Section 1 of Unit Plan

I plan to teach my unit from Monday October 26, 2009 – Friday November 6, 2009. During these two weeks I will cover lessons 3.3, 3.4, 3.5,3.6,3.7,3.8,3.9,3.10, and 4.1

Big Ideas:

Recognizing two-dimensional shapes help students compare/contrasts polygons.

Grouping numbers using arrays, objects, and pictures have a direct influence on early multiplication concepts.

The length of the sides of an object is strongly correlated with calculating the perimeter and area of an object.

Mathematical concepts, such as multiplication, the construction of shapes, and unit measurements can be applied to real world contexts.

Michigan Grade Level Content Expectations

N.MR.02.14 Represent multiplication using area and array models

M.TE.02.04 Find the area of a rectangle with whole number side lengths by covering with unit squares and counting, or by using a grid of unit squares; write the area as a product.

M.UN.03.03 Understand relationships between sizes of standard units, e.g., feet and inches, meters and centimeters.

M.UN.03.05 Know the definition of area and perimeter and calculate the perimeter of a square and rectangle given whole number side lengths.

M.UN.03.06 Use square units in calculating area by covering the region and counting the number of square units.

G.SR.03.05 Compose and decompose triangles and rectangles to form other familiar two-dimensional shapes, e.g., form a rectangle using two congruent right triangles, or decompose a parallelogram into a rectangle and two right triangles.

Learning Objectives

Students will identify the lengths of sides by measuring and estimating a wide range of two-dimensional polygons and three dimensional classroom objects and using their measurements and estimations to calculate the perimeter of a shape.

Students will explore the properties of polygons by using straws and pipe cleaners to construct their own closed two-dimensional shapes.

Students will explore the edges and faces of polygons and determine whether the thickness of a polygon affects the probability of it landing on its edge or face, by setting an hypothesis, using tables to gather information, and making reasonable conclusions from gathered information.

Students will extend their knowledge of the lengths of a polygon by using grid paper and square tiles to find the area of rectangles, squares, and household carpet, by identifying the total amount of squares located inside the object.

Students will recognize the pattern between diameter and circumference by tracing the distance around a soda can (circle), locating the distance from the center to one side of the circle, and by applying the "three times" circle rule to find the circumference, and then students will apply this understanding to objects located in the classroom as they configure the diameter and circumference of objects.

Students will quickly identify multiplication facts by using counters, pictures, and arrays to model equal groups and solve various multiplication stories while making their own original number stories.

Unit Plan Connections Across Standards/Objectives

The big ideas for this unit are: The recognition of two-dimensional shapes help students compare/contrasts polygons, grouping number using arrays, objects, and picture influence early multiplication concepts, the length of the sides of an object is strongly correlated with calculating the perimeter of an object, recognizing two-dimensional shapes help students compare/contrasts polygons, and mathematical concepts, such as multiplication, the construction of shapes, and unit measurements can be applied to real world contexts. These ideas will be evident as we are working through learning objectives that consists of: Students will identify the lengths of sides by measuring and estimating a wide range of two-dimensional polygons and three dimensional classroom objects and using their measurements and estimations to calculate the perimeter of a shape, students will explore the properties of polygons by using straws and pipe cleaners to construct their own closed two-dimensional shapes, students will explore the edges and faces of polygons and determine whether the thickness of a polygon affects the probability of it landing on its edge

or face, by setting an hypothesis, using tables to gather information, and making reasonable conclusions from gathered information, students will extend their knowledge of the lengths of a polygon by using grid paper and square tiles to find the area of rectangles, squares, and household carpet, by identifying the total amount of squares located inside the object, students will recognize the pattern between diameter and circumference by tracing the distance around a soda can (circle), locating the distance from the center to one side of the circle, and by applying the "three times" circle rule to find the circumference, and then students will apply this understanding to objects located in the classroom as they configure the diameter and circumference of objects, and students will quickly identify multiplication facts by using counters, pictures, and arrays to model equal groups and solve various multiplication stories while making their own original number stories. The processing goals used are the communication standard and making mathematical connections. The culmination of all of the big ideas, learning objectives, and process goals reinforce the following GLCEs:

N.MR.02.14 Represent multiplication using area and array models

M.TE.02.04 Find the area of a rectangle with whole number side lengths by covering with unit squares and counting, or by using a grid of unit squares; write the area as a product.

N.MR.03.15 Given problems that use any one of the four operations with appropriate numbers, represent with objects, words (including “product” and “quotient”), and mathematical statements; solve.

M.UN.03.03 Understand relationships between sizes of standard units, e.g., feet and inches, meters and centimeters.

M.UN.03.05 Know the definition of area and perimeter and calculate the perimeter of a square and rectangle given whole number side lengths.

M.UN.03.06 Use square units in calculating area by covering the region and counting the number of square units.

G.SR.03.05 Compose and decompose triangles and rectangles to form other familiar two-dimensional shapes, e.g., form a rectangle using two congruent right triangles, or decompose a parallelogram into a rectangle and two right triangles.

Mathematical Process Goals (NCTM)

Communication Standard

- This is a concept that I want to delve into over the duration of my unit. My students seem to know what the answer is, and sometimes how they got the problem, but most of them can't articulate to me why they chose to analyze the problem the way they did, or put their answer into words. They never show their work and as they get older that is something that they will have to do, so I plan to stress the importance of this process.

Making Mathematical Connections

- Multiplication is a concept built upon after students have a working knowledge of addition and subtraction. As students experiment with multiplication they will come to use their knowledge of this concept and apply it to real-world contexts, such as story problems, grouping items, etc. This process should be hit hard during the unit as it addresses early multiplication concepts.

Math Unit Plan Section 2

<table>
<tr><td colspan="2">Pre-Assessment
The pre-assessment are student interviews with three different students in the class ranging from a lower level of understanding, a medium level of understanding, and a higher understanding of what they currently seem to be knowing about mathematical concepts. With the interview I will ask students to find the perimeter and area of given squares and rectangles and explain their justification. I will also ask them how long are standard US systems of measurement and units of measurement provided by the Metric system used in other countries just to see the foundation of knowledge that they currently have. I will also ask them to look at a multiplication array and ask them to provide me with reasoning behind what this arrays is used for and what it tells me. Then I will have students look at a circle and judging from this circle tell me what the circumference and diameter mean, while having them justify for me why they believe it to be whatever they believe.</td></tr>
<tr><td>Students Knowledge and Planned Activities</td><td>Grid paper will be provided for them so that they should be able to use this as a guide for finding perimeter and area. Visual aids of squares and circles, etc will be provided that hint at what circumference and diameter is while also refreshing students memory of what multiplication arrays are.</td></tr>
<tr><td>Expected Level of Difficulty</td><td>Students have currently been playing around with boxed squares and rectangles as they figure out the perimeter of objects. They also have been working with multiplication arrays in their</td></tr>
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	review of concepts due to MEAP testing preparation, therefore students should be able to explain what an array is and what it is used fo, as well as how to find the perimeter of a square and rectangle. If students cannot then this signals to me that they haven't adequately learned those concepts and that with this unit I should hit those concepts in review. What students may have trouble in doing is finding the area of the object as well as being able to tell me what the circumference and diameter are and how they would go about finding those. These are concepts that have not been introduced to my third grade class, but I would still like to see if they still have a working knowledge of it.
Justification for each of the components	Unit big ideas are centered around circumference, diameter, units of measurement, perimeter, area, and determining lengths therefore this assessment assesses student's current understanding of each of these areas.
Mathematical and Non-Mathematical Accommodations	One of my focus students is dyslexic and has a hard time reading and writing. Therefore the interview will be read to him, but the visuals will help him in determining the answer to most of the questions. The students don't have to write anything, the interview just serves as the teacher's way of writing down notes of what students know and don't know. In a way that interview serves as an anecdotal record for the teacher to use and analyze. Anecdotal records are helpful for any classroom teacher. The Boyd-Badstone article read in TE 802 stresses the importance of anecdotal records. The article says "A fundamental purpose of assessment is to communicate what the child knows and is able to do. Teacher-generated, anecdotal records provide an insider's perspective of the child's educational experience (Body-Badstone,231). Wait time will also be purposely given so that students have time to process the question, their thoughts, and then their responses. Wait time is reinforced *Classroom Discussions* chapter 2"The Tools of Classroom Talk" as it states that wait time is essential for students to articulate thoughts in their head and to get those thoughts

