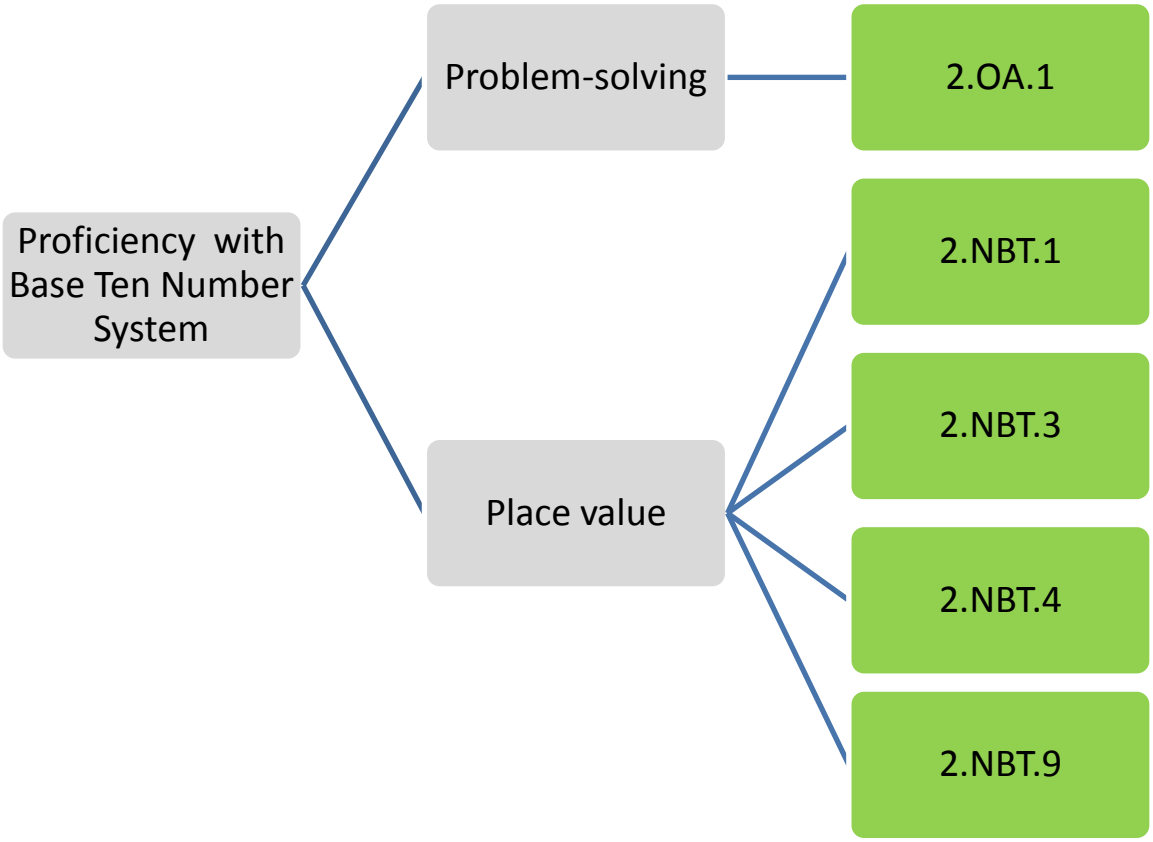
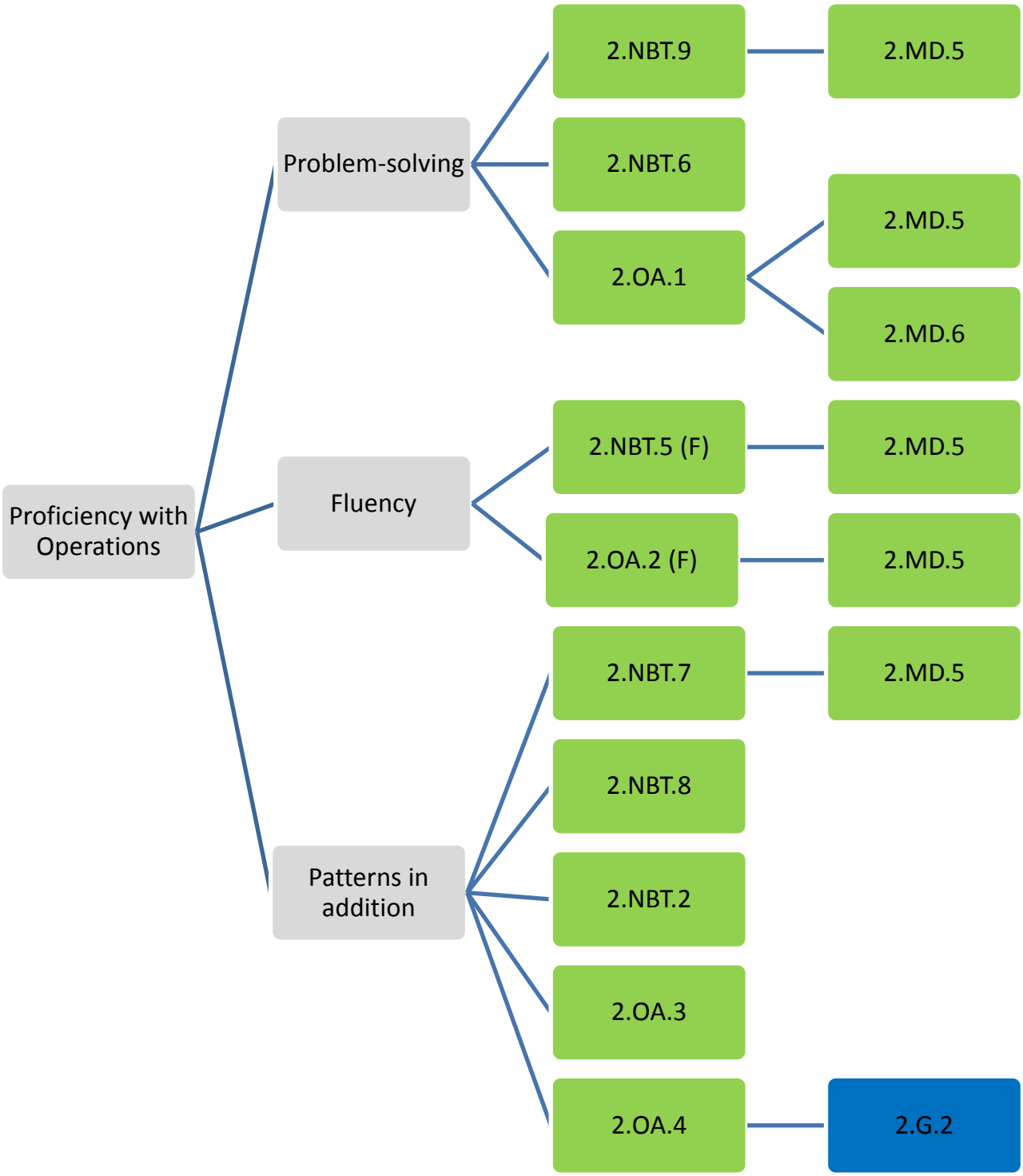
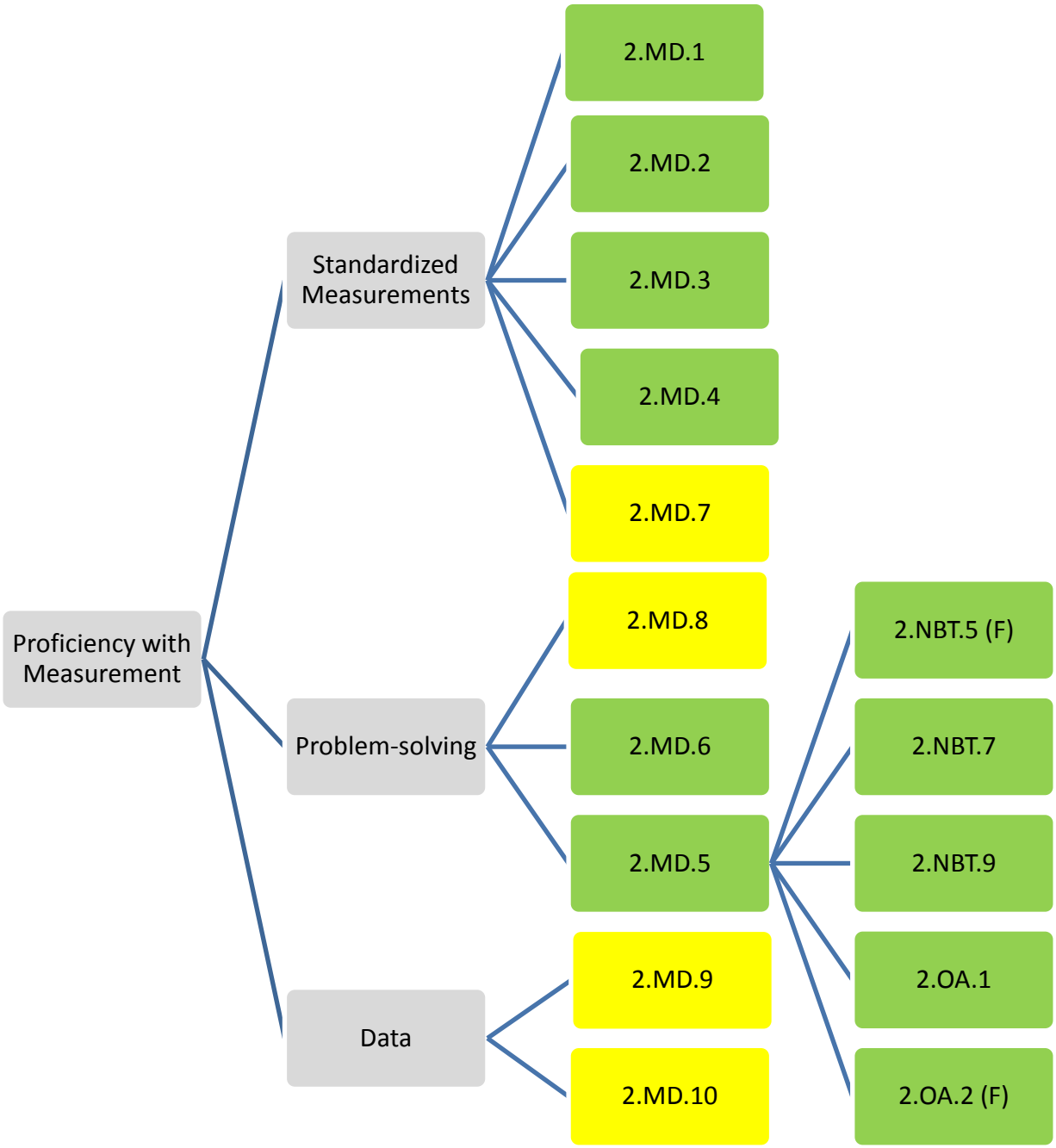
Grade 2


