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Math Unit

Pinecrest Elementary, East Lansing MI
2nd Grade
Everyday Mathematics Curriculum
Unit 3: Place Value, Money, and Time
October-November 2009

PART I:

Big Ideas:

1. Place value in two and three digit numbers has an impact when adding and subtracting larger numbers

N.ME.02.05 Express numbers through 999 using place value, e.g., 137 is 1 hundred, 3 tens, and 7 ones; use concrete materials.

Learning Objective- Students will identify the place value of any digit in a number up to the hundreds place.

2. Coins have specific values and when you have a certain amount of coins they can be exchanged for different coins.

M.UN.02.07 Read and write amounts of money using decimal notations, e.g., $1.15.

M.PS.02.08 Add and subtract money in mixed units, e.g., $2.50 + 60 cents and $5.75 - $3, but not $2.50 + $3.10.

Learning Objective- Students will use combinations of coins to create amounts up to $1.00. Students will write the amount of money that they have or using a specific amount of money will be able to select the correct combinations of coins.

3. Time viewed on an analog clock can be recorded in a digital format

M.UN.02.05 Using both A.M. and P.M., tell and write time from the clock face in 5 minute intervals and from digital clocks to the minute; include reading time: 9:15 as nine-fifteen and

9:50 as nine-fifty. Interpret time both as minutes after the hour and minutes before the next hour, e.g., 8:50 as eight-fifty and ten to nine. Show times by drawing hands on clock face.

M.UN.02.06 Use the concept of duration of time, e.g., determine what time it will be half an hour from 10:15.

Learning Objective- Students will read an analog clock up to a quarter hour. Students can read a digital clock with any time.

NCTM Process Standards:

1. *Recognize and apply mathematics in contexts outside of mathematics*

This unit focuses very heavily on skills that students need in the "real world". They will easily be able to make connections between needing to know how to tell time and use money in a context outside of just math class. Using coins to "trade" between pennies and dimes, dimes and dollars, can also help reinforce the importance of place value.

2. *Create and use representations to organize, record, and communicate mathematical ideas*

The ability to record student thinking is important because many students might struggle with how to accurately write time or money, or to tell where place value is. Knowing how to communicate in a mathematically accurate manner is an important skill that I will teach in this unit.

PART II:

Part A

Pre-assessment- my pre-assessment for this unit has been ongoing since the beginning of the school year. Every morning during morning math we quickly review telling time on the clock, making money exchanges in our coin counter, and reviewing place value in our daily depositor. This is a good way for me to informally assess how much the students already understand about what we are going to cover in this unit. Moreover, in this curriculum students have already covered time and money in first grade so the first unit of the year included review of these topics. That gave me a change to assess how much students were able to remember from the previous year and what work we still needed to do. I also used modified version of the curriculum's pre-

assessment on several students of varying abilities to further judge the current capabilities of the students in my class. After completing my pre-assessments I noticed a large gap in the class between those that could tell time and those that could not. For the students that could they seemed to be able to tell it to the quarter hour fairly accurately. Those that could not could either name the hours and not the minutes, or would confuse the two. If they could not tell time they usually also named the minutes with the number on the clock, e.g. 1, 2, 3 instead of 5, 10, 15. For coins most of the class could identify the values of the coins. Some had difficulty quickly making conversions in their heads. Others that had difficulty with skip counting, e.g. 5, 10, 15, 20, also had difficulties. Place value proved the hardest for most of the class. Differentiation here could mean working with ones and tens place for lower students, and working higher in the thousands or perhaps up to a million for much higher students. Using this information will assist me in planning for the rest of the unit because I will plan out different ways to use the math games at the end of math each day. I will also have to keep in mind the possibility of opening up the back table for additional help for students that are struggling with a concept, thus allowing higher students to continue on at their own pace.