	out of their head.
Strengths and Weaknesses	Strengths: Short interview that helps me to see what concepts students already know and what they need more work on. Helps for me to also see student thinking and how they regurgitate information to me orally as I write down their thoughts. Tests don't really do that. Weaknesses: I'm only interviewing three students therefore the data may not be as reliable as interviewing the whole class. Nevertheless interviewing the whole class one-on-one would take way too long.
Why I Chose to Pre-Asses this Way	Students are used to taking tests whether that be spelling tests every Monday and Friday, reading tests every Friday, or unit tests at the end of each unit (2 weeks or so). Therefore, with this unit I didn't want to overbear students with the anxiety of having to take another test. I believe that learning can be fun and for a lot of children tests are not always the "fun thing." So I thought that interviewing would be best, it's a way of assessing students informally, it's a way of having students orally tell a teacher how to do something or how they would go about doing something, and it is an easier way to look at what student feels comfortable with and what a student doesn't feel comfortable with. You are not only analyzing their oral components, or their problem-solving skills, but you are also analyzing their body language in response to having to complete a certain task or given you an answer that they may or may not be sure of. For all of those reasons I have decided to pre-assess in the form of interviews. I have chosen to interview three students from three different levels in regards to understanding of math, a high achieving student, a medium achieving student, and a lower achieving student. Doing one-on-one interviews with each student over in pre-assessing would take up an enormous amount of time, so I've chosen set representatives of each group to analyze in what they know, what they don't know, and what they are still working on grasping.
Results of the Pre-Assessment	After doing the pre-assessment with all of my

	students I found that they could accurately find the perimeter and area, which is unsurprising to me since that is a concept they have been learning and one they had to use on the MEAP. We haven't spent a whole lot of time on area so that is still a concept I want to hit in review, but I know I had don't have to spend as much time on perimeter of area for that matter, just hit it in review. Now my lower achieving focus students and my upper achieving focus students knew what a foot, an inch, a yard was, but only the upper achieving student knew how many inches were in a foot and how many feet were in a yard. Therefore this has helped me to see that by spending two days on measurement I will help the lower achieving students and the middle achieving students. For the upper achieving students I may have to give them more open-ended problems that assess their ability to convert rather than assessing to see if they know what each unit is. The results of the preassessment also told me that I need to spend more time on circumference and diameter because those were concepts still really new to students. My upper achieving students told me that they could circumference was the outside portion of the circle but they couldn't accurately tell me how to find the diameter or the three times rule, which would help them in finding both. I know that this is also a concept that I will spend time on, and I will also allot more time for students to find circular objects in the classroom and apply their understanding of finding circumference and diameter.

Formative Assessments Formative Assessments will take place in the form of whole-class discussions, experiments, and worksheets from their math work journals. Students will be assessed once that day in one or two of the forms.	
Students Knowledge and Planned Activities	Students have knowledge of doing experiments, using grid paper, using manipulatives, using rulers, etc. A lot of the formative assessments that I will give them involve hands on materials such as those listed above. They also involve worksheets that are closely in line with what they are being asked to do, therefore because students

	are used to this routine in math class they will come to expect a worksheet and it won't put as much pressure on them to get the right answer, as opposed to just writing down their thoughts, which is exactly what I want them to do. I want students to not feel the pressure of having to complete a test or math boxes in order for me to see their understanding, but rather something they do every day, something that comes natural to them.
Expected Level of Difficulty	Students should have no problem making polygons on grid paper and determining the perimeter and then determining the area. Students should also have no problem looking at an array, telling me the multiplication fact it represents and the product of the fact, or doing any of the experiments such as tossing the thin and thick blocks, and manipulating the straws to make different polygons. In some way or another they have already done these things. What I do judge to be a difficult task for students is determining the circumference and diameter of objects, using estimation to help them figure out distance, understanding the relationship between the US customary system as opposed to the Metric System, and then explaining their reasoning orally to me.
Justification for each of the components	The different forms I have for assessing students is whole class discussions (bringing closure to a lesson), worksheets from their math journals, and experiments where they have to look at the information they've collected or their classmates have collected and make reasonable assertions from that data. I believe that all forms are interconnected and provide a balanced approach to assessing as one assesses comprehension of a task, one assesses students ability to work with other students and reason, and then the other assesses application of mathematical concepts. All of these have their importance in mathematics and in my reasoning to use as formative assessments.
Mathematical and Non-Mathematical Accommodations	Manipulatives will be provided for all students to assist them with their formal assessments. Some students may need teddy bear counters or square tiles and grids to help them learn mathematical concepts, so that option will be available for

	them. In reading Jean Behrend's article titled *Learning Disabled Students Make Sense of Mathematics* I have found that students who need to justify their learning and figure out things by themselves need things that will aid in their understanding. Whether square blocks or counters those things help math make sense.
Strengths and Weaknesses	Strengths: Focuses on the content currently being learned, therefore less content to assess. Weaknesses: Does not focus on the content previously learned in the unit which can help serve as a review.
Why I Chose to Assess this way	Formative assessments are things that we can observe from students on a daily basis that help for us to reform our instruction. EveryDay math provides lots of activities to be done the complement the lesson objectives for the day, therefore I have chosen items out of the student workbook journal and out of the math masters book to aid students in understanding the content better. These are also a part of students normal daily routines, after being taught a mini-lesson or whole group lesson students usually have a follow-up activity that helps for them to apply their own understanding. For me this also helps to see what students "got" and what students did not "get." These worksheets also do not provide as much stress as seeing a math box or a weekly test.

Summative Assessment The end of the unit assessments is an end of the unit 3 test which includes making ballpark estimates, measuring line segments, finding the perimeter of polygons, finding the area of rectangles, but it also includes review of other concepts learned in the previous two units which include probability statements, using tally charts to graph results, finding the maximum, minimum, range, and median.	
Students Knowledge and Planned Activities	Students have a working knowledge of making ballpark estimates which they have applied to measuring throughout the course of this unit. This can help them with the first few questions on estimation. Students also know how to use grid paper and by this time they should be able to find the area of a rectangle or square by using

	this grid paper. Students can also use rulers to measure and they have some background knowledge on the US customary system and Metric System, therefore measuring should be no problem to them.
Expected Level of Difficulty	This test does not appear to be very difficult as the formative assessments aid students to be thinking about the content throughout the whole unit. Therefore they should be able to complete the test with ease. What may be more difficult is the last page of the assessment (extra credit) where students have to approximate the shape of the fence that would give them the most room.
Justification for each of the components	Though the objectives don't address ballpark estimates it is a concept being taught in review throughout the whole chapter. This will help throughout a lot of their formative assessments so it would also seem natural to assess this skill at the end of the unit. Determining perimeter and area will also help them in real world application, as well as measuring the lengths of a polygon and its sides.
Mathematical and Non-Mathematical Accommodations	In my class there is a child who is LD and he has a very hard time reading what is in front of him as he is reading below a first grade level. He also has a hard time staying on task because he's highly distractible, therefore, I know that during the course of the final assessment I may have to put this child aside and walk through the problems with him, reading them to him as he completes the problems and writes out the answer. He needs to learn to be accountable for his work but he also needs some special attention. The Jean Behrend article *Learning Disabled Students Make sense of Mathematics* addresses special needs students as it explains a teacher taking two students aside to assist them in making sense of problems. This is exactly what I plan to do for him and any other that is struggling to complete the test. I will hold him accountable by having him do the problem solving, but I will also aid him and encourage him to keep working through despite struggles.
Strengths and Weaknesses	Strengths: This assessment assesses a culmination of most of the things students have learned throughout the semester thus far. Therefore it is a build-up of skills, and these

	skills will continue to be assessed on future summative assessments. Weaknesses: Because this is the end of the unit test for chapter 3 and I am doing a chapter in section 4 as well it doesn't really address circumference and diameter. So I will need to add on to this assessment so that it can fulfill all of my objectives.
Why I Chose to Assess this way	This test is a perfect measure to see what students currently learned and what they learned from the previous chapters. This test is building on skills and though I believe its important to focus on what students learned for the week I also think its important to review the concepts learned throughout the entire year in a way that makes sense. My summative assessment both presents concepts learned in the unit and concepts learned in the previous units.

Copies of the different types of assessments are provided on the following pages.

Summative Assessment

Name _____ Date _____ Time _____

LESSON 3•10

Written Assessment

Progress Check 3

Part A

Make a ballpark estimate for each problem. Write the number model.

Unit

1. 248 − 103 = _____

Ballpark estimate:

_____

2. 169 + 28 = _____

Ballpark estimate:

_____

Measure each line segment to the nearest $\frac{1}{2}$ inch.

3. _____ _____ in.

4. _____ _____ in.

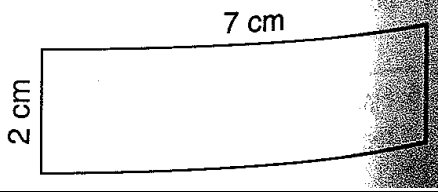
Measure each line segment to the nearest $\frac{1}{2}$ centimeter.

5. _____ _____ cm

6. _____ _____ cm

7. Find the perimeter of the rectangle.

The perimeter is _____ cm.



LESSON 3•10 **Written Assessment** *continued*

14. Measure the line segment to the nearest $\frac{1}{2}$ inch.

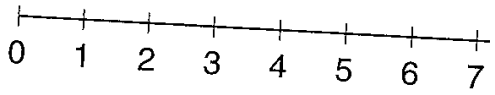
_____ in.