Proficiency with Base Ten Number System
Problem-solving
2.OA.1
Place value
2.NBT.1
2.NBT.3
2.NBT.4
2.NBT.9

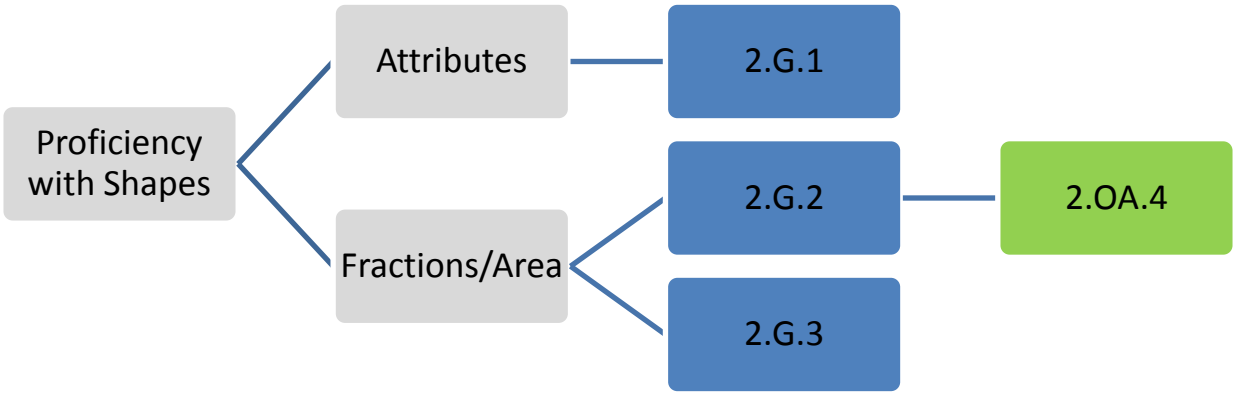
Grade 2


Proficiency with Operations
Problem-solving
Fluency
Patterns in addition
2.NBT.9
2.MD.5
2.NBT.6
2.OA.1
2.MD.5
2.MD.6
2.NBT.5 (F)
2.MD.5
2.OA.2 (F)
2.MD.5
2.NBT.7
2.MD.5
2.NBT.8
2.NBT.2
2.OA.3
2.OA.4
2.G.2

Grade 2


Proficiency with Measurement
Standardized Measurements
Problem-solving
Data
2.MD.1
2.MD.2
2.MD.3
2.MD.4
2.MD.7
2.MD.8
2.MD.6
2.MD.5
2.MD.9
2.MD.10
2.NBT.5 (F)
2.NBT.7
2.NBT.9
2.OA.1
2.OA.2 (F)

Grade 2


Proficiency with Shapes
Attributes
Fractions/Area
2.G.1
2.G.2
2.G.3
2.OA.4

Unit Map 2012-2013

Monroe #2 - Orleans BOCES (Regional Collaboration)

Collaboration / Math 2* / Grade 2 (Math Regional Curriculum)

Monday, October 15, 2012, 1:59PM

Standard/Module: Mathematical Practices (Week 1, 39 Weeks)

Stage 1: Desired Results

Standards Focus

- Major (70%)
- Supporting (20%)
- Additional (10%)

Standards

NYS: CCLS:Mathematics, NYS: 2nd Grade , Mathematical Practice

The Standards for Mathematical Practice describe varieties of expertise that mathematics educators at all levels should seek to develop in their students.

- 1. Make sense of problems and persevere in solving them.
- 2. Reason abstractly and quantitatively.
- 3. Construct viable arguments and critique the reasoning of others.
- 4. Model with mathematics.
- 5. Use appropriate tools strategically.
- 6. Attend to precision.
- 7. Look for and make use of structure.
- 8. Look for and express regularity in repeated reasoning.

Enduring Understandings	Essential Questions

Critical Content

Skills	Vocabulary

Stage 2: Assessment Evidence

Assessments

Stage 3: Learning Plan

Learning Activities	Resources

Differentiation Opportunities

<< Previous Year

Last Updated: Wednesday, June 27, 2012, 11:24AM

Atlas Version 7.2.6
© Rubicon International 2012. All rights reserved

Unit Map 2012-2013

Monroe #2 - Orleans BOCES (Regional Collaboration)

Collaboration / Math 2* / Grade 2 (Math Regional Curriculum)

Monday, October 15, 2012, 2:02PM

Standard/Module: Proficiency with Operations 2.OA.1 (Week 1, 22 Weeks)

Stage 1: Desired Results

Standards Focus

- Major (70%) connects to 2.NBT.1 - 9; 2.MD.5,6; 2.OA.2, 3, 4

Gr. 2 Proficiency Map

Standards

NYS: CCLS:Mathematics, NYS: 2nd Grade , Operations & Algebraic Thinking
2.OA Represent and solve problems involving addition and subtraction.

- 1. Use addition and subtraction within 100 to solve one- and two-step word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem.

Enduring Understandings	Essential Questions
1. Word problems can be represented with pictures, models, and mathematical equations. 2. Determining the relationships between the known and unknown parts in a problem can help us solve for the unknown part.	1. How can pictures or models help us solve problems? 2. How are some problems alike? How are they different?

Critical Content

1. Multiple strategies can be used to solve the same problem.

2. Ability to read and recognize chunks of information in problems and translate the information into a mathematical picture (ie. bar diagram), expression or equation.

Skills	Vocabulary
1. Solve one-step word problems involving adding and subtracting within 100. 2. Solve two-step word problems involving adding and subtracting within 100. 3. Add and subtract with unknowns in all positions. 4. Draw a picture or model to illustrate various situations of adding, taking from, putting together, taking apart, and	tier two: comparing tier three: equation, addends, sum, difference, symbol, unknown (Note: key-words are not reliable for determining appropriate operations)

comparing. 5. Use a symbol to represent an unknown number in an equation.	

Stage 2: Assessment Evidence

Assessments

Solving Addition and Subtraction Word Problems
Formative: Test: Written

Take From (Result unknown): David had 63 stickers. He gave 37 to Susan. How many stickers does David have now? 63 – 37 = ___

Add To: David had $37. His grandpa gave him some money for his birthday. Now he has $63. How much money did David's grandpa give him? $37 + __ = $63

Compare: David has 63 stickers. Susan has 37 stickers. How many more stickers does David have than Susan? 63 – 37 = ___

Even though the modeling of the two problems above is different, the equation, 63 - 37 = __ can represent both situations (How many more do I need to make 63?)

Take From (Start Unknown): David had some stickers. He gave 37 to Susan. Now he has 26 stickers. How many stickers did David have before? __ - 37 = 26

It is important to attend to the difficulty level of the problem situations in relation to the position of the unknown.

-Result Unknown, Total Unknown, and Both Addends Unknown problems are the least complex for students.

-The next level of difficulty includes Change Unknown, Addend Unknown, and Difference Unknown

-The most difficult are Start Unknown and versions

of Bigger and Smaller Unknown

(compare problems)

Stage 3: Learning Plan	
Learning Activities	**Resources**
Use bar diagrams to help students visualize the part-part-whole and comparison problems. **Results Unknown:** There are 29 students on the playground. Then 18 more students showed up. How many students are there now? (29=18=__) **Change Unknown:** There are 29 students on the playground. Some more students show up. There are now 47 students. How many students came? (29+__=47) **Start Unknown:** There are some students on the playground. Then 18 more students came. There are now 47 students. How many students were on the playground at the beginning?	www.illustrativemathematics.org www.engageny.org (see grade 2 module)

(__+18=47) Bar Diagrams Models from Pearon's enVision Program	

Differentiation Opportunities

Students can build the numbers with physical models join together or break apart and relating it to the equation.

