ways in Mrs. Jantusch's Early Primary room. One section of our instruction is based upon CGI (Cognitively Guided Instruction) and focuses on solving word problems. Another exciting addition to our math instruction this year is the district's implementation of the *Investigations* program.

Our most recent unit in *Investigations* is focused on data analysis. Students have been taking surveys, creating class charts and graphs, and then discussing these results. However, this week instead of relying on me to supply the questions, students have been extending their thinking by pairing up to create their own survey questions and data charts. *Haley* and *Sarah* decided to ask their classmates if they would rather ride in a car or on a boat. *Tenee'* and *Liv* chose to ask if their classmates would rather own a dog or a cat. While *Johrdon*, *Khalil*, and *Justin* were interested to know if their friends would rather have blue or black shorts.

Once they had chosen their questions, each group had to decide **who** was going to ask the questions, **how** they were going to **record** their friends' responses, **how** they were going to **make sure** that everyone had been surveyed, and finally **how** to **present** their results to the class. Each group had to discuss the various methods to collect data and create a team plan. Some groups chose to draw pictures to show what students answered, while other groups chose to use a tally mark system. To make sure everyone had participated in the surveys, some teams were going to cross names off of a class list as they asked people. Other teams decided it was easier to count the responses at the end and match the number to our total number of students.

However the teams chose to conduct their surveys, they were each extending their thinking by deciding how to conduct their own research. Instead of being handed a worksheet with a teacher-prepared survey to complete, our class was actively engaged in gathering data that was important to them. Learning experiences such as this, help our students stretch and grown into mathematicians and more critical thinkers. Who knew 5 and 6 year olds could be mathematicians too!

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Our math in Miss Miller's Early Primary Class is always changing to extend student's thinking. We learn different math concepts and then extend our thinking in Math Workshop. We recently have been working on geometry, sorting objects by different attributes, and collecting data to create representations of that data.

When we do our counting jars, we review previous math activities in Math Workshop to continue extending student's thinking on the concepts. When we reviewed our geometry activities, *Lorenai* extended her thinking while using pattern blocks. She was experimenting with the different ways the shapes fit together and realized that she could make a giant hexagon by repeating a pattern with the pattern blocks. *Serina* also extended her thinking by realizing she could make a giant parallelogram with the different pattern blocks by extending her pattern.

When we started sorting objects by different attributes, *Katie* was able to work with her partner to think about four different ways to sort buttons. She sorted them by color, size, shape, and how many holes were in the buttons. We have continued to work on extending student's thinking by playing *Guess My Rule* with sorting objects.

We recently started collecting data and creating representations of the data. After *Aby* created her representation of "Would you rather be an Eagle or a Whale" she was able to extend her thinking more by

answering questions about her representation and the data shown. She was able to tell me which group had more and by how many more students would rather be a whale than an eagle. This is another concept we are continuing to work on to extend student's thinking about data.

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The students in **Ms. Roe and Miss Smith's class** have really enjoyed our two different blocks of math this year! In the morning, we focus on our Math Investigation units. In the afternoon, our focus is on our CGI Math Problem Solving.

Last week during our CGI Math time, the students were given a multiple step multiplication problem. The problem centered around a real activity they did at the Math Project Time station. They were challenged to find out how many spoonfuls of hot chocolate mix each table of students used if each student had 2 spoonfuls in their hot chocolate. The second part of the problem asked the students to find out how many spoonfuls of mix the entire class used. If they were able to solve that problem, the students were then challenged to find out how many packages of mix had to be purchased, if there were only 4 spoonfuls in each package. The last step of the problem was to find out how much money **Miss Smith** spent on the materials for the station. Several of the students attempted the last part of the problem, but did not solve it in the time we have allotted for our CGI Math time.

As we moved into our next portion of our day, *Katie, Payton, Bree* and *Heath* all came to me asking if they could keep working on the final step of the math problem. Together, the four of them extended their thinking and solved the problem correctly! Very impressive!