15. Measure the line segment to the nearest $\frac{1}{2}$ centimeter.

_____ cm

16. Use the data from the tally chart to create a line plot. You may use your *Student Reference Book* to help you.

Number of Books Read	Number of Children
0	
1	
2	𝍸 /
3	𝍸
4	
5	///
6	
7	////



e the data to answer the questions.

What is the *maximum* (greatest) number of books read? _____ books

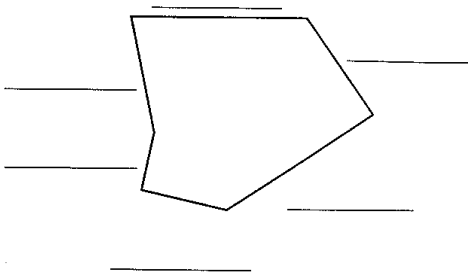
What is the *minimum* (least) number of books read? _____ books

What is the range for the data? _____ books

What is the median for the data? _____ books

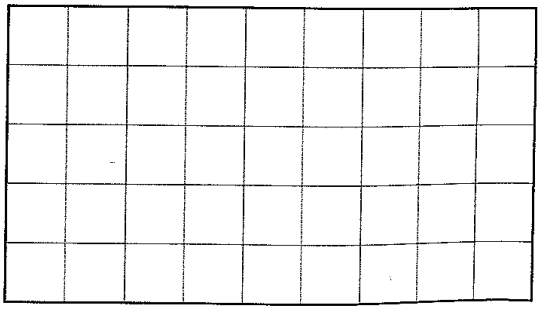
Part B

11. a. Measure the sides of the polygon in centimeters.



b. The perimeter is _____ cm.

12. Draw a rectangle with an area of 16 square centimeters.



13. Fill in the blanks.

12 in. = _____ ft	_____ in. = 4 ft	6 ft = _____ yd
24 in. = _____ ft	_____ ft = 1 yd	12 ft = _____ yd

Name _____ Date _____ Time _____

LESSON 3•10

Open Response

Progress Check 3

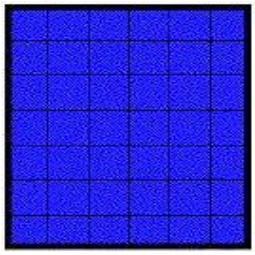
Building a Fence

Gina has 24 feet of fence.
She wants to make the **largest rectangular area** possible for her rabbit to play in.
What length should she make each side of the rabbit pen?
Show all your work and explain how you found the **largest area.**

Pre-Assessment –Student Interviews (3 Students)

1. If I were to ask you to explain perimeter to me how would you explain it?

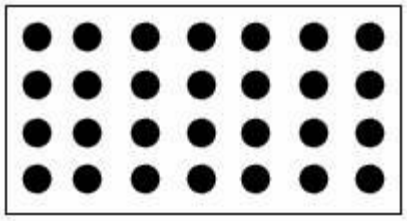
2. Can you show me how to find the perimeter of this square? How do you know when you have reached the right answer?



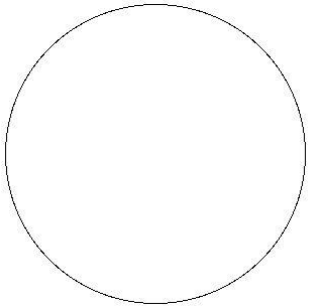
3. When I say find the area of this square what do I mean? How would you find the area of the square? Are you confident in doing this?

4. How long is a foot? A centimeter? A Meter? Are these units of measurement related to one another? How so?

5. What does this multiplication array symbolize in terms of multiplying numbers? Can you use this array to find an answer?



6. Look at this circle. What is does circumference and diameter mean? How would I find both of these?



Formative Assessments

Assessments include exit cards, teacher observations, and lesson worksheets that assess student understanding. Attached are the lesson worksheets that will be used.

Date Time

LESSON 3•6

Tiling with Pattern Blocks *continued*

Cover this rectangle with squares.

About _____ squares cover the whole rectangle.

Cover this rectangle with triangles.

About _____ triangles cover the whole rectangle.

Cover this rectangle with narrow rhombuses.

About _____ narrow rhombuses cover the whole rectangle.

Date Time

LESSON 3•3

Estimating Lengths

1. Follow these steps using **U.S. customary** units: inches (in.), feet (ft), or yards (yd). Then follow these steps using **metric** units: millimeters (mm), centimeters (cm), decimeters (dm), or meters (m).
   - ◆ Use personal references to estimate the measures.
   - ◆ Record your estimates. Be sure to write the units.
   - ◆ Measure with a ruler or tape measure. Record your measurements.

Objects	U.S. Customary Units		Metric Units	
	Estimate	Measurement	Estimate	Measurement
height of your desk				
long side of your calculator				
short side of the classroom				
distance around your head				

2. Choose your own objects to estimate and measure.

Objects	U.S. Customary Units		Metric Units	
	Estimate	Measurement	Estimate	Measurement

Date Time

LESSON 3•7

Areas of Rectangles

Draw each rectangle on the grid. Make a dot inside each small square in your rectangle.

1. Draw a 3-by-5 rectangle.

Area = _____ square units

2. Draw a 6-by-8 rectangle.

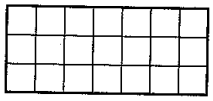
Area = _____ square units

3. Draw a 9-by-5 rectangle.

Area = _____ square units

Fill in the blanks.

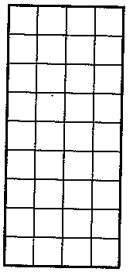
4.



This is a _____-by-_____ rectangle.

Area = _____ square units

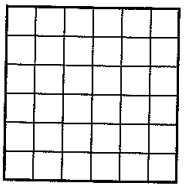
5.



This is a _____-by-_____ rectangle.

Area = _____ square units

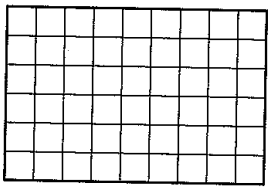
6.



This is a _____-by-_____ rectangle.

Area = _____ square units

7.



This is a _____-by-_____ rectangle.

Area = _____ square units

Date _____ Time _____

LESSON 3•9

Diameters and Circumferences

1. Find numbers on the label of your can. Write some of them below. Also write the unit if there is one.

_____

2. Record the diameter and circumference of your can.

can letter: _____ **diameter:** about _____ cm

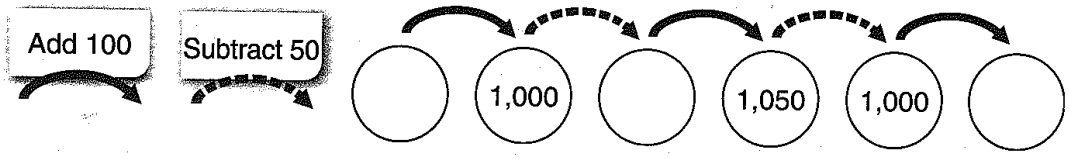
circumference: about _____ cm

3. Write the rule linking diameter and circumference:

_____

_____

4. Fill in the empty frames. Use two rules.



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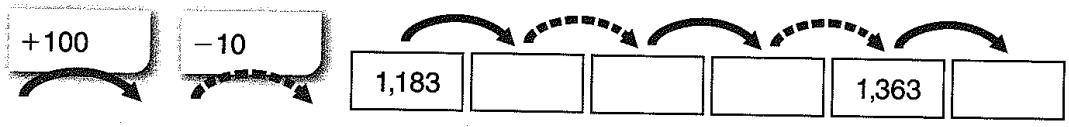

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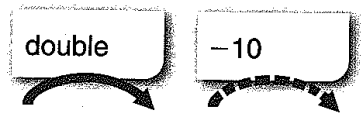
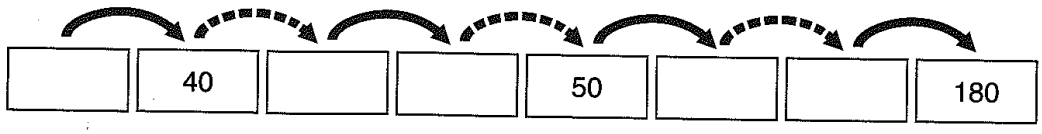




Date _____ Time _____

LESSON 4•1

Solving Multiplication Number Stories

Use the Variety Store Poster on page 215 of the *Student Reference Book.*

For each number story:

- Fill in a multiplication/division diagram. Write ? for the number you need to find. Write the numbers you already know.
- Use counters or draw pictures to help you find the answer.
- Record the answer with its unit. Check whether your answer makes sense.

1. Yosh has 4 boxes of mini stock cars. There are 10 stock cars in each box. How many stock cars does he have?

boxes	cars per box	cars in all

Answer: _____ (unit)

How do you know your answer makes sense? _____

_____

2. There are 100 file cards in each package. How many cards are in 5 packages of file cards?

packages	cards per package	cards in all

Answer: _____ (unit)

How do you know your answer makes sense? _____

_____

3. Use a separate sheet of paper. Write your own multiplication number story. Write how you know your answer makes sense.