In the morning there are 25 students in the cafeteria. 18 more students come in. After a few minutes, some

students leave. If there are 14 students still in the cafeteria, how many students left the cafeteria? Write an

equation for your problem. (EXPECT students to use *place value blocks (base 10*), *number line, hundreds*

chart, etc. to show, solve and explain their reasoning.)

Word problems that are connected to students' lives can be used to develop fluency with addition and

subtraction. Table 1 describes the four different addition and subtraction situations and their relationship to

the position of the unknown.

<< Previous Year

Last Updated: Thursday, September 27, 2012, 10:03AM

Atlas Version 7.2.6
© Rubicon International 2012. All rights reserved

Unit Map 2012-2013

Monroe #2 - Orleans BOCES (Regional Collaboration)

Collaboration / Math 2* / Grade 2 (Math Regional Curriculum)

Monday, October 15, 2012, 2:01PM

Standard/Module: Proficiency with Operations 2.OA.2 (Week 1, 2 Weeks)

Stage 1: Desired Results

Standards Focus

- Major (70%) connects with 2.NBT.1,3,4,9; 2.MD.5,6

Gr. 2 Proficiency Map

Standards

NYS: CCLS:Mathematics, NYS: 2nd Grade , Operations & Algebraic Thinking
2.OA Add and subtract within 20.

- 2. Fluently add and subtract within 20 using mental strategies. By end of Grade 2, know from memory all sums of two one-digit numbers.

Enduring Understandings	Essential Questions
1. Addition and Subtraction are related. 2. Strategies that connect addition and subtraction can be used to recall addition and subtraction facts automatically.	1. Why do we want to recall our math facts automatically? 2. How does knowing addition facts help us solve/recall subtraction facts? 3. How does knowing subtraction facts help us solve/recall addition facts?

Critical Content

1. Addition and Subtraction are related.

2. Strategies that connect addition and subtraction.

3. Math facts to 20 at an automatic level

Skills	Vocabulary
1. Know from memory all addition/subtraction facts of two one-digit numbers (sums to 20).	Tier two: related Tier three: equation, addends, sum, difference

Stage 2: Assessment Evidence

Assessments

Number Sprints
Formative: Test: Written

Use the "Sprints" from the NYSED Math modules as a form of both practice and assessment. Build patterns of problems within the Sprint. See "Sprints" document for a description of the process.

Stage 3: Learning Plan

Learning Activities	Resources
Mental strategies help students make sense of number relationships as they are adding and subtracting within 20. The ability to calculate mentally with efficiency is very important for all students. Mental strategies may include the following: -Counting on -Making tens (9 + 7 = 10 + 6) -Decomposing a number leading to a ten (14 – 6 = 14 – 4 – 2 = 10 – 2 = 8) -Fact families (8 + 5 = 13 is the same as 13 - 8 = 5) -Doubles -Doubles plus one (7 + 8 = 7 + 7 + 1) -The use of objects, diagrams, or interactive whiteboards, and various strategies will help students develop fluency.	Math and Movement by Suzy Koontz www.K-5mathteachingresources.com www.illustrativemathematics.org www.illuminations.nctm.org

Differentiation Opportunities

Have students study how numbers are related to the anchor numbers 5 and 10, so they can apply these relationships to their strategies for knowing 5+4 or 8 +3. Students might picture 5+4 on a ten-frame to mentally see 9 as the answer. For remembering 8+7, students might think, since 8 is 2 away from 10, take 2 away from 7 to make 10+5=15. Another example: After multiple experiences with ten-frames, when students add to 9, they mentally SEE 9, but THINK 10 and generalize that 9+ 8 is the same thing as 10 + 7. Then, apply this same thinking to 19+8 is the same thing as 20 + 7, and so on.

Provide activities in which students apply the commutative and associative properties to their mental strategies for sums less or equal to 20 using the numbers 0 to 20.

<< Previous Year

Last Updated: Thursday, September 27, 2012, 10:16AM

Atlas Version 7.2.6
© Rubicon International 2012. All rights reserved

Unit Map 2012-2013

Monroe #2 - Orleans BOCES (Regional Collaboration)

Collaboration / Math 2* / Grade 2 (Math Regional Curriculum)

Monday, October 15, 2012, 2:03PM

Standard/Module: Proficiency with Operations 2.NBT.5 (Week 1, 2 Weeks)

Stage 1: Desired Results

Standards Focus

- Major (70%) connects with 2.NBT.2,5-9; 2.OA.1-4; 2.MD.5,6

Gr. 2 Proficiency Map

Standards

NYS: CCLS:Mathematics, NYS: 2nd Grade , Number & Operations in Base Ten

2.NBT Use place value understanding and properties of operations to add and subtract.

- 5. Fluently add and subtract within 100 using strategies based on place value, properties of operations, and/or the relationship between addition and subtraction.

Enduring Understandings

1. Operations create relationships between numbers.
2. Computation involves taking apart and combining numbers using a variety of approaches.
3. Addition combines two or more numbers to create more.
4. Changing the order of the addends does not change the sum.
5. Grouping of addends does not change the sum.
6. Subtraction takes away a part from the whole.
7. There is a direct relationship between addition and subtraction.
8. Computation involves taking apart and combining numbers using a variety of approaches.

Essential Questions

1. Why does the order of the numbers matter when subtracting?
2. What are 2 strategies that can be used to add and/or subtract numbers quickly?
3. How do fact families help you compute?
4. What is subtraction?
5. What is addition?

Critical Content

1. Add numbers within 100.
2. Subtract numbers within 100.
3. Regroup numbers to demonstrate that the value of the number does not change but the place values of the digits within that number change. eg. when regrouping in the problem 324-116, 324 becomes 300=10=14 in order to regroup.

4. Memorizing and applying strategies to compute numbers. eg. doubles, doubles plus one, near doubles, look for groups of 10

5. Addition and Subtraction are related: related facts- fact families

6. Regroup numbers to demonstrate that the value of the number does not change but the place values of the digits within that number change.

eg. when regrouping in the problem 324-116, 324 becomes 300=10=14 in order to regroup.

Skills	**Vocabulary**
1. Fluently add and subtract within 100 using strategies based on place depending on the task. 2. Fluently add and subtract within 100 using strategies based on properties of operations (commutative, associative) depending on the task. 3. Fluently add and subtract within 100 using strategies based on the relationship between addition and subtraction (fact families) depending on the task.	Tier two: together, operations, take apart, sentence, join, order, group, strategies Tier three: add, addition sentence, equals, more, plus, sum, whole, doubles, near doubles, addend, number sentence subtract, subtraction, minus, difference,fact families, commutative, associative properties

Stage 2: Assessment Evidence

<u>Assessments</u>

AIMS Web M-CBM
Formative: Performance: Skill Demonstration

timed computation

Stage 3: Learning Plan

Learning Activities	**Resources**
Example: 67 + 25 = __ *<u>Place Value Strategy:</u>* I broke both 67 and 25 into tens and ones. 6 tens plus 2	k-5mathteachingresources.com www.illustrativemathematics.org www.illuminations.nctm.org

tens equals 8 tens. Then I added the ones. 7 ones plus 5 ones equals 12 ones. I then combined my tens and ones. 8 tens plus 12 ones <u>*Counting On and Decomposing*</u> a Number Leading to a Ten: I wanted to start with 67 and then break 25 apart. I started with 67 and counted on to my next ten. 67 plus 3 gets me to 70. I then added 2 more to get to 72. I then added my 20 and got to 92. <u>*Commutative Property:*</u> I broke 67 and 25 into tens and ones so I had to add 60+7+20+5. I added 60 and 20 first to get 80. Then I added 7 to get 87. Then I added 5 more. My answer is 92. Adding and subtracting fluently refers to knowledge of procedures, knowledge of when and how to use them appropriately, and skill in performing them	

flexibly, accurately, and efficiently. Students should have experiences solving problems written both horizontally and vertically. They need to communicate their thinking and be able to justify their strategies both verbally and with paper and pencil. **Addition strategies based on place value for 48 + 37 may include:** -Adding by place value: 40 + 30 = 70 and 8 + 7 = 15 and 70 + 15 = 85. -Incremental adding (breaking one number into tens and ones); 48 + 10 = 58, 58 + 10 = 68, 68 + 10 = 78, 78 + 7 = 85 -Compensation (making a friendly number): 48 + 2 = 50, 37 – 2 = 35, 50 + 35 = 85 **Subtraction strategies based on place value for 81 - 37 may include:** -Adding up (from smaller number to larger number): 37 + 3 = 40, 40 + 40 = 80, 80 + 1 = 81, and 3 + 40 + 1 = 44. -Incremental subtracting: 81 -10 = 71, 71 – 10 = 61, 61 – 10 = 51, 51 – 7 = 44 -Subtracting by place value: 81 – 30 = 51, 51 – 7 = 44	

Properties that students should know and use are: Commutative property of addition (Example: 3 + 5 = 5 + 3) Associative property of addition (Example: (2 + 7) + 3 = 2 + (7+3)) Identity property of 0 (Example: 8 + 0 = 8) Students in second grade need to communicate their understanding of why some properties work for some operations and not for others. Commutative Property: In first grade, students investigated whether the commutative property works with subtraction. The intent was for students to recognize that taking 5 from 8 is not the same as taking 8 from 5. Students should also understand that they will be working with numbers in later grades that will allow them to subtract greater numbers from smaller numbers. This exploration of the commutative property continues in second grade. Associative Property: It is difficult for students to recognize that the associative property does not work for subtraction at this grade level because it is a challenge to determine all the possibilities.	