Formative assessment- While I will still continually assess students during morning math and at other times during the day, perhaps asking a student what time it is at that moment, I will also integrate more assessments into our daily math routine. Every day we will open our math lesson with a math message. Sometimes this will be an informal discussion so I can gauge what students learned yesterday in math, sometimes it will be a preview of what we will be discussing that day. Once or twice a week instead of informally discussing the math message I will have students fill out an "exit slip" which is merely a slip of paper where they record their responses so I can assess all of the students on their understanding individually. Example- yesterday we discussed different coin combinations, I might have students show me on their exit slip three different coin combinations that add up to one dollar. This would be in addition to other informal daily assessments.

Summative assessment- I will be starting my GLT at the start of Unit 3 so in this amount of time we will not make it to the end of the unit for a summative assessment. The summative assessment that would normally be used is a paper/pencil assessment that is a part of the

curriculum that our classroom uses as well as several hands on explorations to assess student thinking. The summative assessment comes from the Everyday Math curriculum. For Unit 3 it is assessing time, place value, and money. The test is administered with students working quietly at their desks while I will read the test aloud to make sure that students are being tested only on their math, not on their ability to read. I expect to see students struggling somewhat with time, but place value should be not too difficult for many of the students. I am not sure what I expect to see with money right now.

Part B

- How closely does your assessment plan (including **pre-assessment**, **formative assessments**, and **summative assessment**) match your objectives? If the assessments do not address all of your objectives, explain why that's okay.

My pre-assessment and formative assessments match my objectives fairly closely I think. Since this unit focuses on three very concrete ideas it makes assessing them easier. I will be testing skills such as telling time, counting money, and identifying and using place value through the exit slips and partner discussions.

- What do children have to know or be able to do in order to succeed on the assessments? What kinds of activities will prepare them for these?

In order for children to be successful on these assessments they will need to have continued practice and experience working with money, clocks, and place value. Morning work with these three things will continue, and students will also have access to personal clocks at their desks during some activities, as well as their own place value mats and coins. Integral math games as well as classroom discussion will reinforce these ideas.

- What parts of the assessments do you expect to be most difficult for students? (This is what you should be spending the most time on in the unit.) What parts do you expect to be easy for students?

From pre-assessments, place value seems to be the most difficult for students. Asking students to identify digits in different place values in a number will be something we will have to spend a lot of time on. Something that should be easy for students is naming different coins and their values.

- How will your **formative assessment** allow you to monitor student's progress in ways that are both informative to your teaching decisions and manageable to the time you have to spend on them?

The exit surveys that I use will provide the most valuable insight into what every student can record so I don't accidentally leave out quieter students in classroom discussion, or students that perhaps aren't as comfortable speaking out loud. These are quick and leave a lasting record for me.

- What skills will students need that are not explicitly a part of your objectives (reading, writing, adding skills in a unit on perimeter, etc)? How will you figure out if children's performances on the assessments are affected by these secondary skills? What accommodations can you offer?

I have discovered that for some lower readers in my class, not being able to easily read the question they are working on can be very frustrating. I try to relieve this by reading aloud each question for the class and if it is something more challenging I will ask them to stay with me. For explorations and games I will model with the students what I expect of them several times before they explore.

- What learning styles do these assessments emphasize? How can you help those who learn in other ways to succeed?

Most of my assessments are oral or written. If a particular student likes to model or explain their thinking in another way, since these are informal assessments, while other students are working on something else in math I might sit with them to be sure they understand the

material as well.

PART III

When I was reconsidering the smartness chart that I made at the beginning of the year, I realized that I had let some outside influences cloud my judgment. I have several students that are not necessarily high in reading and writing so I just assumed they were lower in math although they were not. For one or two other students, the opposite was true.

My focal student gets easily distracted in math. He is an average student but I am afraid if he spends too much time off task he will be slow to understand the material. My focus for him is thinking of ways to make the material engaging enough to keep his attention while varying the activities as well.