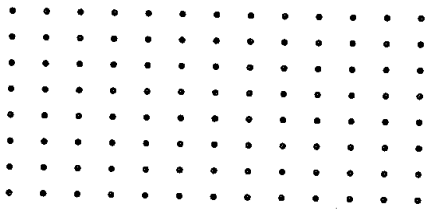
Date _____ Time _____

LESSON 4•2

More Multiplication Number Stories

- Fill in the multiplication/division diagram.
- Make an array with counters. Mark the dots to show the array.
- Find the answer. Write the unit with your answer. Write a number model.

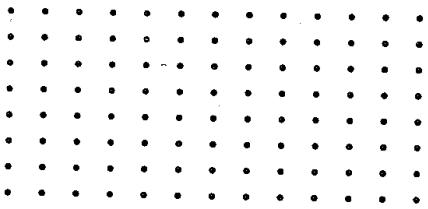
1. Mrs. Kwan has 3 boxes of scented markers. Each box has 8 markers. How many markers does she have?



boxes	markers per box	markers in all

Answer: _____ (unit) Number model: _____

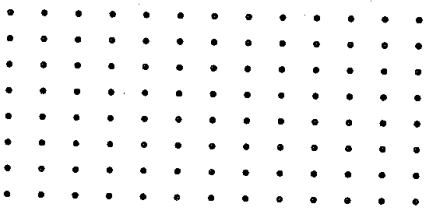
2. Monica keeps her doll collection in a case with 5 shelves. On each shelf there are 6 dolls. How many dolls are in Monica's collection?



shelves	dolls per shelf	dolls in all

Answer: _____ (unit) Number model: _____

3. During the summer Jack mows lawns. He can mow 4 lawns per day. How many lawns can he mow in 7 days?



days	lawns per day	lawns in all

Answer: _____ (unit) Number model: _____

Date Time

LESSON 3•5

Group Tally Chart

Block: _____

Result	Tallies	Total
on an edge		
not on an edge		
Total number of tosses		

lame _____ Date _____ Time _____

LESSON 3•5

Group Tally Chart

ock: _____

Result	Tallies	Total
on an edge		
not on an edge		
Total number of tosses		

Section 3

Differentiated Instruction

2 Gifted Students (Students A and B)

Students A and B are really performing at the same rate. Both are labeled as gifted students by the district and looking at the curriculum modifications provided by Marsha Chance (Differentiated Instruction Coordinator) the modifications presented for each student on the progress report indicates that the differentiated instruction provided for both students would be the same. They both have a wealth of knowledge that they eagerly share with the rest of the class and they also have this calm confidence about them, where students just kind of take to them because they are natural born leaders. They can mentally compute mathematical equations and they can provide justification whether prompted or not prompted to do so.

In my discussion based lesson I will expect that they provide me with the at least six objects in the room that fit under the category of an inch, a foot, and a yard.

In my group work based lesson I will pair both of these students together and I will differentiate by having the students do an additional experiment where they flip one of the shapes a total of 10 times and then they flip the shape 40 times as they write down how many times the shapes lands on its edge, and face for both different strategies. They will then look at both experiments and figure out which experiment was more reliable.

1 Learning Disabled Student (Student C)

Student C has a very hard time with reading, writing, and staying on task. He's highly distractible which means that he almost never gets anything done and he's dyslexic so he has a hard time configuring the way words are structured or the sounds that make up the words. We almost always scribe for him, but lately after an IEP with his parents we've been moving away from scribing for him and we've been making him write his own words the way it sounds to him, we've just been decreasing the amount of work that he needs to give us in comparison to the rest of the students.

In my discussion based lesson he will be working with a partner and he will be able to bounce off ideas with that partner, so coming up with objects that represent an inch, foot, and a yard won't be very difficult for him to do. Plus he likes to do hands on things so this lesson should serve as no problem. Because he only has to write down a total of nine objects I will expect that he write down all of those objects. I realize that it may take him more time so if I could draw a picture of some of those objects and when we are discussion write down the words the way he thinks they are spelled that will be sufficient.

In my group work based lesson he will also be working with a partner and he will be able to bounce off math talk with a partner. This activity is also very hands on and he likes hands on things so this

should also serve as no problem for him. He knows how to make tally marks and he knows how to predict. There is really no substantial amount of writing that he has to do, so this lesson can be done without having to differentiate for this student.

2 Students who really struggle (Students D and E)

Students D and E really struggle with just about every math concept. Student E will find every excuse in the book to not do her work, while student D will attempt her work but just doesn't get it. Student D and E both have a hard time skip counting (100's) while Student D also has a hard time skip counting (2s, 10s). These concepts have made it hard for them to continue learning more stuff when they haven't full mastered previous stuff.

In my discussion based lesson I will spend a lot of time with these students initially just so that they are sure what an inch looks like, what a foot looks like, and what a yard looks like. I will also tell them that they can use their measuring tapes if they are not sure if their estimations are accurate. I still expect them to provide me with at least three examples of each and to provide a justification for why they chose those objects.

In my group work based lesson I will pair Student D with a student who is really excelling in math just so that the student can model how to do the lesson without me having to be there. For Student E I will pair her with a student that is decent in math but one that really likes hands on activities and making sense of things. Hopefully this will get her excited about doing math and hold her accountable as well. Because students are making predictions and doing an experiment this lesson isn't totally bombarded with concepts that seem like math. These are fun activities and they really get the students up and out of their seats. Both of these students though and their partners will be given a lot of one-on-one attention and modeling if need be.

Section 4 - Sequence of Lessons for Ten Days

Monday October 26th – Standard Linear Measures

Grade Level Content Expectations: M.UN.03.03 Understand relationships between sizes of standard units, e.g., feet and inches, meters and centimeters.

Learning Objectives: Students will identify the lengths of sides by measuring and estimating a wide range of two-dimensional polygons and three dimensional classroom objects and using their measurements and estimations to calculate the perimeter of a shape.

Process Goals: Making Mathematical Connections and the Communication Standard.

Activities: Large group discussions and small group activities.

Materials: Student Reference Book Page 146 and 148, 22 Tape Measurers, 9 quarter sheet papers for each student, blank piece of paper.

Big Ideas: The length of the sides of an object is strongly correlated with calculating the perimeter and area of an object.

Details of the Information and Overview of Activities: PowerPoint presentation on the US Customary system, followed by instructional questions, followed by small group activity with measuring, followed by large classroom discussion. The big idea is that students will eventually learn that in finding lengths of objects they can also figure out the perimeter and area of objects. This big idea will come later but a component of that big idea is learning the lengths of sides in a way that makes sense to children.

Plans for Extra Time: Have students find an object in the room that has a length of about 15 feet and a width of 5 feet by going on a scavenger hunt across the room..

Additional Activities for Students who Finish Early: Have students create a poster representation of the objects they found.

Tuesday October 27th-Standard Linear Measures Part 2

Grade Level Content Expectations: M.UN.03.03 Understand relationships between sizes of standard units, e.g., feet and inches, meters and centimeters.

Learning Objectives: Students will identify the lengths of sides by measuring and estimating a wide range of two-dimensional polygons and three dimensional classroom objects and using their measurements and estimations to calculate the perimeter of a shape.

Process Goals: Making Mathematical Connections and the Communication Standard.

Activities: Large group discussions and small group activities.

Materials: Student Reference Book Page 146 and 148, 22 Tape Measurers, 9 quarter sheet papers for each student, blank piece of paper.

Big Ideas: The length of the sides of an object is strongly correlated with calculating the perimeter and area of an object.

Details of the Information and Overview of Activities: PowerPoint presentation on the Metric System, followed by instructional questions, followed by small group activity with measuring, followed by large classroom discussion. This lesson is a continuation from the first day's lesson where students had to measure using the US customary system. Today students will be measuring using the metric system and they will be identifying 3 objects that are 1 centimeter, 1 decimeter, and 1 meter. When students understand length and the different ways to measure length they will be

able to apply finding lengths of objects and distances to a variety of objects in the United State s and in other countries. The big idea is that students will eventually learn that in finding lengths of objects they can also figure out the perimeter and area of objects. This big idea will come later but a component of that big idea is learning the lengths of sides in a way that makes sense to children.

Plans for Extra Time: Have students find an object in the room that has a length of 3 meters long and 1 meter wide as they go on a scavenger hunt around the room..

Additional Activities for Students who Finish Early: Have students create a poster representation of the objects they found.

Wednesday October 28th-Perimeter

Grade Level Content Expectations: G.SR.03.05 Compose and decompose triangles and rectangles to form other familiar two-dimensional shapes, e.g., form a rectangle using two congruent right triangles, or decompose a parallelogram into a rectangle and two right triangles.
M.UN.03.05 Know the definition of area and perimeter and calculate the perimeter of a square and rectangle given whole number side lengths.

Learning Objectives: Students will identify the lengths of sides by measuring and estimating a wide range of two-dimensional polygons and three dimensional classroom objects and using their measurements and estimations to calculate the perimeter of a shape.

Students will explore the properties of polygons by using straws and pipe cleaners to construct their own closed two-dimensional shapes.

Process Goals: Making Mathematical Connections.