Differentiation Opportunities

Students may think that the 4 in 46 represents 4, not 40. Students need many experiences representing two-and three-digit numbers with manipulatives that group (base ten blocks) and those that do NOT group, such as counters, etc. When adding two-digit numbers, some students might start with the digits in the ones place and record the entire sum. Then they add the digits in the tens place and record this sum. Assess students' understanding of *a ten* and provide more experiences modeling addition with grouped and pregrouped base-ten materials as mentioned above.

When subtracting two-digit numbers, students might start with the digits in the ones place and subtract the smaller digit from the greater digit. Then they move to the tens and the hundreds places and subtract the smaller digits from the greater digits. Assess students' understanding of *a ten*

and provide more experiences modeling subtraction with grouped and pregrouped base-ten materials.

<< Previous Year

Last Updated: Thursday, September 27, 2012, 10:31AM

Atlas Version 7.2.6
© Rubicon International 2012. All rights reserved

Unit Map 2012-2013

Monroe #2 - Orleans BOCES (Regional Collaboration)

Collaboration / Math 2* / Grade 2 (Math Regional Curriculum)

Monday, October 15, 2012, 2:04PM

Standard/Module: Proficiency with Measurement 2.MD.1 (Week 3, 34 Weeks)

Stage 1: Desired Results

Standards Focus

- Major (70%) Connects to 2.MD.2-4, and 2.MD.9

Standards

NYS: CCLS:Mathematics, NYS: 2nd Grade , Measurement & Data

2.MD Measure and estimate lengths in standard units.

- 1. Measure the length of an object by selecting and using appropriate tools such as rulers, yardsticks, meter sticks, and measuring tapes.

Enduring Understandings	Essential Questions
-Length can be measured with specific tools meant for measuring length. -Some tools are rigid such as rulers, yardsticks, and meter sticks whereas some tools are flexible, like measuring tapes. -Some tools are more appropriate than others for measuring certain items	What tool would I select to measure something that is relatively short? What tool would I select to measure something that is relatively long? What tool would I use if I want to measure in the straightest possible line? When would I use a tool that requires more flexibility to measure the length of something?

Critical Content

I can use tools and the markings shown on tools to measure in length units.

I can choose the correct length measurement tool based on what I am measuring and what tool will be more efficient.

Skills	Vocabulary
This standard calls for students to measure the length of objects in both customary (inches and feet) and metric (centimeters and meters). Students should have ample experiences choosing objects, identifying the appropriate tool and unit, and then measuring the object. The teacher should allow students to determine which tools and units to use.	Tier 2: appropriate, selecting Tier 3: measure, ruler, yardstick, meterstick, measuring tape, length

- Understand that larger units can be subdivided into equivalent units (partition). -Understand that the same unit can be repeated to determine the measure (iteration). -Understand the relationship between the size of a unit and the number of units needed (compensatory principal). -Understand the measuring of two-dimensional space (area) using non-standard units.	

Stage 2: Assessment Evidence

Assessments

Measure Around the Room
Formative: Performance: Skill Demonstration

Students are assigned items around the classroom to measure. Items should be various lengths. Students will have to choose the most appropriate tool for the item, record the name of the tool and the measurement of the item. This allows you to assess whether they can choose the best tool as well as whether they can use the tool to accurately measure.

Stage 3: Learning Plan

Learning Activities	Resources
Second graders are transitioning from measuring lengths with informal or nonstandard units to measuring with these standard units: inches, feet, centimeters, and meters. The measure of length is a count of how many units are needed to match the length of the object or distance being measured. Students have to understand what a length unit is and how it is used to find a measurement. They need many experiences measuring lengths with appropriate tools so they can become very familiar with the standard units and estimate lengths. Use language that reflects the approximate nature of measurement, such as the length of the room is about 26 feet. Have students measure the same length with different-sized units then discuss what they noticed.	www.illustrativemathematics.org www.illuminations.nctm.org

Ask questions to guide the discussion so students will see the relationship between the size of the units and measurement, i.e. the measurement made with the smaller unit is more than the measurement made with the larger unit and vice versa. Insist that students always estimate lengths before they measure. Estimation helps them focus on the attribute to be measured, the length units, and the process. After they find measurements, have students discuss the estimates, their procedures for finding the measurements and the differences between their estimates and the measurements.	

Differentiation Opportunities

When some students see standard rulers with numbers on the markings, they believe that the numbers are counting the marks instead of the units or spaces between the marks. Have students use informal or standard length units to make their own rulers by marking each whole unit with a number in the middle. They will see that the ruler is a representation of a row of units and focus on the spaces.

Some students might think that they can only measure lengths with a ruler starting at the left edge. Provide situations where the ruler does not start at zero. For example, a ruler is broken and the first inch number that can be seen is 2. If a pencil is measured and it is 9 inches on this ruler, the students must subtract 2 inches from the 9 inches to adjust for where the measurement started.

<< Previous Year

© Rubicon International 2012. All rights reserved

Unit Map 2012-2013

Monroe #2 - Orleans BOCES (Regional Collaboration)

Collaboration / Math 2* / Grade 2 (Math Regional Curriculum)

Monday, October 15, 2012, 2:04PM

Standard/Module: Proficiency with Measurement 2.MD.2 (Week 3, 34 Weeks)

Stage 1: Desired Results

Standards Focus

- Major (70%) Connects to 2.MD.1-4 and 2.MD.9

Standards

NYS: CCLS:Mathematics, NYS: 2nd Grade , Measurement & Data
2.MD Measure and estimate lengths in standard units.

- 2. Measure the length of an object twice, using length units of different lengths for the two measurements; describe how the two measurements relate to the size of the unit chosen.

Enduring Understandings	Essential Questions
Relate the units of length to each other using the tools to determine the relationship The variable that is changes is the unit, but the item stays the same length. The smaller units require more units while equivalent larger units require less units.	What are the relationships between units of of measurement (ie. how many centimeters long is this item and how many millimeters? How do those two numbers relate to each other?)

Critical Content

Students must be able to measure the same item with two different units to form specific conclusions about how the units relate to one another.

Skills	Vocabulary
I can accurately measure the length of items I can determine the difference between the units I can state the difference between the units I can see that the items can be measured with different units but have equivalent length units.	Tier 2: unit, different, relate Tier 3: length, measurement

Stage 2: Assessment Evidence

Assessments

Measure Around the Room II
Formative: Performance: Skill Demonstration

Students are assigned items around the classroom to measure. Items should be various lengths, and

students should measure the same item with two different units. Students will have to choose the most appropriate tool for the item, record the name of the tool and the measurements of the item in two different units. This allows you to assess whether they can choose the best tool as well as whether they can use the tool to accurately measure.

Stage 3: Learning Plan

Learning Activities	Resources
A student measures the length of their desk and finds that it is 3 feet and 36 inches. Students should explore the idea that the length of the desk is larger in inches than in feet, since inches are smaller units than feet. This concept is referred to as the compensatory principle. Note: this standard does not specify whether the units have to be within the same system. Students need multiple opportunities to measure using different units of measure. They should not be limited to measuring within the same standard unit. Students should have access to tools, both U.S. Customary and metric. The more students work with a specific unit of measure, the better they become at choosing the appropriate tool when measuring. Students measure the length of the same object using different tools (ruler with inches, ruler with centimeters, a yardstick, or meter stick). This will help students learn which tool is more appropriate for measuring a given object. They describe the relationship between the size of the measurement unit and the number of units needed to measure something. For instance, a student might say, —The longer the unit, the fewer I need.‖	www.illustrativemathematics.org www.illuminations.nctm.org

Differentiation Opportunities

Multiple opportunities to explore provide the foundation for relating metric units to customary units, as well as relating within customary (inches to feet to yards) and within metric (centimeters to meters).

<< Previous Year

Last Updated: Tuesday, October 9, 2012, 9:12PM

Atlas Version 7.2.6
© Rubicon International 2012. All rights reserved

Unit Map 2012-2013

Monroe #2 - Orleans BOCES (Regional Collaboration)

Collaboration / Math 2* / Grade 2 (Math Regional Curriculum)

Monday, October 15, 2012, 2:08PM

Standard/Module: Proficiency with Measurement 2.MD.3 (Week 3, 34 Weeks)

Stage 1: Desired Results

Standards Focus

- Major (70%) Connects to 2.MD.1-4 and 2.MD.9

Standards

NYS: CCLS:Mathematics, NYS: 2nd Grade , Measurement & Data
2.MD Measure and estimate lengths in standard units.