There are several students in my class that I know are often left behind in math, either because they do not understand the material, they are not paying attention, or they just don't like math for a variety of reasons. Something I have tried to do in whole group is to use the name sticks to call on students instead of just calling on ones who have their hands raised so I get greater group participation. This sometimes means affirming students who may not have the right answer but was able to explain some of their thinking, or walking students slowly through the problem, but I know at least then they were tuned in for some of the math time. During groups we often employ partners. I have started a multi-curricular partner list and have been fine-tuning it to get good results from the partners. This has been beneficial as far as helping students get more into math games and activities. Larger group work has still been difficult in my class. It requires a lot of management just as Cohen described in *Designing Groupwork.* This has been an ongoing challenge that I have been putting a lot of time and effort into.

How will I support the range of students with whom I am working?

- What will you do to differentiate your instruction so that you meet the needs of all your learners?

I have some students in my class that are very high in math and will finish ahead of everyone

else. To help them stay involved in math the entire time I will always offer the option of browsing some math literature that goes along with the unit or playing math games with a partner. On a lesson-by-lesson basis there is often built-in differentiation as well. For example, if students are working on finding times on a clock to the half hour, I may challenge them to find times to the minute.

- How will you support students who may struggle?

For students that are struggling I will meet with them as a small group in the rear of the room while the rest of the class is working individually. This will be on an as-needed basis so students won't necessarily have to meet with me every day, or they might only meet once or twice. Due also to the basic design of the curriculum, if a student struggles with one concept, they will see it over and over again throughout the year to reinforce their learning of the concept.

- How will you support students who are English Language Learners?

I do not have any ELL students in my classroom.

Part IV: Integration of Literature

The books that I will be using as a part of my unit are *A Place for Zero: A Math Adventure, How Much is that Guinea Pig in the Window?, and The Big Buck Adventure.*

The first text that I will use is *How Much is that Guinea Pig in the Window.* This book I will use as a read-aloud during one of the earlier lessons on money. It discusses different combinations of money. From our lesson study project earlier in the semester we learned that by integrating a read-aloud into math lessons the students stay much more engaged in the content. This book also reads like a story and not like a math text which is why I chose it for the read aloud.

Another book I selected for a read-aloud is *A Place for Zero: A Math Adventure.* This book focuses on the importance of place value. I selected this because although we talk about the different place values a lot, we don't spend a lot of time talking about why it is necessary to have for adding and subtracting larger numbers. This also reads like a story to help engage students. While I am reading the story I will pull out certain ideas to discuss with students while

we're reading. I don't want it to be a silent reading where I read and the students just listen for either of the two books that I have selected. We will be discussing the book and thinking through it as we read.

The other book that I have listed above, as well as two to three other books, will be available in the room on our math bookshelf for students to browse if they finish their math work early. These books are all related to time, money, or place value to help reinforce students learning.

PART V:

Day	GLCE Teaching Objective	Activity	Materials	Big Idea

11/2 3.1	GLCE: N.ME.02.05 Express numbers through 999 using place value, e.g., 137 is 1 hundred, 3 tens, and 7 ones; use concrete materials.* TO: To review place value in 2-digit and 3-digit numbers	Math Message, decomposing numbers into place value. Matching Numbers and Base 10 Blocks- EM p. 186	Base ten blocks Calculator Number cards	All numbers can be decomposed into individual place value. 526 into 5 hundred, 2 tens, 6 ones.
11/3 3.1	DAY 2 GLCE: N.ME.02.05 Express numbers through 999 using place value, e.g., 137 is 1 hundred, 3 tens, and 7 ones; use concrete materials.* TO: To review place value in 2-digit and 3-digit numbers	Digit Game EM p. 187 Math Boxes	Base ten blocks Calculator Number cards	All numbers can be decomposed into individual place value. 526 into 5 hundred, 2 tens, 6 ones.
11/4 3.2	GLCE: **M.PS.02.08** Add and subtract money in mixed units, e.g., $2.50 + 60 cents and $5.75 - $3, but not $2.50 + $3.10. TO: To review coin values and exchanges among coins; and to provide experiences with finding coin combinations needed to pay for items	Math Message- calculate sums of money Review equivalent amounts of money Paying for Things With Coins and Buying and Selling EM p. 57 and 58 Spinning for Money EM p. 55 Math Boxes p. 58	Coins and bills, scissors	There are many different coin combinations to reach a given amount of money.