Activities: Modeling, whole class discussions, and peer work.

Materials: 90 straws, and 90 twist ties, material bins, pencils, math journals, Elmo, dry erase board and markers

Big Ideas: Recognizing two-dimensional shapes help students compare/contrasts polygons.

The length of the sides of an object is strongly correlated with calculating the perimeter and area of an object.

Details of the Information and Overview Of Activities: Teacher will model how to put two and three straws together with twist ties to make different shapes, followed by students receiving time to manipulate the straws themselves, followed by explicit instructions from the teacher to make a triangle, then a square. Teacher will instruct them to pull the sides of the square and will ask

questions about the new shapes they get. Students will trace their shapes and figure out the perimeter of each shape by using a ruler and labeling them in inches. Students will then as a pair complete math journal page 63 where they have to find the perimeter of objects. This activity further helps students to see that the length of sides is directly related to finding the perimeter of objects which is one of the big ideas.

Plans for Extra Time: If there is extra time draw shapes on the board and have students guess which shape will have the bigger perimeter, including their justification for why.

Additional Activities for Students who Finish Early: Give children grid paper and have them find all of the possible rectangles that would yield a perimeter of 20 centimeters. Have students draw the rectangles they found including the length of each side.

Thursday October 29th-Pattern block toss experiment

Grade Level Content Expectations:

Learning Objectives: Students will explore the edges and faces of polygons and determine whether the thickness of a polygon affects the probability of it landing on its edge or face, by setting a hypothesis, using tables to gather information, and making reasonable conclusions from gathered information.

Process Goals: Communication Standard

Activities: Whole class discussion, partner talk, small group activities.

Materials: : Table on the whiteboard that records different pattern blocks and tallies indicating which is most likely to land on an edge, 24 copies of page 70 from the Math masters book, 3 single blocks 3 double blocks (6 blocks) per group of two students (11 groups in all), pencils, dry erase markers.

Big Ideas: Mathematical concepts, such as multiplication, the construction of shapes, and unit measurements can be applied to real world contexts.

Details of the Information and Overview of Activities: Students will form a hypothesis of whether if they were to throw a single and double shape up twenty-five times whether or not it would land on its face, its edge, or neither. Teacher will create a tally on the board and record student's hypotheses with tally marks. Students will work in pairs and conduct their own experiments by shaking single blocks objects in a cup as well as double thick objects in a cup and they will record how many times it landed on its edge, face, or neither. After students are done then we will have a whole class discussion on what happened, if the students' hypothesis were correct, any limitations they may have ran into, and what all of the experimentation means. The big idea is that students can apply mathematical concepts to real world contexts and this essentially what

happens in this experiment. Students are fondling with the idea of probability, a concept they learned earlier, and the likelihood of what will or will not happen. They are also exploring the construction of each shape wondering why they are most likely to land on an edge or a face, which provides them with real-world application.

Plans for Extra Time: Read *Probably Pistachio* by Stuart J. Murphy and ask students how the block toss relates to probability, a concept they learned in an earlier unit.

Additional Activities for Students who Finish Early: Have students create a graph representation (whether bars or pictures) showing the relationship between different shapes and the sides they landed on.

Friday October 30th-Perimeter and Area

Grade Level Content Expectations: M.TE.02.04 Find the area of a rectangle with whole number side lengths by covering with unit squares and counting, or by using a grid of unit squares; write the area as a product.

M.UN.03.05 Know the definition of area and perimeter and calculate the perimeter of a square and rectangle given whole number side lengths.

Learning Objectives: Students will extend their knowledge of the lengths of a polygon by using grid paper and square tiles to find the area of rectangles, squares, and household carpet, by identifying the total amount of squares located inside the object.

Students will identify the lengths of sides by measuring and estimating a wide range of two-dimensional polygons and three dimensional classroom objects and using their measurements and estimations to calculate the perimeter of a shape.

Process Goals: Making Mathematical Connections and the Communication Standard

Activities: Small group activity, Whole class instruction.

Materials: Smart Board, ELMO, 22 geoboards, and 44 rubber bands (1 extra for each student).

Big Ideas: The length of the sides of an object is strongly correlated with calculating the perimeter and area of an object.

Overview of Activities and Details of the Information: Draw rectangles on the board and have students try and figure out the length of two missing sides when they know the perimeter and the length of the other two sides. In pairs have students make 3 rectangles or squares with a perimeter

of 12 units, 3 rectangles or squares with a perimeter of 14 units, and 4 rectangles or squares with a perimeter of 16 units. Have students identify the lengths of all the sides and record them on math journal page 67. Follow up with a whole class discussion of different strategies students used to find different rectangles and squares. Once students have an accurate picture of perimeter and how to find perimeter and make perimeter, as a whole class have students predict how many squares will fit in the rectangle on the smart board, how many triangles will fit in the rectangle on the smart board, and how many rhombuses will fit in the rectangle on the smart board. These lesson steps are all tied to the objectives and big ideas where we want students to play around with perimeter, constructing objects with a certain perimeter, and then realizing the connection between perimeter and area.

Plans for Extra Time: Have students look for patterns with their squares and rectangles that are 12 units, then with their rectangles and squares that are 14 units, then with their rectangles and squares that are 16 units.

Additional Activities for Students who Finish Early: Have students find the lengths of sides of squares and rectangles if they only know 1 side length and the perimeter.

Monday November 2nd-Area

Grade Level Content Expectations: M.UN.03.06 Use square units in calculating area by covering the region and counting the number of square units.

Learning Objectives: Students will extend their knowledge of the lengths of a polygon by using grid paper and square tiles to find the area of rectangles, squares, and household carpet, by identifying the total amount of squares located inside the object.

Process Goals: Making Mathematical Connections

Activities: Group work, Whole Class Mini-Lesson

Materials: Yard squares, foot squares, worksheets with finding the area of a polygon, pencils, tape.

Big Ideas: Mathematical concepts, such as multiplication, the construction of shapes, and unit measurements can be applied to real world contexts.

Overview of Activities and Details of the Information: Review class of what happened yesterday when they placed the triangles, squares, and rhombuses inside of the rectangle. Place a 1 yard paper square on whiteboard, have students guess how many 1 foot squares will be needed to cover the entire 1 yard square. Have students come to the board and tape the 1 foot squares on the 1 yard square. Tell students that there are 9 square feet in a square yard. Show students how we just found the area of the yard square, which is also what we did the following day. Discuss advantages for

using squares to find the area of objects. Have children work in groups of four (5 groups total) and have them find the area of an appointed object (the area of a desk, the area of two floor tiles, the area of the top of a bookshelf, the area of the classroom window on the door, the area of the top of the paper rack) own 1 foot squares and have them estimate the areas of different surfaces in the classroom. When students are done have them come back together and share their findings. Then have them complete a sheet where they have to find the area of different polygons. All of these skills and the sequence of the skills directly influence students perception of area and how to find area, which are my big ideas and objectives.

Plans for Extra Time: Have students use grid paper to cut out a rectangle. Then have students cut apart that triangle and piece together a new polygon with the same area. Discuss how the shapes look different even though they have the same area.

Additional Activities for Students who Finish Early: Have students construct their own rectangles and squares on construction paper, and have them figure out the area and perimeter of their shapes using a ruler (inches).

Tuesday November 3rd-Number models for Area

Grade Level Content Expectations: M.UN.03.06 Use square units in calculating area by covering the region and counting the number of square units.

Learning Objectives: Students will extend their knowledge of the lengths of a polygon by using grid paper and square tiles to find the area of rectangles, squares, and household carpet, by identifying the total amount of squares located inside the object.

Process Goals: Making Mathematical Connections

Activities: Whole group instruction and modeling, individual work.

Materials: Smart Board, 10 by 10 grid paper, math journal page 74

Big Ideas: Mathematical concepts, such as multiplication, the construction of shapes, and unit measurements can be applied to real world contexts.

Grouping numbers using arrays, objects, and pictures have a direct influence on early multiplication concepts.

Overview of Activities and Details of the Information: Place one yard squares along the outside of the room (shaped like the letter L). Ask students to figure out how many squares are going vertically and horizontally. Show students that in order to figure out the area of the room we would

have to fill in the rest of the squares. Call on students to estimate the area in square yards of the room, while also giving a justification for their thoughts. Then show students a 10 by 10 grid on the smartboard. Have students imagine that this grid is the area of the floor Ask students how many rows there are, then ask students how many squares are in each row. Show students that like finding arrays they can also use arrays to find the area of the floor. Show students that they can easily find the area of surfaces by using multiplication. Have students complete Math Journal page 74. This sequence of activities is strongly in line with the learning objectives and goals

Plans for Extra Time: Have students use grid paper to make their own floor models, calculating the lengths of each side and the perimeter of their floors.

Additional Activities for Students who Finish Early: Have students use geoboards to construct a rectangle or square, and then have them place a penny within each slot in each row and have students calculate the perimeter.

Wednesday November 4th-Dimater and Circumference

Grade Level Content Expectations: Could not find a Michigan GLCE that was in line for this in the third, second, fourth, or fifth grade.