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Would you rather be an eagle or a whale? **Mrs. Uhl & Ms. Stillwell's Early Primary Class** is crazy about data! We have been doing several quick surveys recently. This helps us to get to know our classmates better as well to read graphs and interpret data. We are learning to organize our data in many different ways such as tally marks, smiley faces, post-it notes, unifix cubes, stickers and pictures. We recently had the kids answer the question of whether they would rather be an eagle or a whale. After collecting information using different colored unifix cubes, the student's had to decide how to represent the data we collected in a different way.

The unique thing about representing data is that it lends itself to student creativity. *Eniyah* did a wonderful representation of her data using stickers. Her whale column had 16 stickers and her eagle column had 6. However, an interesting detail *Eniyah* included was instead of putting headings at the top of her columns, she used different colored dots to represent the eagle and the whale. *Jakob* decided to represent his data using stickers too but instead of using dots, he decided to write a capital E and W to represent the whale and eagle. Wow! What great data collectors! *Paige* decided to represent her data by using smiley faces. She made two organized rows. One column had 16 yellow smiley faces with "whale" written above it. Then, she had another column with 6 orange smiley faces and "eagle" written above it. After explaining her graph, we asked how she knew everyone was asked? If there are 25 people in our class, why did only 22 people respond? She quickly explained that using the class nametags, we made sure everyone that was at school voted. Three people were absent and did not vote. *Paige* also decided on her own to represent her graph a second way. So, using stickers she represented the two groups. *Addison* decided to represent her data in another way. She organized her work into two groups and drew pictures of both eagles and whales. She neatly drew sixteen whales and six eagles. Then, above each column, she made the headings "Whales" and "Eagles". The student's extended their thinking by noticing that ten more people wanted to be whales than eagles. As well, they noticed that the data would change if we had an opportunity to ask the three absent students what they would rather be.

More recently, the students have been asked to take on a bigger data challenge. They have to create their own survey question and determine how they will organize and collect their data. This week the students have been busy little bees mapping out their survey plans and deciding on “good” questions. Our class had a long conversation about how it is important to ask a question that all the students in the class could answer. So, the question could not be all about boy or girl type things. *Isaiah* and *Jordan* extended their thinking and came up with a fantastic survey question. They want to know if the class would rather jump in a swimming pool or jump in a sandbox? I can’t wait to see the rest of the survey questions that the class develops and what interesting ways they create to represent their data!

LATE PRIMARY CLASSROOMS

In **Mrs. Andrade and Miss Zumbahlen’s Room**, we are measuring our brains out in the Land of Inch. Mrs. Brubaker, Central’s superb Math Coach, has even joined the mathematical forces in our room for this second trimester. Our students started the measurement unit by using non-standard units (craft sticks, unifix cubes, paperclips, etc.) to measure their jumps. Figuring out who had the longest jump proved challenging since the students had measured using different units. While this may have stumped another group of children, our class quickly came to the conclusion that the only way to truly know the answer would be to figure out how many units fit in all of the different units. We brainstormed a more efficient method, which was to have everyone measure using the same unit. When everyone used cubes to measure their jumps, it was evident that *Jake* had jumped the longest jump in the classroom at 97 cubes. His love of frogs could be the reason he is such a great jumper!

We recently sent an assignment home involving blue and yellow strips. The objective was for the children to figure out the ratio of yellow strips to the blue strip (2:1). When we did this in class, olders and youngers were working in teams. *Briley, Aaron, and Day’Sean* quickly figured out that all you have to do was take the blue strip measurement and double it for your yellow strip measurement. From that point forward, they didn’t even measure with yellow strips. They simply doubled their blue strip measurement. Way to be efficient, gentlemen!

Currently, we are working on connecting our concrete experiences to the abstract. By this, we mean that we are using our measurement experiences, issues, and discussions to help us figure out story problems. Today’s problem involved the measurement of a desk. How could two students who measured the width of a desk using their pencil get different measurements? *Anastasia* did a wonderful job of figuring out that they clearly used different sized pencils. We are always amazed when students can bridge their hands-on learning to the unknown. Even though we are past the counting on us theme, we can assure you that you can count on our class to measure up to greatness!