- 3. Estimate lengths using units of inches, feet, centimeters, and meters.

Enduring Understandings	Essential Questions
This standard calls for students to estimate the lengths of objects using inches, feet, centimeters, and meters. Students should make estimates after seeing a benchmark unit, such as the length of one inch, before making their estimate.	What can I observe (and remember) that is about one inch? What can I observe (and remember) that is about one foot? What can I observe (and remember) that is about one centimeter? What can I observe (and remember) that is about one meter? When looking at an object, reference(s) can I use to estimate the length? When looking at an object, how do I know what is a reasonable estimate?

Critical Content

Estimation helps develop familiarity with the specific unit of measure being used. To measure the length of a shoe for example, knowledge of an inch or a centimeter is important so that one can approximate the length in inches or centimeters.

Skills	Vocabulary
I can estimate the length of objects using a reference that I have previously observed and measured.	Tier 2: estimate, units, lengths Tier 3: inches, feet, centimeters, meters

Stage 2: Assessment Evidence

Assessments

Estimating and Measuring Objects
Formative: Performance: Skill Demonstration

For example: Look at your ruler to see how long one inch is. Now, estimate the length of this paper in inches. Write down your estimate. Now measure the paper with your ruler and write down how long your paper measures.

Stage 3: Learning Plan

Learning Activities	Resources
Look at your ruler to see how long one inch is. Now, estimate the length of this paper in inches. Students should begin practicing estimation with items which are familiar to them (length of desk, pencil, favorite book, etc.). Some useful benchmarks for measurement are: (these are for adults so they will need to be adjusted for 2nd graders) -First joint of a thumb to the tip of a thumb is about an inch -Length from your elbow to your wrist is about a foot (possibly to the tip of their fingers instead of to the wrist on a second grader) -If your arm is held out perpendicular to your body, the length from your nose to the tip of your fingers is about a yard	www.illustrativemathematics.org www.illuminations.nctm.org AIMS foundation: Mini Metric Olympics

Differentiation Opportunities

Students should begin practicing estimation with items which are familiar to them (length of desk, pencil, favorite book, etc.). Move them into less familiar items and practice the estimation before measuring.

<< Previous Year

Atlas Version 7.2.6
© Rubicon International 2012. All rights reserved

Unit Map 2012-2013

Monroe #2 - Orleans BOCES (Regional Collaboration)

Collaboration / Math 2* / Grade 2 (Math Regional Curriculum)

Monday, October 15, 2012, 2:09PM

Standard/Module: Proficiency with Measurement 2.MD.4 (Week 3, 34 Weeks)

Stage 1: Desired Results

Standards Focus

- Major (70%) Connects to 2.MD.1-6 and 2.MD.9

Standards

NYS: CCLS:Mathematics, NYS: 2nd Grade , Measurement & Data
2.MD Measure and estimate lengths in standard units.

- 4. Measure to determine how much longer one object is than another, expressing the length difference in terms of a standard length unit.

Enduring Understandings	Essential Questions
This standard calls for students to determine the difference in length between two objects. Students should choose objects, identify appropriate tools and units, measure both objects, and then determine how to find the differences in lengths.	How can I compare two items with regard to their lengths? How can I determine how much longer something is that something else?

Critical Content

Measure and compare the lengths of objects by choosing an appropriate tool and accurately measuring the objects.

Express the comparisons in whole number units.

Skills	Vocabulary
I can determine the difference in length between two items by measuring and comparing their lengths.	Tier 2: determine, object, expressing, difference Tier 3: longer, standard length unit

Stage 2: Assessment Evidence

Assessments

Measure Around the Room III
Formative: Performance: Skill Demonstration

Students are assigned 2 items around the classroom to measure. Items should be different lengths. Students will have to choose the most appropriate tool for the item, record the name of the tool(s) used to measure, and the measurement of each item. This allows you to assess whether they can choose the best tool as well as whether they can use the tool to accurately measure, and then compare and find the differences in the lengths of the items.

Stage 3: Learning Plan

Learning Activities	Resources
Students should choose objects, identify appropriate tools and units, measure both objects, and then determine the differences in lengths. Second graders should be familiar enough with inches, feet, yards, centimeters, and meters to be able to compare the differences in lengths of two objects. They can make direct comparisons by measuring the difference in length between two objects by laying them side by side and selecting an appropriate standard length unit of measure. Students should use comparative phrases such as "It is longer by 2 inches" or "It is shorter by 5 centimeters" to describe the difference between two objects. It is important that students have multiple opportunities to work with actual objects in the process of measuring.	www.illuminations.nctm.org www.illustrativemathematics.org

Differentiation Opportunities

It is important that students have multiple opportunities to work with actual objects in the process of measuring. Measuring or looking at graphics will not be enough experience for most students.

<< Previous Year

Last Updated: Thursday, September 27, 2012, 2:51PM

Atlas Version 7.2.6
© Rubicon International 2012. All rights reserved

Unit Map 2012-2013

Monroe #2 - Orleans BOCES (Regional Collaboration)

Collaboration / Math 2* / Grade 2 (Math Regional Curriculum)

Monday, October 15, 2012, 2:10PM

Standard/Module: Proficiency with Measurement 2.MD.5 (Week 3, 34 Weeks)

Stage 1: Desired Results

Standards Focus

- Major (70%) Connects to 2.MD.3, 4 and 6

Standards

NYS: CCLS:Mathematics, NYS: 2nd Grade , Measurement & Data

2.MD Relate addition and subtraction to length.

- 5. Use addition and subtraction within 100 to solve word problems involving lengths that are given in the same units, e.g., by using drawings (such as drawings of rulers) and equations with a symbol for the unknown number to represent the problem.

Enduring Understandings	Essential Questions
In this standard, students understand how to apply the concept of length to solve addition and subtraction word problems with numbers within 100. Students must use the same unit in these problems. Students must know what symbols to put into equations that represent problems.	How can I use what I know about addition and subtraction when finding the differences between lengths? How can I write an equation to symbolize the differences in the measures? What drawings can I use or create to help me solve problems where I must find the difference in the lengths?

Critical Content

There is a strong connection between this standard and demonstrating fluency of addition and subtraction facts. Addition facts through 10 + 10 and the related subtraction facts should be included.

Skills	Vocabulary
I can use what I know about addition and subtraction and apply it to solving problems where I need to know the differences in measurements.	Tier 2: addition, lengths, units, drawings, symbol, unknown, represent, problem Tier 3: subtraction, word problems, equations, rulers

Stage 2: Assessment Evidence

Assessments

Measure Around the Room IV
Formative: Performance: Skill Demonstration

Students are assigned 2 items around the classroom to measure. Items should be different lengths. Students will have to choose the most appropriate tool for the item, record the name of the tool(s) used to measure, and the measurement of each item. This allows you to assess whether they can choose the best tool as well as whether they can use the tool to accurately measure, and then compare and find the differences in the lengths of the items by writing and solving an appropriate equation.

Stage 3: Learning Plan

Learning Activities	Resources
Students need experience working with addition and subtraction to solve word problems which include measures of length. It is important that word problems stay within the same unit of measure. Counting on and/or counting back on a number line will help tie this concept to previous knowledge. Some representations students can use include drawings, number lines, rulers, pictures, and/or physical objects.	Rulers Yardsticks Meter sticks Measuring tapes Cash register tapes or paper strips
Example: *In P.E. class Kate jumped 14 inches. Mary jumped 23 inches. How much farther did Mary jump than Kate? Write an equation and then solve the problem.*	Nctm.org Illuminations: Hopping Backward to Solve Problems In this lesson, students determine differences using the number line to compare lengths.
An interactive whiteboard or document camera may be used to help students develop and demonstrate their thinking.	Nctm.org Illuminations: Where Will I Land? In this lesson, the students find differences using the number line, a continuous model for subtraction.
Sample equations include: $20 + 35 = c$ $c - 20 = 35$ $c - 35 = 20$	www.illuminations.nctm.org www.illustrativemathematics.org

$20 + b = 55$ $35 + a = 55$ $55 = a + 35$ $55 = 20 + b$ **Another Example:** *A word problem for 5 – n = 2 could be: Mary is making a dress. She has 5 yards of* *fabric. She uses some of the fabric and has 2 yards left. How many yards did Mary* *use?* There is a strong connection between this standard and demonstrating fluency of addition and subtraction facts. Addition facts through 10 + 10 and the related subtraction facts should be included. Connect the whole-number units on rulers, yardsticks, meter sticks and measuring tapes to number lines showing whole-number units starting at 0. Use these measuring tools to model different representations for whole-number sums and differences less than or equal to 100 using the numbers 0 to 100. Use the meter stick to view units of ten (10 cm) and hundred (100 cm), and to skip count by 5s and 10s. Provide one- and two-step word problems that include different lengths measurement made with the same unit (inches, feet, centimeters, and meters). Students add and subtract within 100 to solve problems for these situations: adding to, taking from, putting together, taking apart, and comparing, and with unknowns in all positions. Students use drawings and write equations with a symbol for the unknown to solve the problems. Have students represent their addition and subtraction within 100 on a number line. They	

can use notebook or grid paper to make their own number lines. First have them mark and label a line on paper with whole-number units that are equally spaced and relevant to the addition or subtraction problem. Then have them show the addition or subtraction using curved lines segments above the number line and between the numbers marked on the number line. For 49 + 5, start at 49 on the line and draw a curve to 50, then continue drawing curves to 54. Drawing the curves or making the "hops" between the numbers will help students focus on a space as the length of a unit and the sum or difference as a length.	