Learning Objectives: Students will recognize the pattern between diameter and circumference by tracing the distance around a soda can (circle), locating the distance from the center to one side of the circle, and by applying the "three times" circle rule to find the circumference, and then students will apply this understanding to objects located in the classroom as they configure the diameter and circumference of objects.

Process Goals: Mathematical Connections

Activities: Whole class instruction, individual work

Materials: 22 pre-made circles, pencils, paper, and rulers

Big Ideas: Mathematical concepts, such as multiplication, the construction of shapes, and unit measurements can be applied to real world contexts.

Details of the Information and Overview of Activities: On the Elmo trace a circle by tracing the bottom of a cup. Tell students that the distance around the circle is called the circumference, which is kind of like perimeter. Cut out the circle and fold it in half. Show students that from any point on the outside of the circle to where they see the fold is called the diameter. As a whole class find the diameter of the can by using the cm side of a ruler. Tell students that to find the circumference they can use the 3 times rules, so the circumference = diameter+diameter+diameter. Give students

pre-cut circles and have them find the diameter and circumference. This lesson is closely in line with the Objectives and Goals.

Plans for Extra Time: Form a circle with the entire class and have one student walk to the center of the circle while the other student walks around. Students will realize that it takes three times a long to walk around the circle.

Additional Activities for Students who Finish Early: Have students find objects in the room that are circular and have them measure the diameter and find the circumference.

Thursday November 5th-Unit 3 Test

Grade Level Content Expectations: M.TE.02.04 Find the area of a rectangle with whole number side lengths by covering with unit squares and counting, or by using a grid of unit squares; write the area as a product.
N.MR.03.15 Given problems that use any one of the four operations with appropriate numbers, represent with objects, words (including "product" and "quotient"), and mathematical statements; solve.
M.UN.03.03 Understand relationships between sizes of standard units, e.g., feet and inches, meters and centimeters.

M.UN.03.05 Know the definition of area and perimeter and calculate the perimeter of a

square and rectangle given whole number side lengths.

M.UN.03.06 Use square units in calculating area by covering the region and counting the number of square units.

G.SR.03.05 Compose and decompose triangles and rectangles to form other familiar two-dimensional shapes, e.g., form a rectangle using two congruent right triangles, or decompose a parallelogram into a rectangle and two right triangles.

Learning Objectives: Students will identify the lengths of sides by measuring and estimating a wide range of two-dimensional polygons and three dimensional classroom objects and using their measurements and estimations to calculate the perimeter of a shape.

Students will explore the properties of polygons by using straws and pipe cleaners to construct their own closed two-dimensional shapes.

Students will explore the edges and faces of polygons and determine whether the thickness of a polygon affects the probability of it landing on its edge or face, by setting a hypothesis, using tables to gather information, and making reasonable conclusions from gathered information.

Students will extend their knowledge of the lengths of a polygon by using grid paper and square tiles to find the area of rectangles, squares, and household carpet, by identifying the total amount of squares located inside the object.

Students will recognize the pattern between diameter and circumference by tracing the distance around a soda can (circle), locating the distance from the center to one side of the circle, and by applying the "three times" circle rule to find the circumference, and then students will apply this understanding to objects located in the classroom as they configure the diameter and circumference of objects.

Process Goals: Making Mathematical Connections

Activities: Individual test

Materials: Unit 3 test and pencil.

Big Ideas: The length of the sides of an object is strongly correlated with calculating the perimeter and area of an object.

Recognizing two-dimensional shapes help students compare/contrasts polygons.

Mathematical concepts, such as multiplication, the construction of shapes, and unit measurements can be applied to real world contexts.

Grouping numbers using arrays, objects, and pictures have a direct influence on early multiplication concepts.

Details of the Information and Overview of Activities: Today students will simply be taking a test in assessment of whether or not they achieved the objectives and goals for the series of lessons. Students will be asked to apply their build-up of knowledge over the past two weeks.

Plans for Extra Time: Have children complete math boxes.

Additional Activities for Students who Finish Early: Students can read in the classroom library so they won't distract other students from doing their tests.

Friday November 6th-Multiples of Equal Groups

Grade Level Content Expectations: N.MR.02.14 Represent multiplication using area and array models

Learning Objectives: Students will quickly identify multiplication facts by using counters, pictures, and arrays to model equal groups and solve various multiplication stories while making their own original number stories.

Process Goals: Making Mathematical Connections and Communication Standard

Activities: Whole class instruction and individual work.

Materials: PowerPower presentation, Smart Board, Math Journals, pencils, dry erase board, dry erase markers.

Big Ideas: Grouping numbers using arrays, objects, and pictures have a direct influence on early multiplication concepts.

Details of the Information and Overview of Activities: Review arrays for students by showing pictures of objects aligned in patters on the Smart board. Read multiplication problems to the student where they have to find the part/part total of the problem and as a chart have them make a table of what they know. Then use the array to find the answer. Students will then with a partner be asked to complete math journal page 79 where they have to solve multiplication number stories. This lesson sequencing is directly in line with the objectives and goals for the unit. Students will understand multiplication by looking at arrays and how items are grouped.

Plans for Extra Time: Have students write multiplication problems where they give two parts and they are asking students to figure out the total. Include solutions on the back.

Additional Activities for Students who finish Early: Have students practice their multiplication facts using flash cards.

Outline for a Daily Lesson Plan

Discussion Lesson

Date: Wednesday 10/28/09

Overview: Taught in Kay Linz's third grade class at Hiawatha Elementary by Amber Miller. Monday October 26, 2009 from 1:05 PM – 1:50 PM

Learning Goals and Objectives: Students will identify the lengths of sides by measuring and estimating a wide range of two-dimensional polygons and three dimensional classroom objects and using their measurements and estimations to calculate the perimeter of a shape.

Rationale: Students need to develop the ability to identify the lengths of sides in order to calculate the perimeter of an object, but first they must be able to associates given lengths with everyday objects

GLCEs
M.UN.03.03 Understand relationships between sizes of standard units, e.g., feet and inches, meters and centimeters.

Prior Knowledge: Students know how to use rulers and tape measurers to measure objects. Students are familiar with what an inch and a foot looks like on a measuring stick. They are also familiar with measuring objects with a ruler.

Materials: Student Reference Book Page 146 and 148, 22 Tape Measurers, 9 quarter sheet papers for each student, blank piece of paper.

Task Setup: Pages from 146 and 148 from the Math Masters book will be used to aid the teacher in preparing the PowerPoint. During the lunch break the teacher will setup the Smart Board so that the PowerPoint is on the board and ready to be reviewed by one click. Pieces of 8 by 11 paper and measuring tapes will be sitting on the desk right next to the whiteboard, these will be setup during the lunch period. Materials that need to be passed out will be passed out by the paper collector designated person (found on the back bulletin board by the teacher's desk).

Special needs Consideration: Found in the Academic, Social, and Linguistic Support Section.

Procedures and approximate time allocated for each event	***Academic, Social and Linguistic Support during each event***
• ***Introduction to the lesson***	
Have paper collector designated person (found on bulletin board by the teacher's desk) Pass out measuring tapes to each student. Pull a popsicle stick out of the basket to call on a student. Ask the following questions to the whole class:	*Visual aids will be provided for students to touch and observe. For students who have difficulty reading words this task should prove to be one that they can do with no problem.*
Students will be expected to participate in the whole-group discussion, have their desk totally cleared away besides the measuring tapes, and to be respectful of other students' thoughts and ideas. If students have questions or comments then they are expected to raise their hand and wait to be called upon by the teacher.	
a. What things do you observe about it? b. Turn the measuring tape over to the inch side, locate the 12^{th} inch and the 36^{th} inch, what do you observe? c. How many inches are in a foot? How do we know? d. How many inches are in a yard? How do we know? e. How many feet are in a yard? How do we know? f. If you were to stretch out your entire measuring tape how many inches long is it?	*Pictures will be presented on the PowerPoint as information is orally given to them, which also help students who have a difficult time reading words.*
5 Minutes	
• ***OUTLINE of key events during the lesson***	
Show students the first few slides in a PowerPoint of the US Customary system on how the US came to use the system, what it encompasses, and what we can do with it. Then show students the slide with the following units of length conversions:	