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Math, math, math... can you guess what we are talking about this week? If you said “math”, you are correct. When we (teachers), were growing up, math sure looked different. Geometry, algebra, and division were some of the skills we struggled with when we were in school. Working with a partner or working with manipulatives was unheard of in our time. In **VanBurgey’s** and **Zahora’s** room math looks fun! Fun and the word math never went together when we were growing up. This year we are using the book *Investigations*. This is a hands-on program. Currently, we are learning about measurement and the “Land of Inch.” Students have enjoyed making their own inch tool. Students also came up with great ideas of measuring tips. For example, *Caleb* said, “Know the difference between length, width, and height.” *Nathan* said, “Double check your work.” *Maddidson M.* said, “Make sure to measure $\frac{1}{2}$ correctly.” *Bobby* said, “Don’t leave gaps.” *Zach* said, “Don’t overlap.” *Jacob B.* said, “Be careful and

don't count a half as a whole." Our students have been reviewing these great measuring tips. Until next time... keep measuring! Go Central!

INTERMEDIATE CLASSROOMS

Math in **Mrs. Larison's Intermediate** classroom may appear in a variety of ways depending on what type of math the students are doing and how they are choosing to do it. This year is our first year using the new *Investigations* program, which the district has adopted and asked teachers to implement. Students also continue to do CGI math problems and math contracts. When doing any of these math types, depending on the activity and the needs of the students, students may be found working individually, with a partner, in a small group with classmates, or with the teacher or tutor. *Alec* and *Theo* often work by themselves. They seem to enjoy working through problems on their own. On the other hand, *Keyan* and *Kenny* enjoy the company of other classmates when working through math problems. They like to bounce their ideas off the ideas of their classmates.

Many of the math activities we do in class extend students' thinking. For example, when students work on CGI math problems, each child approaches the problem in their own way. They have to think about strategies that will work best for them in order to solve the problems. The math contract activities and many of the *Investigations* activities require students to think deeply and carefully about what needs to be done in order to find the solution. The directions are not always clearly defined in a step-by-step fashion. The students must continually analyze why they are doing what they are doing and adjust their approach based on their analysis.

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Math in **Muenchenburgey Land** has changed somewhat this year. The district has adopted the *Investigations* series, which we have embedded within our math instruction. Because this series encourages inquiry-based learning, it fits well with our CGI and math contract work. The students work as partners, in small groups, and individually to develop a deeper understanding of the math concepts being investigated. Because the students make their own discoveries and connections during their *Investigations* activities, they are extending their thinking and applying it to other areas. It's exciting to see the connections the students are able to make between concepts and the understanding they are able to demonstrate.

Recently, *Marcus* and *Cole* were discovering strategies to help them break down numbers into their primes. They were using what they knew about the factors of 12 to discover the factors of 120 and 1,200! It turned into a challenge for them to see just how far they could break down the numbers. *Will* and *Austin* were extending their thinking about the problem 36×12 . They were finding easier ways to break down 36 and 12 to help them reach the product. For example, they broke this problem down into easier multiplication combinations, such as 30×10 , 30×2 , 6×10 , and 6×2 . They then added the products for these problems together to reach the solution! The students are discovering strategies that help them solve problems, versus learning how to solve meaningless algorithms (the rules about how to do specific problems).

The transition math instruction has taken over the past few years has allowed students to gain a better understanding of math concepts and processes. They use their own strengths to develop strategies to gain understanding of math. While this is far different than the way we learned math, we love the enthusiasm and excitement the children display as they take more ownership of their learning!

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There are many collaborative ways that Math is taught in Ms. Thinnies' Intermediate Class. Students during Quick Images are asked to draw a visual representation of the shape that is shown through the LCD Projector. The students get five seconds with pencils down to look at the image. Then students have to draw what they see. I show the image to them one more time for revisions. Students make any necessary corrections and write the strategy that worked best for them in their Math Journal. The strategies and how they saw the dots is discussed. Students are then asked to question others' strategies to extend their thinking and make connections.