Day	GLCE Teaching Objective	Activity	Materials	Big Idea
11/5 3.3	**M.UN.02.05** Using both A.M. and P.M., tell and write time from the clock face in 5 minute intervals and from digital clocks to the minute; include reading time: 9:15 as nine-fifteen and 9:50 as nine-fifty. Interpret time both as minutes after the hour and minutes before the next hour, e.g., 8:50 as eight-fifty and ten to nine. Show times by drawing hands on clock face. TO: To review telling time; and to provide experiences with writing time in digital-clock notation	Math Message: Use your clock and show the time that school starts Functions of clock hands Estimating time with hour hand and minute Telling and Writing Time Math Boxes EM p. 60	Demonstration clock Analog and digital clock Slate Paper fastener Scissors	Estimating time by using the hour hand and approximate minute hand allows time to be read much quicker.
11/6 3.4 DAY 1	GLCE: N.ME.02.05 Express numbers through 999 using place value, e.g., 137 is 1 hundred, 3 tens, and 7 ones; use concrete materials.* TO: To provide experiences with representing and renaming numbers with base-10 blocks	Math Message: Show several ways to make 36 Go over explorations: Building and Renaming Numbers Making a clock booklet Making and Comparing Geoboard Shapes Math Boxes EM p. 63	Base ten blocks Number cards Scissors Stapler Paper Clock face stamp Geoboard Rubber bands	Patterns are found throughout our number system.

Day	GLCE Teaching Objective	Activity	Materials	Big Idea

11/9 3.4 Day 2	GLCE: N.ME.02.05 Express numbers through 999 using place value, e.g., 137 is 1 hundred, 3 tens, and 7 ones; use concrete materials.* TO: To provide experiences with representing and renaming numbers with base-10 blocks	Explorations: Building and Renaming Numbers EM p.61 Making a clock booklet EM p. 68 Making and Comparing Geoboard Shapes EM p. 62	Base ten blocks Number cards Scissors Stapler Paper Clock face stamp Geoboard Rubber bands	Patterns are found throughout our number system.
11/10 3.5	GLCE: no clear correspondence TO: To provide experiences with gathering data, entering data into a table, and drawing a bar graph	Math Message: Counting Pockets Tallying and Creating Bar Graphs Dollar Rummy EM p 211 Math Boxes EM p 68	Calculator Class Data Pad	Using the middle number can assist with making more accurate predictions.
11/11 3.6	GLCE: **N.ME.02.04** Count orally by 3's and 4's starting with 0, and by 2's, 5's, and 10's starting from any whole number. TO: Solving frames and arrows problems with two rules	Math Message: Frames and Arrows using nickels F&A with two rules Math Journal p. 69 Reading a Bar Graph Math Boxes p. 72	Coins Slate	Understanding the rule of a pattern helps to quickly comprehend number patterns.
11/12 3.7	**M.PS.02.08** Add and subtract money in mixed units, e.g., $2.50 + 60 cents and $5.75 - $3, but not $2.50 + $3.10. TO: To guide children as they make change by counting up from the cost of the item to the amount tendered	Demonstrate how to make change by counting up Shopping Activity EM p 221 Digit Game Math Boxes EM p. 74	Coins	Counting up allows quick method to providing change.

Day	GLCE Teaching Objective	Activity	Materials	Big Idea
11/13 3.8	GLCE: **M.PS.02.08** Add and subtract money in mixed units, e.g., $2.50 + 60 cents and $5.75 - $3, but not $2.50 + $3.10. TO: To guide children as they solve multi-step problems for amounts under $1.00 and as they practice making change using nickels, dimes, and quarters.	Math Message: Using Q, N, D's to pay for three different items Buying Items with exact change only Buying items without exact change Making vending machine purchases with and without exact change Math Boxes EM p. 78	Slate coins	Cents and dollars are not equivalent amounts of money, each dollar is equal to 100 cents.