Students will be expected to sit up attentively, to put their measuring tapes on the left hand side of their desk and to participate if they are called upon during the presentation. i. 1 Foot=12 Inches ii. 1 Yard=3 Feet iii. 1 Yard=36 Inches iv. 1 Mile=5,280 Feet After looking at the PowerPoint pick up a sheet of blank 8 by 11 paper. Pull a popsicle stick out of the basket to call on a student. g. If you were to estimate or make a good guess do you think this paper would be closer to a foot or closer to 6 inches? How do you know? Tell students that a piece of notebook paper is about 1 foot long. We can use this as a way of estimating different items. Pull a popsicle stick out of the basket to call on a student. 2. Using this piece of paper can you estimate how long the SmartBoard is? How do you know? Student desks are already arranged in pairs of two (students will work in pairs to keep them accountable for the work they produce, to allow for each student to have an equitable amount of participation, and to build special bonds and friendships amongst peers). The groups(11 pairs) are small enough where the individuals in the group can work together and complete the task of using a piece of paper and measuring tape to finish page 67 of their math journals. End of class discussion will assess how well students worked together in groups, and whether not the group was equitable. ***Students will be expected to have conversations that are centered on current math content, or connections they are making with the math content. They will also be expected to finish their math workbook page***	*Peer work helps students who have a difficulty bouncing off ideas by themselves. With two heads together students can work as a unit to find items and a justification for why they chose those items. Community will also be built up.* *Whole class debriefing helps to ensure that all students are on the same page. Allows for all students to see whether or not the objects that they chose are similar or different from the objects that others chose.*

When they are done they will raise their hand to have teacher check them off on a clipboard. a. Find at least 3 objects in the room that are 1 inch long, b. Find at least 3 objects that are 1 foot long c. Find at least 3 objects that are 1 yard long. While students are working on finding their objects the teacher will be coming around to see if students need help getting started, if they are off task, or if they are still have trouble with envisioning what an inch, foot, and yard look like. The teacher can even help by pointing to an object and telling students that it is a inch, a foot, a yard, and then ask them which one they think it is and why. If students finish before the time is over which some students will students will be encouraged to find even more objects other than the list of three things. When they are done they will raise their hands to have e teacher check them off on the clipboard. If students don't have at least the objects down for each category they will have to finish during recess. Therefore, the clipboard acts as a passport to go. **25 Minutes** • ***Closing summary for the lesson*** Ring the bell and have students come back to their seats. As a whole group compile a list of the items that are 1 inch,1 foot, and 1 yard. Ask the following questions: ***Students are expected to be listening attentively, not fiddling with anything on their desk, and will be called upon by raised hands or popsicle sticks.*** a. What were some of your struggles during this activity? b. How did you know when your estimate was accurate? c. Why would using estimation be helpful to use in your everyday life?	

d. Name some situations when using estimation wouldn't be as helpful as getting out a measuring tape and actually doing the measuring yourself? **Discussion Strategies:** 1. I will regain attention from the class by ringing the bell and doing a finger count up to five. If students are not looking I will the signal checker (student job) write them down on their notepad and they will get Linz Money subtracted from their paycheck. 2. For the classroom discussion students will go back to their seats and stay in their area. I will use a combination of popsicle sticks and raised hands to receive feedback and to get questions answered from students. 3. I will structure the whole-group discussion by having students raise their hands to at first initiate conversation. In order to keep the routine of the classroom students will have to be called upon to answer or provide a comment. If students are not providing feedback or if I notice that some students are not participating I will quickly start pulling Popsicle sticks to call on random people. 4. I will ask students specifically what strategies they used to help them measure and estimate objects. I will also have students demonstrate their strategies by coming to the front of the class and giving a mini-presentation. I want students to see useful strategies being estimation, and personal connections to real life. 5. In order to ensure that students are listening to one another I will make sure I review the classroom rules and that if students violate the rules then they will go on the clipboard or will not participate in activities for the next day. I will also have students re-state what another has said to ensure that they are listening. 6. In order to make sure that students are making connections I will ask them the question, "Why is measuring important and why would estimation	

help someone to measure? If students see the importance of this then later on when they get to fourth and fifth grade they will also see the importance that measurements have on distance and traveling. 7. I will summarize the main ideas from the lesson by revoicing what students have said and then giving them the breakdown of where we started and where we finished for that day. 8. I will bring closure by having students think about the exercise they did today and by thinking about ways in which doing the actual measuring would be useful and ways that estimation of measurements would be useful. 9. In my discussion I will ask students some of their struggles during the lesson and this will give me feedback on things that worked and things that didn't work. It will also provide a way for them to be teachers and critique. **10 Minutes** • ***Transition to next learning activity*** Please place your math journals in your desks and sit quietly at your seats. I'll be dismissing students to line up for music by whichever row is the quietest. If students take less time than allotted read *Humphrey* as students sit in their seats and then are dismissed to lineup for music.	
Assessment Assess students' math journal worksheets to see if they found at least three items that were an inch, a foot, and a yard long. Then see if students' objects are accurate in size or they are way off.	***Academic, Social, and Linguistic Support during assessment*** *Students who have a hard time writing can draw pictures of the objects they found instead of writing the words if that comes easier to them.* *Students who see this task as a breeze will be asked to identify*

	double the items for each of the three categories.
<u>Solving the Task and Anticipated Student Thinking and Questions and Sequencing Student Responses</u> **A solution strategy that children will use is questioning. Before showing students the PowerPoint presentation of the US Customary System I believe that students will have very vague knowledge of why we use our systems of measurement, where the system originated from and why it differs from the standard of measurement for the rest of the world. Some of the anticipated responses from students would include:** • Why do we operate on a different standard of measurement than the rest of the world? My response would be that this way of measuring was developed from a long time ago from England's standard of measurement. We've gotten so comfortable using it that we just use it all the time and that's what's most convenient for us to use. However for trading with other countries the United States uses the Metric system and the have to convert from customary to metric. So both types of measurement are used although one is used more than the other. • Why is it important that we use inches and centimeters instead of kilometers and meters? See above response. We can use all types of measurements but because the standard in the United States is customary this one seems to be more relevant than metrics. If someone asked for how big the room was in inches, would you give them the area of the room in kilometers? Right, because it would take more time. • Isn't measuring with Kilometers more ideal? My response would be	

Another solution strategy that children will use is calling upon their prior knowledge to assist them in measuring. As I point out to them that the length of a piece of paper (vertically) is comparable to a foot this should aid them in looking at classroom objects and estimating. Some o the anticipated responses from students would include: • An inch is the size of your thumb (Misconception) In response to this I would say that that perception is very close but it is actually the length from the point where your thumb bends to the tipoff your fingernail. No matter how big your hands seem to be everyone has the same standard length between the point where their thumb bends to the tip of their fingernail. Therefore you can also use this to help you measure an inch. • If a piece of paper is the size of a foot then why isn't my foot as big as this piece of paper? My response: Remember we are estimating so we are looking for objects in the room that are close to the size of an inch, a foot, and a yard. Also, is everyone's foot the same size? Probably not right? I wear a size nine and My dad wears a size 13 and a half, even though we both have a foot (point to foot) they both don't equal a foot when talking about the U.S. Customary System. How many inches are in a foot? Yes, 12, therefore you should look at a piece of paper as being about 12 inches and if you look at your foot it may or may not be 12 inches. • There are 3 feet in a yard? My response: correct! So how can we measure objects that are a yard in here if we didn't have a yard stick? **Another solution strategy is having students make personal connections with mathematical content. Personal connections in this lesson is looking at**	

measurements and making measuring useful to the everyday world by locating objects and estimating their lengths. • There were more objects in the classroom that were the size of a foot, rather than an inch or a yard. My Response: Interesting, did anyone else come to this same conclusion? Why do you think that there are more objects that are the size of a foot? • Why is it important to estimate objects by using a piece of paper when we can just measure it? My Response: There are many things we measure such as the length of a car, the length of a foot, the length of a piece of carpet. Those measurements help to tell something about an object that we are using. For example if you have a room in your house that is 36 feet long by 15 feet long then would you want to buy a piece of carpet that is 15 feet long by 15 feet long? Of course not, so it helps to know how big something is in order to use it. But what if I didn't know how big my house was. Couldn't I simply estimate to see how big it was? Measuring could be useful. But if I know how big a yard is and I believe my house to be four yards long wouldn't it save me a lot of time? **Another solution strategy is having students justify their answers by making a list of the things they labeled in the classroom that were an inch, a foot, and a yard, and providing rationale for their lists in the form of classroom discussion.** • I knew that I had an object that was an inch when I put half of my thumb to the object? My response: Great, and how would you check just to make sure that your estimation was correct? • I could check again or use a ruler?	

My response: Great, we should always double check our work. • I knew that I had an object that was a foot when I put the paper up to it and it was close. My response: Great, and how would you check just to make sure that your estimation was correct? • I knew that I had an object that was a yard when I put three pieces of paper up to that object. My response: How did you know to put three pieces of paper up to the object? • Well if one paper was about a foot long, and 3 feet were in a yard then a yard would be about three pieces of paper.	
Reflection *(What did students learn? What did I learn about teaching literacy? What went well? What would I do differently next time?)*	*(Which students struggled with the material? How will I reteach these students)*

Outline for a Daily Lesson Plan

Group Work Lesson

Date: Thursday 10/29/09

Overview: Taught in Kay Linz's third grade class at Hiawatha Elementary by Amber Miller. Thursday October 29, 2009 from 1:05 PM – 1:35 PM

Learning Goals and Objectives: Students will explore the edges and faces of polygons and determine whether the thickness of a polygon affects the probability of it landing on its edge or face, by setting a hypothesis, using tables to gather information, and making reasonable conclusions from gathered information.