Differentiation Opportunities

There is a strong connection between this standard and demonstrating fluency of addition and subtraction facts. Addition facts through 10 + 10 and the related subtraction facts should be included.

<< Previous Year

Last Updated: Thursday, September 27, 2012, 2:16PM

Atlas Version 7.2.6
© Rubicon International 2012. All rights reserved

Unit Map 2012-2013

Monroe #2 - Orleans BOCES (Regional Collaboration)

Collaboration / Math 2* / Grade 2 (Math Regional Curriculum)

Monday, October 15, 2012, 2:10PM

Standard/Module: Proficiency with Measurement 2.MD.6 (Week 3, 34 Weeks)

Stage 1: Desired Results

Standards Focus

- Major (70%) Connects to 2.MD.1,2,4, 5, & 9

Standards

NYS: CCLS:Mathematics, NYS: 2nd Grade , Measurement & Data

2.MD Relate addition and subtraction to length.

- 6. Represent whole numbers as lengths from 0 on a number line diagram with equally spaced points corresponding to the numbers 0, 1, 2, ..., and represent whole-number sums and differences within 100 on a number line diagram.

Enduring Understandings	Essential Questions
This standard calls for students to create number lines using numbers within 100 to solve addition and subtraction problems. Students should create the number line with evenly spaced points corresponding to the numbers. Students represent their thinking when adding and subtracting within 100 by using a number line. An interactive whiteboard or document camera can be used to help students demonstrate their thinking	How can I use a number line to represent sums and differences? Why do the points on the number line have to be equally spaced?

Critical Content

Points on a number line diagram must be equally spaced.

Sums and differences can be calculated on a number line diagram by determining the number of equally spaced "hops" are made between numbers.

Skills	Vocabulary
I can create a number line with equally spaced points. I can find sums and differences on a number line diagram.	Tier 2: represent, lengths, corresponding, differences Tier 3: whole numbers, number line diagram, equally spaced points, numbers, sums

Stage 2: Assessment Evidence

Assessments

Add and Subtract on the Number Line
Formative: Test: Written

Students solve addition and subtraction equations by showing the process on a number line and write the answers. Students can also write the equation when given a graphic of a problem performed on a number line diagram.

Stage 3: Learning Plan

Learning Activities	Resources
Use number line diagrams to work on calculating sums and differences.	www.illuminations.nctm.org www.illustrativemathematics.org

Differentiation Opportunities

Use dry erase markers on high-gloss plastic page protectors and insert a number line into the page protector. Students may have an easier time with this tool.

Try using "open number lines" where students have to put in their own points on the line instead of it being pre-determined.

<< Previous Year

Last Updated: Thursday, September 27, 2012, 2:31PM

Atlas Version 7.2.6
© Rubicon International 2012. All rights reserved

Unit Map 2012-2013

Monroe #2 - Orleans BOCES (Regional Collaboration)

Collaboration / Math 2* / Grade 2 (Math Regional Curriculum)

Monday, October 15, 2012, 2:11PM

Standard/Module: Proficiency with Measurement 2.MD.7 (Week 3, 37 Weeks)

Stage 1: Desired Results

Standards Focus

- Additional (10%) Connects to 2.NBT.2

Standards

NYS: CCLS:Mathematics, NYS: 2nd Grade , Measurement & Data
2.MD Work with time and money.

- 7. Tell and write time from analog and digital clocks to the nearest five minutes, using a.m. and p.m.

Enduring Understandings	Essential Questions
This standard calls for students to tell (orally and in writing) and write time after reading analog and digital clocks. Time should be to 5 minute intervals, and students should also use the terms a.m. and p.m. A clock is simply a curved number line and can be treated in much the same way as a straight number line.	Why do I skip count by 5's when reading an analog clock? How is a clock like a number line? What are the differences between AM and PM? What are the similarities between AM and PM?

Critical Content

Teachers should help students make the connection between skip counting by 5s (2.NBT.2) and telling time on an analog clock.

In first grade, students learned to tell time to the nearest hour and half-hour. Students build on this understanding in second grade by skip-counting by 5 to recognize 5-minute intervals on the clock. They need exposure to both digital and analog clocks. It is important that they can recognize time in both formats and communicate their understanding of time using both numbers and language. Common time phrases include the following: quarter till ___, quarter after ___, ten till ___, ten after ___, and half past ___. Students should understand that there are 2 cycles of 12 hours in a day - a.m. and p.m.

Skills	Vocabulary
Tell and write time to the nearest 5 minutes from an analog clock Tell and write time to the nearest 5 minutes from a digital clock	Tier 2: analog, digital, minutes

	Tier 3: AM, PM

Stage 2: Assessment Evidence

Assessments

Telling Time
Formative: Test: Written

Students write the time shown on digital and analog clock faces. Student draw what the clocks (both analog and digital) would look like given a specified time.

Stage 3: Learning Plan

Learning Activities	Resources
Recording their daily actions in a journal would be helpful for making real-world connections and understanding the difference between these two cycles. An interactive whiteboard or document camera may be used to help students demonstrate their thinking. Second graders expand their work with telling time from analog and digital clocks to the nearest hour or half-hour in Grade 1 to telling time to the nearest five minutes using a.m. and p.m.	www.illustrativemathematics.com www.illuminations.nctm.org

Differentiation Opportunities

Some students might confuse the hour and minutes hands. For the time of 3:45, they say

the time is 9:15. Also, some students name the numeral closest to the hands, regardless

of whether this is appropriate. For instance, for the time of 3:45 they say the time is 3:09

or 9:03. Assess students' understanding of the roles of the minute and hour hands and

the relationship between them. Provide opportunities for students to experience and

measure times to the nearest five minutes and the nearest hour. Have them focus on the

movement and features of the hands on real or geared manipulative clocks.

<< Previous Year

Last Updated: Thursday, September 27, 2012, 2:42PM

Atlas Version 7.2.6
© Rubicon International 2012. All rights reserved

Unit Map 2012-2013

Monroe #2 - Orleans BOCES (Regional Collaboration)

Collaboration / Math 2* / Grade 2 (Math Regional Curriculum)

Monday, October 15, 2012, 2:24PM

Standard/Module: Proficiency with Operations 2.NBT.2 (Week 8, 7 Weeks)

Stage 1: Desired Results

Standards Focus

- Major (70%) connects to 2.NBT.6-9; 2.OA.1-4

Gr. 2 Proficiency Map

Standards

NYS: CCLS:Mathematics, NYS: 2nd Grade , Number & Operations in Base Ten

2.NBT Understand place value.

- 2. Count within 1000; skip-count by 5s, 10s, and 100s.

Enduring Understandings	Essential Questions
1. Number lines can help with skip-counting. 2. Counting and place value patterns can be seen on hundreds charts. 3. Counting to a designated number, such as 1000, can be accomplished by skip-counting. 4. Skip-counting is a faster way of counting/moving on a number line or number chart. 5. Count on" from any number and say the next few numbers that come afterwards. 6. Understand that counting by 2s, 5s and 10s is counting groups of items by that amount.	1. What patterns can we see on a hundreds/thousands chart or on a number line when counting by 10's, by 100's? 2. If we count by 5s to 100 and then count by 10s to 100, which will take longer? 3. How is counting by 5 related to counting by 10?

Critical Content

1. Skip count within 100 using a hundred chart
2. Skip count within 1000 using a thousand chart
3. Understand and recognize number patterns while skip-coun

   a. on a hundred chart

   b. on a number line

4. Skip-counting is repeated addition: using 2's, 5's, 10's

5. Skip count starting from various numbers (count by 10's starting at 34)

Skills	Vocabulary
1. Students will count to 1000, by ones on a chart or number line and by rote. 2. Students will skip count by 2's within 1000 on a chart or number line and by rote. 3. Students will skip count by 5's within 1000 on a chart or number line and by rote. 4. Students will skip count by 10's within 1000 on a number line and by rote. 5. Students will start skip-counting from various numbers within 1000 on a number line and by rote.	Tier two: number line hundred chart Tier three: skip count repeated addition thousand chart

Stage 2: Assessment Evidence

Assessments

Counting Different Ways
Formative: Oral: Presentation

What are the next 3 numbers you would say after 498?

499, 500, 501.

When you count back from 201, what are the first 3 numbers that you say?

200, 199, 198.

If you start counting "5, 10, 15 . . " what are the next three numbers you would say?

If you start counting, "10, 20, 30 . . ." what are the next three numbers you would say?

If you start counting "100, 200, 300 . . ." what are the next three numbers you would say?