Extra Time Activities:

Free choice math games- addition top-it, number line squeeze, name that number, what's my rule, number grid game, etc. Also available, math enrichment texts.

Other Activities:

Readiness	Enrichment
Counting Practice	Creating 3-Digit Numbers
Penny-Nickel Exchange	Fruit & Veggie Stand Number Stories
Illustrating Daily Activities	Calculating Elapsed Time
Base 10 Exchange	Minute Math
Tally Marks	Comparing Data
Counting on a number line	Solving Frames and Arrows Puzzles
High Roller	Solving a Coin Puzzle
Number Grid with Coins	Calculating the Value of a Name

Outline for a Daily Lesson Plan

Date: **November 11, 2009**

Objectives for today's lesson: **Provide experiences with representing and renaming numbers with base-10 blocks, reviewing time, and making, describing, and comparing geoboard shapes.**

Materials & supplies needed: **scissors, stapler, paper, clock stamp, geoboard, rubber bands, base 10 blocks, number cards**

Procedures and approximate time allocated for each event	***Academic, Social and Linguistic Support during each event***
• ***Introduction to the lesson*** *(What will I say to help children understand the purpose of the lesson? How will I help them make connections to prior lessons or experiences? How will I motivate them to become engaged in the lesson?) (5_ minutes)*	
Since I went over in-depth how to do each of the three explorations, to begin this lesson I will start by reviewing the directions for the base 10 blocks, the clock, and the geo-boards once more. I will ask for any questions and give out a few more clarifying directions. Then, since part of our goal in second grade is to prepare students for active and supportive group work that allows them to problem solve, I will review our poster for good group-work behavior. This allows me to remind students of our poster during the explorations if a problem should arise. I already will have divided the class into three groups so I will tell them when I see their group is sitting ready to move on, I will dismiss them to their pre-assigned exploration.	Continued repetition of rules and expectations for all students verbally and with a written poster for students to look at.
• ***OUTLINE of key events during the lesson*** *(Include specific details about how I will begin and end activities; what discussion questions I will use; how I will help children understand behavior expectations during the lesson; when/how I will distribute supplies and materials) (_35__ minutes)*	
There will be three exploration stations set up throughout the room. Building and Renaming Numbers (EM 61) will be set up at the back table. Making a clock booklet (EM 65) will be set up at table 2, and Making and Comparing Geo-shapes (EM 69) will be set up on the carpet. Each group will have 10 minutes at each station. I will let them know how much time they have remaining by setting our visual timer and giving them a verbal reminder at 1 minute. Then they will have a short clean-up/passing time to their next activity. Since they have had several prior experiences with explorations I anticipate that the speed of transitions will be speeding up. While students are exploring I will circulate between groups, first with management issues, and then to ensure that they are using problem solving to	Groups will be situated keeping social and academic status in mind. Since groupwork is a skill they are still learning, close monitoring will allow all students to participate. I will also have enough supplies for every student to alleviate potential fighting over materials.