Davyn shared his strategy of grouping the dots by groups of eight and then he combined two groups to make sixteen dots. He then added the five larger groupings of sixteen to equal eighty and then added eight more from the last group to equal eighty-eight. *Amirah* then asked why he used that particular strategy. *Davyn* explained, "It was less work to combine five groups of sixteen and one group of eight compared to eleven groups of multiples of eight." The discussion helped all students learn a new strategy that they might apply the next time they are given an opportunity for a Quick Image. Students are then expected to write a new strategy that they might try in the future in their Math Journal. In doing this, students are applying what they have learned and extending their thinking in several ways.

Students have also been working together to represent an answer to 35×28 . Students have discovered several ways to solve the problem in cooperative groups on a Math Poster. *Nolan* and *Colin* worked together to create one strategy for the activity. Students are able to solve these multiplication problems with the use of square tiles, drawings of marked and unmarked arrays, and solving simpler problems first. Students are also given more opportunities for multiplication through the daily CGI (Cognitive Guided Intervention) math problems that the students solve in their Math Journal. Students extend their thinking by completing the following: draw a picture, write a sentence with the answer including units, write two-three sentences about their strategy, and an equation. Students enjoy sharing the different solutions to these problems on a daily basis. Students extend their thinking in math through an inquiry and cooperative learning environment in Ms. Thinnies' Intermediate Class.

MIDDLE SCHOOL CLASSROOMS

Math in Kristi Joseph's class is designed around the specific needs of the students. As the math instruction is created with the learners in mind, opportunities arise to extend the students' thought processes. Engaging students in activities that encourage higher order thinking skills enhances learning. *Angel, Andrew, Corey, Robert* and *Caleb C.* have been working with challenging materials and experiencing success. *Ethan* and *Althea* have made tremendous growth in the last few weeks. The students receive small group instruction from both Kristi and Joy Carroll who team-teach in the classroom during math.

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This trimester in Mrs. Smith's math class, we will be focusing on topics pertaining to transformations like reflection, rotation, translation and dilation. There will also be time spent on prime and composite numbers as well as solving problems using prime factorization. We will conclude with transversals and relation tables focusing on the coordinate plane. Please ask your child throughout the trimester about his or her progress.

Part of our day is delegated to Ohio Benchmark curriculum, in which the students focus on extending their current knowledge to higher and deeper level thinking based on the Ohio Standards. During this time the students are working independently, in pairs, and with tables to solve a variety of problems that

were selected from the practice benchmark tests we took this year. When they conclude the activity for the day, students are allowed to work in “independent” math groups. During this time, the individual student is allowed to select from the areas in which he or she had the greatest personal concern. Within each selection there are table leaders.

I am very proud to say that the current leaders are *Bailey, Cole, Kaleb and Asia*. They work very hard to help their partners to understand better. When students are able to explain to another, their own understanding deepens. Throughout the first trimester the table leaders have recycled. I am really impressed with the dedication of all my students in relation to their math education.

Other Places and Voices Around Central

Mrs. Carroll and Mr. Perdue go from classroom to classroom and see math everywhere. It starts in early primary where Mrs. Carroll works in Ms. Roe’s Early Primary classroom for CGI. During math she watches students as they learn from each other and share strategies that they have learned and discovered on their own and from each other. *Chloe* might say, “I tried *Emma’s* strategy that I saw yesterday.” Mrs. Carroll’s favorite part is how the students describe the strategies that they discover. They have the hand strategy, the counting-on strategy, and the compare strategy, but she really thinks it is exciting when the students name the strategies after one of the students. It is not uncommon for several students to use the *Payton* strategy or *Katie’s* strategy. Last week when the students had a table problem with several parts, no one had finished the entire problem that was comprised of 4 or 5 separate problems that build upon each other. While students were sharing the strategies that they used to solve each part, *Heath* and several others volunteered to work on solving the money part of the problem during their project time. It is exciting to see such young students not only solve multiple step problems, but also explain all of the steps that they used in the problem solving process.

When Mr. Perdue visited VanBurgey’s Class recently, he worked with *Josh* and *Drew* while they measured different objects and each other’s heights. They were very excited to see how tall they were. This carried over to an assignment that they had at home to measure various objects around their house.