Stage 3: Learning Plan

Learning Activities	Resources

What are the next 3 numbers after 498? *499, 500, 501*. When you count back from 201, what are the first 3 numbers that you say? *200, 199, 198*. This standard also introduces skip counting by 5s and 100s. Students are introduced to skip counting by 10s in First Grade. Students should explore the patterns of numbers when they skip count. When students skip count by 5s, the ones digit alternates between 5 and 0. When students skip count by 100s, the hundreds digit is the only digit that changes, and it increases by one number.	Math and Movement by Suzy Koonz www.illustrativemathematics.org www.livebinders.com www.illuminations.nctm.org

Differentiation Opportunities

Students need many opportunities counting, up to 1000, from different starting points. They should also have many experiences skip counting by 5s, 10s, and 100s to develop the concept of place value.

The use of the 100s chart may be helpful for students to identify the counting patterns.

The use of money (nickels, dimes, dollars) or base ten blocks may be helpful visual cues.

The use of an interactive whiteboard may also be used to develop counting skills.

The ultimate goal for second graders is to be able to count in multiple ways with no visual support.

<< Previous Year

Atlas Version 7.2.6
© Rubicon International 2012. All rights reserved

Unit Map 2012-2013

Monroe #2 - Orleans BOCES (Regional Collaboration)

Collaboration / Math 2* / Grade 2 (Math Regional Curriculum)

Monday, October 15, 2012, 2:24PM

Standard/Module: Proficiency with Base Ten System 2.NBT.1 (Week 8, 7 Weeks)

Stage 1: Desired Results

Standards Focus

- Major (70%) connected with 2.OA.1, 2.NBT, 1,3,4,9

Gr. 2 Proficiency Map

Standards

NYS: CCLS:Mathematics, NYS: 2nd Grade , Number & Operations in Base Ten
2.NBT Understand place value.

- 1. Understand that the three digits of a three-digit number represent amounts of hundreds, tens, and ones; e.g., 706 equals 7 hundreds, 0 tens, and 6 ones. Understand the following as special cases:
- 1a. 100 can be thought of as a bundle of ten tens — called a "hundred."
- 1b. The numbers 100, 200, 300, 400, 500, 600, 700, 800, 900 refer to one, two, three, four, five, six, seven, eight, or nine hundreds (and 0 tens and 0 ones).

Enduring Understandings

1. Our number system is based on ten.

   a. 10 ones =1 ten called "one ten"

   b. 10 tens = 100 called "one hundred"

2. The value of a digit in a number is determined by its position in a number.

   eg. 257: 2=200, 5=50, 7=7

3. 0 can be a place holder eg. 706 equals 7 hundreds, 0 tens, and 6 ones.

4. Three-digit numbers can be modeled with base ten manipulatives.

Essential Questions

1. How do we write numbers larger than 99?
2. What are the values of each digit in a three-digit number?
3. How is the value of a digit decided when reading a two or three digit number?

Critical Content

1. Base ten system to hundred
    a. ones
    b. 10 ones = 1 ten
    c. 10 tens= 1 hundred

2. Compose and decompose 100 in a variety of ways; hundreds into tens, tens into ones.

3. Apply the ability to skip count by 10's and 100's

Skills	**Vocabulary**
1. Students will use models to demonstrate understanding of the three place values ones, tens, and hundreds. 2. Students will identify the value of a digit based on its position in a number. 3. Students will read the numbers 100, 200, 300, 400, 500, 600, 700, 800, 900 as hundreds and as 10 tens, 20 tens, 30 tens, 40 tens, 50 tens, 60 tens, 70 tens, 80 tens, 90 tens. 4. Students will demonstrate the ability to count by 10's and 100's	Tier two: bundle Tier three: whole number Digit Place value ones, tens, hundreds

Stage 2: Assessment Evidence

Assessments

Understanding Place Value
Formative: Test: Written

(From 2nd Grade Math Module on engageny.org)

Make true equations. Write one number in every space. Draw a picture if it helps.

1) 1 hundred + 4 tens = _____

2) 4 tens + 1 hundred = _____

3) 14 tens =

10 tens + _____ tens

= _____ hundred +

4 tens

= _____

4) 7 ones + 5 hundreds = _____

5) 8 hundreds = _____

6) 106 =

1 hundred + _____tens + _____ones

7) 106 = _____tens + _____ones

8) 106 = _____ones

9) 90 + 300 + 4 = _____

Are these comparisons true or false?

10) 2 hundreds + 3 ones > 5 tens + 9 ones _____

11) 9 tens + 2 hundreds + 4 ones < 924 _____

12) 456 < 5 hundreds _____

Stage 3: Learning Plan

Learning Activities	Resources
Structure learning activities similar to the assessment above. Student should also have activities that incorporate manipulatives, and real-world application of place value.	www.illustrativemathematics.org www.k-5mathteachingresources.com www.livebinders.com/play/play/52180.com

Differentiation Opportunities

Allow student access to base-ten blocks, place value discs or other manipulatives that help. Eventually,

wean students off the manipulatives. Interactive Whiteboard activities may also help students to build or break apart bundles.

<< Previous Year

Last Updated: Thursday, September 27, 2012, 2:43PM

Atlas Version 7.2.6
© Rubicon International 2012. All rights reserved

Unit Map 2012-2013

Monroe #2 - Orleans BOCES (Regional Collaboration)

Collaboration / Math 2* / Grade 2 (Math Regional Curriculum)

Wednesday, October 31, 2012, 4:01PM

Standard/Module: Proficiency with Base Ten System 2.NBT.3 (Week 8, 7 Weeks)

Stage 1: Desired Results

Standards Focus

- Major (70%) connects to 2.NBT.1,4,9;

Gr. 2 Proficiency Map

Standards

NYS: CCLS:Mathematics, NYS: 2nd Grade , Number & Operations in Base Ten

2.NBT Understand place value.

- 3. Read and write numbers to 1000 using base-ten numerals, number names, and expanded form.

Enduring Understandings

1. Numbers have value and position based on 10.
2. Number progress in an order that presents a pattern based on 10.
3. Numbers have names that can be written.
4. Numbers can be written in standard form and expanded form.

Essential Questions

1. How ways can a number be written?
2. What is the value of (a specific digit) in a given number? *5 in the number 359*
3. Given a model, name "how many" in 2 other ways. (using numbers, using written number words)

Critical Content

Numbers 0-1000 in base 10

1. Base ten number system
2. Numbers 0-1000
3. Number names for numbers 0-1000: oral and written form
4. Writing numbers in expanded form

Skills

1. Students will recognize numerals 0- 1000.
2. Students will read numerals to 1000.
3. Students will read written numeral names of numbers 0-1000
4. Students will write numerals 0-1000.
5. Students will write numeral names 0-1000.
6. Students will write numerals to 1000 in expanded form.

Vocabulary

Tier two:

Tier three: expanded form

numeral

numeral name

	value

Stage 2: Assessment Evidence

Assessments

Read and Write Place Value
Formative: Performance: Skill Demonstration

Students will read and write place value shown in a variety of formats, including on a place value chart, using pictures of or actual base-ten blocks, place value discs, and in written numerals. Students should also demonstrate the expanded form of any number given.

Stage 3: Learning Plan

Learning Activities	Resources
Practice building numbers with a variety of tools and read/write those numbers. Tools may include base ten blocks, place value discs (from Common Core Inc. math modules), and/or place value charts. Students can also "build" these numbers to conceptualize the relative sizes (145 stars versus 845 stars). Each student can make a picture of 100, then students can combine into groups to join their pictures to represent larger numbers.	www.illuminations.nctm.org www.illustrativemathematics.org

Differentiation Opportunities

Incorporate a variety of tools for students to choose from. Offer as many visual and hands-on models as possible to help students conceptualize large numbers.

<< Previous Year

Last Updated: Wednesday, October 31, 2012, 4:00PM

Atlas Version 7.2.6
© Rubicon International 2012. All rights reserved

Unit Map 2012-2013

Monroe #2 - Orleans BOCES (Regional Collaboration)

Collaboration / Math 2* / Grade 2 (Math Regional Curriculum)

Monday, October 15, 2012, 3:03PM

Standard/Module: Proficiency with Base Ten System 2.NBT.4 (Week 8, 7 Weeks)

Stage 1: Desired Results

Standards Focus

- Major (70%) connects with 2.NBT.1,3,9

Gr. 2 Proficiency Map

Standards

NYS: CCLS:Mathematics, NYS: 2nd Grade , Number & Operations in Base Ten
2.NBT Understand place value.

- 4. Compare two three-digit numbers based on meanings of the hundreds, tens, and ones digits, using >, =, and < symbols to record the results of comparisons.

Enduring Understandings

1. A number's value is dependent on the number of digits.
2. A number's value is dependent on the value of the digits.
3. Numbers can be compared based on their value.

Essential Questions

1. How do we decide which number is greater or less than another number?
2. When are numbers equal?
3. What happens to the value of a three-digit number when you switch one digit to another place value?

Critical Content

1. Number value is based on place value
   a. One digit numbers
   b. Two digit numbers
   c. Three digit numbers
2. Symbols >, =, <.
   a. Names: greater than, equal to, less than
   b. Meaning of each symbol

Skills

1. Compare two three-digit numbers using >, =,

Vocabulary

<. 2. Compare two three-digit numbers orally using terms less than, greater than, equal to. a. Comparing the hundreds place b. Comparing the tens place c. Comparing the ones place	Tier two: numbers Tier three: place value, digits Ones, tens, hundreds greater than, less than equal to

Stage 2: Assessment Evidence

Assessments

Comparing numbers
Formative: Test: Written

Students are given two numbers to compare and they are asked to show which one is larger and justify their answers using pictures and/or written sentences.