explore at their station. At Exploration A I will be asking them what patterns they notice when they are using their base-10 blocks? What short-cuts can they use to easily figure out a number by looking at the blocks? How do they know when to move from the ones to tens place… tens to hundreds? At Exploration B I will be asking students what strategies they are using to tell the time digitally, with an analog clock? What is confusing? If it is easy, what could they do to make this more challenging? At Exploration B I will be asking what kind of directions are you giving your partner so they can figure out your shape? What shapes can you name? Do all of them have different names? Why doesn't your partner's shape look just like your shape? • ***Closing summary for the lesson*** *(How will I bring closure to the lesson and help children reflect on their experiences? How will I help them make connections to prior lessons or prepare for future experiences? What kind of feedback do I want from them at this time?) (_5__ minutes)* At the end of the lesson after the students have cleaned up for the last time I will have them meet me on the carpet to decompose the lesson. I will ask for volunteers to share about what they did at each exploration. We will discuss things like the importance of giving good directions (geoboards), accurately telling time (clocks) and finding patterns in our numbers (base-10). • ***Transition to next learning activity***	Asking for volunteers at this point can take away performance anxiety on the part of some students. I might have also spoken with students during the exploration if I noticed they had something that I thought would be beneficial to share with the class.
Assessment *(How will I gauge the students' learning as I implement the lesson plan and once the lesson is completed? Specifically, what will I look for? How will I use what I am learning to inform my next steps)* In our math curriculum, much of what they learn they are not expected to master right then, instead, they see it over and over. This is not the first time they have experienced any of the ideas in this lesson, nor will it be the last. I will only be looking for a continued greater understanding of our big ideas.	***Academic, Social, and Linguistic Support during assessment***
Reflection *(What did students learn? What did I learn about teaching literacy? What went well? What would I do differently next time?)* Since this is the third time the students have had an explorations lesson this year they have become better at clean up and transitioning between activities so that went well. Something I could have done better was just spending a little bit more time clarifying instructions for every station. While the students were engaged with the material at every station, when I checked not all students were doing quite what I asked them to do. I tried to clarify on a one on one basis while they were doing explorations but that was not as effective. Also, there were some issues that have been on-going within the groups that were preventing some from working up to their potential. The next time I might want to go over our group work behavior expectations chart before releasing them to remind them to cooperate and work together. As far as the understanding of the lesson, since it was not introducing any new concepts, most of the students seemed to do quite well at it and enjoyed it. Since the class all enjoyed and were engaged in the activity, that is a good starting point. If I were to do this lesson again I would turn my focus	*(Which students struggled with the material? How will I reteach these students)* Since this was a review explorations day, I will be re-teaching or have taught many of the concepts from the day. I saw the most students struggling with the time so luckily there are several more lessons in this unit that focus on time and in future units we will continually re-visit this concept. Time is something that is integrated into our morning math every day as well, so its something that I will continue teaching on a daily basis and for most of the students I think more practice is

towards asking students to try to challenge themselves even more on the activities since many of them were very open to differentiation.	really what they will need in order to become capable at telling time.

Outline for a Daily Lesson Plan

Date: November 12, 2009

Objectives for today's lesson: **Provide experience with gathering data, entering data in a table, and drawing a bar graph, and to demonstrate a strategy for finding the middle value in a data set.**

Materials & supplies needed: **Math Journal, Teaching Master**

Procedures and approximate time allocated for each event	***Academic, Social and Linguistic Support during each event***
• ***Introduction to the lesson*** *(What will I say to help children understand the purpose of the lesson? How will I help them make connections to prior lessons or experiences? How will I motivate them to become engaged in the lesson?) (5_ minutes)* The lesson starts out with the math message, which asks students to figure out how many pockets they have on their clothing. I will have the class gathered on the carpet, and will ask the children with the greatest number of pockets.. then the least number of pockets, to stand. I will ask the class to help explain their solution strategies.	To reinforce earlier learning of greater than, less than, I will show the symbols < > on the board while we discuss this.
• ***OUTLINE of key events during the lesson*** *(Include specific details about how I will begin and end activities; what discussion questions I will use; how I will help children understand behavior expectations during the lesson; when/how I will distribute supplies and materials) (_35__ minutes)* After the class has gone through greater than, less than, I want us to think about how we would predict how many pockets a new student to the class might have. I will gather predictions from the class and record them. I will ask students to explain their thinking while directing them to the idea that finding the middle number of pockets might help us predict the new students pockets. The students with the most pockets	The visual representation of finding the middle number as well as having students move around the room will help reinforce this concept.