Rationale: Students need to develop the ability to form a hypothesis, gather information and then make a reasonable assumption about their gathered information in order to further understand both mathematical concepts and scientific concepts. With this information students can set up tables, graph, etc.

Prior Knowledge: Students have worked with block shapes and they understand what an edge and what a face is. They also have a working knowledge of the three different shapes we will be working with.

Materials: Table on the whiteboard that records different pattern blocks and tallies indicating which is most likely to land on an edge, 24 copies of page 70 from the Math masters book, 3 single blocks 3 double blocks (6 blocks) per group of two students (11

groups in all), pencils, dry erase markers.

Task Setup: While students are at lunch I will prepare 11 material boxes for each group. Inside the material boxes there will be 2 cups, one for each student. One cup will have the three single shapes in it, the other cup will have the three double shapes in it. At lunch I will also write the table for student hypothesis's to be tallied on the whiteboard. The Elmo projector will also be turned one set of single blocks and one set of double thick blocks blocks will be on the ELMO so that the teacher can quickly demonstrate what an edge and a face is just in case students have forgotten. There will also be 24 copies of the Math Masters page 70 on the desk located next to the whiteboard, these will be passed out by the paper collector for the week (assigned on the bulletin board by the teacher's desk) when prompted to do so.

Procedures and approximate time allocated for each event	***Academic, Social and Linguistic Support during each event***
• ***Introduction to the lesson***	
Students are expected to be paying attention and participating. They are also expected to be respectful of others' ideas, and to raise their hands if they have comments or questions.	*Visual aids will be provided for students to touch and observe.*
On the ELMO show students what the edge of a pattern block and what the face of a pattern block looks like. Then show students what a single block looks like (one shape) and what a double thick block looks like (two of the same shape taped together). Pull a popsicle stick out of the basket to call on a student. Ask the following questions: a. What are the similarities between both the single block and the double block? b. What are the differences between both the single block and the double block?	*For students who need a lot more direction modeling for how this activity will work will be provided for students so that students can see how the experiment should be conducted.*
3 Minutes	
• ***OUTLINE of key events during the lesson***	
Students are expected to participate; vote for which shape they believe is most likely to land on an edge	*Questions without a definite answer will be asked to get all students involved in the task, not making them feel*

and to be attentive. If they have questions or comments they are also expected to raise their hands.	*as if their guess is wrong or right but rather their opinion.*
Tell students that we are going to be doing an experiment today about the single block and the double block and all of the blocks in comparison to one another. Have students vote for which shape they believe is most likely to land on an edge. Draw a table on the board with number of students on the y axis and "most likely to land on its face" and "most likely to land on its edge on the x axis. Give students a sticky note, have them write their name on the sticky note and then when they are quiet have them to go the board and put their prediction under the category of their choice on the x axis.	.
Whole class discussion: Pull a popsicle stick out of the basket to call on a student. Ask the following question: a. What information can we conclude from our tallies? b. Which shape do we think will land most frequently on its edge?	
With the ELMO show students the group tally chart (Math Masters page 70) they will use to run an experiment with a partner on. Explain to students that one person in their group will toss a single shape twenty-five times with their partner and make tally marks for how many times it lands on its edge, not on an edge (face) and the total number of tosses. The other partner will then toss the next shape twenty-five times with their partner and make tally marks for how many times it lands on its edge, not on an edge(face) and the total number of tosses, then toss again for the last shape. Once they are done tossing the single shape they will then toss the thicker shape twenty-five times and make tally marks for how many times it lands on its edge, not on an edge (face), and the total number of tosses, alternating between partners, then toss again for the last shape. They will record the total	*Whole class discussion helps to get all ideas out on the table while also serving as a method for debriefing and tying in all the learning done that day together, just in case some students fell behind.*

number of times for the single triangle, double triangle, single trapezoid, double trapezoid, single square, and double square on their Math Masters page 70. Instruct each student to shake the shape in the paper cup provided for them a foot high (size of a piece of paper. Students are already paired in groups of two for their seating arrangements. Those two individuals will be in a group. This is an organized and pre-established way of making groups. Students already feel comfortable with the person they are sitting next to and have developed a rapport with them. This way the teacher doesn't have to worry about students not getting along or not wanting to work with the partner they have been given. Students will equally work together, alternating between tosses, as each student records tallies on their own papers, therefore both students have to participate and equal number of times and they both will be accountable for their written work. **If students cannot begin the task then more teacher/student modeling will be given. The teacher will roam around to see who needs more direction and help and who seems to be having a hand on things. If students end early have them continue to toss the shapes in order to see if their results change when they continue to toss the shapes. The teacher will walk around to ensure that students are staying on task and they are talking about math or connections with math.** **15 Minutes** • ***Closing summary for the lesson*** Ring the bell to regain students' attention. Pull a popsicle stick out of the basket to call on a student. Engage in a whole class discussion about the following questions: ***Students will be expected to participate in the whole-***	

group discussion, and to be respectful of other students' thoughts and ideas. If students have questions or comments then they are expected to raise their hand and wait to be called upon by the teacher. a. Did the single block for the triangle land more times on its face or edge? b. Did the single block for the trapezoid land more times on its face or edge? c. Did the single block for the square land more times on its face or edge? d. What can we conclude about this experiment? e. Why do you think it landed more on its face or side? f. Was the table we wrote on the board earlier accurate in accounting for our guesses? Why or why not? g. Why was it important that we tossed the single block and the double block the same number of times? Why did we toss it 25 times? **10 Minutes** • ***Transition to next learning activity*** Please place your math journals in your desks and sit quietly at your seats. I'll be dismissing students to line up for library by whichever row is the quietest. If students take less time than allotted read *Humphrey* as students sit in their seats and then are dismissed to lineup for library.	
Assessment Assess students' Math Masters Page 70 worksheets to see if they completed the table. Further assess student understanding during the whole class discussion.	***Academic, Social, and Linguistic Support during assessment*** *Gifted students will be asked to write down proposals for how this experiment would have*

<u>Solving the Task and Anticipating Student Thinking and Questions and Sequencing Student Responses</u> **Another strategy that students will use is predicting. Prediction is a great for students to make inferences about what they think will happen before they actually begin the experiment. It also provides them to think about the rationale for why they believe the way they do.** • I predict that the shapes will land on its edge more? • I predict that the shapes will land on their face more? **Another strategy that students will use to problem solve is through experimentation. They may find that during the course of the experiment their thoughts and theories may change from where they originally started.** • The experiment helped for me to see that what I originally thought would happen was right. • The experiment helped for me to see that what I originally thought would happen was wrong. • At first I thought that the face would occur the most for each shape, then when I started tossing the square the first few times it landed on its side, so then I thought that the edge would occur the most, but then I continued to toss and I found that the face actually ended up having the most tally marks. My Response: Do you think it was important that we kept tossing the block? • Yes, because if we didn't then it would have changed what I thought. **Another strategy that students will use to problem solve is by looking at their data and coming to one**	*provided more reliable results.*

conclusion about the task. Either the shape is more likely to land on its edge or its face, or neither, but students will have to look at the data to make assertions about the experiment. • The single shape is more likely to land on its face because when I was doing my experiment it landed more on its face. • The double shape is more likely to land on its face because when I was doing my experiment it landed more on its face. My response: Why do you think it landed more on its face? • Maybe because it had a bigger amount of space on its face than it had on its edge. • The square landed more on its face than the trapezoid. My response: Why do you think the square landed more on its face than the trapezoid? What is different about this shape than the other? **Students will analyze the tasks to see if there were any constraints or limitations that could have messed up the results.** • If we hadn't continued to toss the shapes then we would have ended up with closer results. • The more we tossed the shapes the more reliable our results became.	
Reflection *(What did students learn? What did I learn about teaching literacy? What went well? What would I do differently next time?)*	*(Which students struggled with the material? How will I reteach these students)*

Section 6 –Parental Involvement

Every week we send a newsletter home to parents indicating what we did for the week. We include concepts learned in science, social studies, and math, while also including assignments worked on in reading and writing. This newsletter serves as a way of bringing parents into classroom experiences and making the language and network of home and school interrelated. My plan for this unit is to continue to include math concepts learned but to become much more detailed with the information I provide for parents, such as some of the activities that we did and student findings. I think that by including more direct knowledge of what is going on in the classroom parents can better communicate with students, whether that be asking them how their week was, asking them to provide an example of something they learned, or even helping them with their homework or concepts that they still need work on. In the newsletter I am sending home something we call home links which allow for parents and students to become involved in learning. Essentially the home links act as homework, but the key to the parental involvement is that when students do their homework they bring it into school, we check off that we have seen it, and then we send it back home with the child so that the parents can check it. That way they see on a firsthand account of what their child knows and what their child doesn't yet know. This places more responsibility on the parent to become equally involved.

I also plan to work on the website and put games on the website that will help to enhance the goals and objectives of the unit. Games where children have to find the circumference and diameter, games where students have to find the area of objects, etc, but also games that are actually FUN. There are a lot of games that students are not taking full advantage of because they and their parents don't know that they exist.