will line up at one end, and the students with the least pockets will line up opposite them. Then the rest of the class will line up in order of number of pockets. In pairs, children at the front and end of the line will sit down until only the child or children in the middle of the line remain. I will explain that these children represent the middle number of pockets. We will discuss, is the middle number a good prediction for the new child? Would you be surprised if the new child had more of fewer pockets than the middle number? I will have students go back to their seats and take out their math journals. Together we will tally the number of pockets that each student has. How many children have 5 pockets? What is the most common number of pockets? Etc. After discussing the table, students will create a bar graph of the pockets data in their math journals. When they finish I will ask, which bar is the tallest, why? What number was our most common number, how can you tell? Discuss **range.** To conclude the lesson, students will complete and we will go over their math boxes, EM p. 68	I will be available at the back table during independent work time for students that are struggling with these concepts to come and get additional help if they need it on a case by case basis. Students will first work on math boxes individually, then we will go over them as a whole group.
• ***Closing summary for the lesson*** *(How will I bring closure to the lesson and help children reflect on their experiences? How will I help them make connections to prior lessons or prepare for future experiences? What kind of feedback do I want from them at this time?) (_8__ minutes)* To conclude the lesson, students will complete and we will go over their math boxes, EM p. 68 • ***Transition to next learning activity***	
Assessment *(How will I gauge the students' learning as I implement the lesson plan and once the lesson is completed? Specifically, what will I look for? How will I use what I am learning to inform my next steps)* I will be looking for students to be able to critically think about why the middle number is important. Are there times when this strategy is more useful than others? What are its limitations? In 2nd grade students have not actually created their own bar graphs yet so I am anticipating support will be needed for this. I just want to assess what they know at this point so we can move forward from there.	***Academic, Social, and Linguistic Support during assessment***
Reflection *(What did students learn? What did I learn about teaching literacy? What went well? What would I do differently next time?)* When I taught this lesson, we often discuss things in math, but it	*(Which students struggled with the material? How will I reteach these students)*

usually is not the center focus of the lesson. Some of the students were a little hesitant about what to do and I think that as we practice doing discussion lessons in math more it will go more smoothly. I too need more practice I think because when we were discussing ways to determine what a good prediction for the number of pockets that a new student might have I only let about 3 or 4 students share until I just kind of quickly guided them to the answer. I think it would have been more effective if I had allowed students to deliberate over their answer for longer. Again, I think with more practice so that I was more relaxed about it that will change with time. The rest of the lesson went fairly smoothly but the students were having a hard time trying to remember their number of pockets when we were using the information later even though it was written on a paper in front of them- still thinking of a way to remedy this!	The main focus of this lesson was finding the middle number and working on bar graphs. I was a little nervous about it, but nearly all of the students were able to read it. The thing that several students struggled with was finding the middle number from looking at a bar graph. I ended up adding onto the end of that lesson to demonstrate several more examples of how to find the middle number. In a few days this same concept will show up again in our math boxes and I will re-evaluate how many students still need help with it from there and I might spend extra time going over the math boxes example that day and in the future as needed.

Part VII:

1. Look at the work your students did on your assessment and at the notes you took as you taught and write about what your students did and did not learn. Provide <u>evidence</u> for your ideas. Explain (of course) your thoughts about why students came to deeper understandings of some ideas than of others. Discuss how you might modify your teaching, participation structures, and/ or tasks if you were to teach this unit again to children of the same age.

On the various formative assessments throughout the unit most of the class did fairly well. One of the first formative assessments that I used asked the class to show coin combinations for buying something for a certain amount of money. Out of twenty-one students, fourteen were able to use coin combinations that were completely correct. Another five students did not finish the assessment in the time allotted. While I think about half of them did not finish the assessment because they did not understand it, another half of them were not using their time very wisely. The final two students were both gone to the resource room during our math time. This showed me that by half-way through the part of the unit on coins, most of the class was able to come up with correct coin combinations. This same idea proved true from the summative assessment at the end of the unit. One

question asked students to show coin combinations to buy a green pepper for 27 cents. All of the class except for two students was able to show a correct combination. Well over half of the class showed combinations using the least number of coins. Some students still relied on using smaller combinations, such as two dimes, instead of going straight to a quarter. This showed me that they are all comfortable with the various amounts that coins are worth, but not all of them are able to consider all of their options or perhaps they are more comfortable adding smaller numbers like using nickels and dimes instead of having to add onto a larger number like a quarter. Although they were comfortable making an exact amount to buy various things under a dollar, making change proved very difficult for about half the class based on classroom discussion and by looking at student's journal pages. If a chocolate milk cost 65 cents and the student paid for it with a dollar, they were supposed to be able to solve it by counting up from 65 cents to a dollar. This concept was difficult. One thing that made this portion difficult was that we did not have any model coins for the students to use to assist them visually while they were thinking about how to count up. I think if they were able to add up the coins in front of them instead of doing it all in their heads the concept would have been much easier to grasp. If I thought these lessons again I definitely would have enough coins for every student to use while working through these problems.

When we were working on time at the very start of the unit there were a handful (perhaps 5) students that could easily tell time without a lot of thought about it. By the end of the unit on the summative assessment everyone was correctly able to answer the clock question except for three students. I think that most of the class was able to develop a deeper understanding of time because the rules regarding time are easier to remember than all the possible adding and subtracting that takes place with coins. Students would occasionally struggle with keeping the hour and minute hand clear, which I saw on their journal pages and when they answered a question out loud in class, but we went over it so many times that (at least for now) everyone was able to keep the hour and minute hands separate. In second grade the objective with telling time is that students are able to tell time to the quarter hour. We spent a lot of time practicing 3= fifteen minute, 6= thirty minutes, 9= forty-five minutes, and 12= zero minutes. This made telling time much faster for the students that had previously relied on counting by fives to get around the clock every time. Still, in discussions with students, there were about four students that still relied solely on counting by fives to get around the clock. As far as I can tell, they seemed to have difficulty remembered the "short-cuts" that we had been practicing as a class. I hung a poster in the room that reminded students which hand was the hour and the minute, and another

showing the minutes short-cut so students that struggled could consult the poster at any time. Although I would ask questions about time every single day, I think if I had spent even more time with struggling students the ones that were not yet able to use all of the short-cuts efficiently might have been able to do it better. I noticed that students often were better at reading the time on an analog clock and writing it down in digital format than they were at reading a digital clock and writing it down on an analog clock. I really am not very worried about that because it would be a very rare occurrence in life to have to read a digital time and transcribe it into analog whereas people often have to read analog times. I think that might have been part of the reason why they found this more difficult.

When we started discussing place value I was rather worried because I thought that this would be a difficult concept for much of the class. On the written pre-assessment when asked to put an X on the digit in the ones, tens, or hundreds place about a third of the class did not answer the question correctly. When informally discussing place value before the unit with several students the students I was talking to were not able to locate the correct digit in a three digit number when I would ask them to find the 10's, or 1's, or 100's. The most common error would be a student saying, using 180, for instance, if I asked which number was in the tens place they would say the 1. By the end of the unit I did not see this error from anyone anymore. We spent a lot of time working with base 10 blocks and doing things like not thinking of the 8 in the tens place as 8, but as 80 because that is what it really represents. I think that the visual of seeing how much larger the 100's squares are than the 10's sticks, and the 1's cubes helped reinforce what is really happening. In a formative assessment I gave out halfway through the unit sixteen students were correctly able to model a given number on their number mats with base 10 cubes without any prompting. With prompting all of them were able to do so. By the time of the summative assessment at the end of the unit, all students but one correctly marked the right digit when presented with a three digit number and they asked you to mark the digit in the tens place. This showed me that through exploring the base-10 blocks the students were able to gain a greater understanding of place value. If I taught this same unit again I would definitely use them just as much as I did in this unit.