Stage 3: Learning Plan

Learning Activities	Resources
Have students build the two numbers they are comparing using tools (blocks, strips, discs, etc.)	www.illuminations.nctm.org www.illustrativemathematics.org

Differentiation Opportunities

Ask students to represent the numbers using money and ask which one they would rather have.

<< Previous Year

Last Updated: Friday, September 28, 2012, 1:49PM

Atlas Version 7.2.6
© Rubicon International 2012. All rights reserved

Unit Map 2012-2013

Monroe #2 - Orleans BOCES (Regional Collaboration)

Collaboration / Math 2* / Grade 2 (Math Regional Curriculum)

Monday, October 15, 2012, 2:44PM

Standard/Module: Proficiency with Operations 2.NBT.6 (Week 15, 9 Weeks)

Stage 1: Desired Results

Standards Focus

- Major (70%) connects with 2.NBT.2,5,7,8,9; 2.OA. 1-4; 2.MD.5; 2.G2

Gr. 2 Proficiency Map

Standards

NYS: CCLS:Mathematics, NYS: 2nd Grade , Number & Operations in Base Ten
2.NBT Use place value understanding and properties of operations to add and subtract.

- 6. Add up to four two-digit numbers using strategies based on place value and properties of operations.

Enduring Understandings	Essential Questions
1. Two-digit numbers are computed using basic computation strategies, knowledge and skills. 2. Base ten rules apply when adding more than 2 numbers a. Composing (regrouping) is necessary when reaching a bundle of 10. b. Only one digit can be placed in a place value	1. Explain how you would add "these" four two-digit numbers. 2. What happens when digits added together are greater than 9?

Critical Content

1. Basic number facts
2. Add two-digit numbers without composing (regrouping).
3. Add two-digit numbers with composing
4. Properties of operations:

Order or group digits into familiar addition facts when adding more than 3 digits in a place value.

Skills	Vocabulary
1. Students fluently add two or more one digit numbers. 2. Students will add up to four two-digit numbers, without regrouping, accurately using appropriate strategies. 3. Students will add up to four two-digit numbers, with regrouping, accurately using appropriate strategies.	Tier two: strategies, bundle Tier three: composing (in lieu of regrouping), place value, ones, tens, hundreds Digit, one-digit, two-digit numbers

Stage 2: Assessment Evidence

<u>Assessments</u>

Add It Up!
Formative: Test: Written

Students add up numbers (up to four two-digit numbers within a problem) and justify their answers using precise language referencing the properties.

Stage 3: Learning Plan

Learning Activities	Resources
Example: **43 + 34 + 57 + 24 = __** <u>*Associative Property*</u> I saw the 43 and 57 and added them first, since I know 3 plus 7 equals 10. When I added them 100 was my answer. Then I added 34 and had 134. Then I added 24 and had 158. <u>*Place Value Strategies*</u> I broke up all of the numbers into tens	www.illuminations.nctm.org www.illustrativemathematics.org

and ones. First I added the tens. 40 + 30 + 50 + 20 = 140. Then I added the ones. 3 + 4 + 7 + 4 = 18. Then I combined the tens and ones and had 158 as my answer. <u>*Place Value Strategies and Associative Property*</u> I broke up all the numbers into tens and ones. First I added up the tens. 40 + 30 + 50 + 20. I changed the order of the numbers to make adding easier. I know that 30 plus 20 equals 50 and 50 more equals 100. Then I added the 40 and got 140. Students demonstrate addition strategies with up to four two-digit numbers either with or without regrouping. Problems may be written in a story problem format to help develop a stronger understanding of larger numbers and their values. Interactive whiteboards and document cameras may also be used to model and justify student thinking.	

Differentiation Opportunities

Problems may be written in a story problem format to help develop a stronger understanding of larger numbers and their values.

Interactive whiteboards and document cameras may also be used to model and justify student thinking.

Students may think that the 4 in 46 represents 4, not 40. Students need many experiences

representing two-and three-digit numbers with manipulatives that group (base ten blocks) and

those that do NOT group, such as counters, etc.

When adding two-digit numbers, some students might start with the digits in the ones place and record the entire sum. Then they add the digits in the tens place and record this sum. Assess students' understanding of *a ten* and provide more experiences modeling addition with grouped and pre-grouped base-ten materials.

<< Previous Year

Last Updated: Friday, September 28, 2012, 1:56PM

Atlas Version 7.2.6
© Rubicon International 2012. All rights reserved

Unit Map 2012-2013

Monroe #2 - Orleans BOCES (Regional Collaboration)

Collaboration / Math 2* / Grade 2 (Math Regional Curriculum)

Wednesday, October 31, 2012, 4:01PM

Standard/Module: Proficiency with Operations 2.NBT.7 (Week 15, 9 Weeks)

Stage 1: Desired Results

Standards Focus

- Major (70%) connects with 2.NBT.2,5,6,8,9; 2.OA.1-4; 2.MD.5

Gr. 2 Proficiency Map

Standards

NYS: CCLS:Mathematics, NYS: 2nd Grade , Number & Operations in Base Ten

2.NBT Use place value understanding and properties of operations to add and subtract.

- 7. Add and subtract within 1000, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method. Understand that in adding or subtracting three-digit numbers, one adds or subtracts hundreds and hundreds, tens and tens, ones and ones; and sometimes it is necessary to compose or decompose tens or hundreds.

Enduring Understandings

1. Addition and subtraction of multi-digit numbers can be accomplished by using models or drawings.
2. Strategies based on properties of operations and/or the relationship between addition and subtraction, that are applied to adding and subtracting smaller numbers are applied when adding and subtracting larger numbers.
3. Base ten rules apply when adding multi-digit numbers

   a. Ones are added/subtracted from ones, tens from tens and hundred's from hundreds

   b. Regrouping is necessary when reaching a bundle of 10.

   c. Only one digit can be placed in a place value

Essential Questions

1. How do you demonstrate subtracting/adding 2 numbers within 1000 using a model (or drawing)?
2. Why does the larger number need to be "on top" when subtracting?
3. What strategies did you use when adding/subtracting these given numbers? (528, 387)?
4. Why do we use numbers instead of models or drawings in everyday/real life situations?

Critical Content

Add and subtract numbers within 1000

1. Using models or drawings and strategies (link to 2.NBT.5, .6)

a.Composing while adding

b. Decomposing while subtracting

2. Relate models to written method

Skills	Vocabulary
1. Add and subtract within 1000, composing or decomposing tens and hundreds, using models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction 2. Relate the strategy to a written method.	Tier two: models, strategies Tier three: compose, decompose, (use in lieu of regrouping) place value, properties of operations, addition, subtraction, written method

Stage 2: Assessment Evidence

Assessments

Add and Subtract within 1000
Formative: Test: Written

Students add and subtract within 100 showing all of their work and explaining the problems with at least two methods.

Stage 3: Learning Plan

Learning Activities	Resources
2.NBT.7 builds on the work from 2.NBT.5 by increasing the size of numbers (two 3-digit numbers). Students should have ample experiences to use concrete materials (place value blocks) and pictorial representations to support their work. This standard also references composing and decomposing a ten. This work should include strategies such as making a 10, making a 100, breaking apart a 10, or creating an easier problem. While the standard (traditiona)l algorithm could be used here, students' experiences should extend beyond only working with the algorithm.	www.illustrativemathematics.org www.k-5mathteachingresources.com www.livebinders.com www.illuminations.nctm.org

There is a strong connection between this standard and place value understanding with addition and subtraction of smaller numbers. Students may use concrete models or drawings to support their addition or subtraction of larger numbers. Strategies are similar to those stated in 2.NBT.5, as students extend their learning to include greater place values moving from tens to hundreds to thousands. Interactive whiteboards and document cameras may also be used to model and justify student thinking.

Students should use number lines, base ten blocks, etc. to show, solve and explain reasoning.

Example: 354 + 287 = __

Student 1 uses a number line. "I started at 354 and jumped 200. I landed on 554. I then made 8 jumps of 10 and landed on 634. I then jumped 7 and landed on 641."

Student 2 uses base ten blocks & mat. "I broke all of the numbers up by place using a place value chart. I first added the ones(4+7), then the tens (50+80)and then the hundreds (300 + 200=500) I then combined my answers: 500+130 =630. 630+11=641"

Student 3 uses place value blocks. "I made a pile of 354. I then added 287. That gave me 5 hundreds, 13 tens and 11 ones. I noticed that I could trade some pieces. I had 11 ones, and traded 10 ones for a ten. I then had 14 tens, so I traded 10 tens for a hundred I ended up with 6 hundreds, 4 tens and 11 ones."

Differentiation Opportunities

Use multiple learning strategies as documented by the example above. Students will naturally follow the strategies that cater best to their learning styles if those strategies are offered/taught to them.

When subtracting two-digit numbers, students might start with the digits in the ones place and subtract the smaller digit from the greater digit. Then they move to the tens and the hundreds places and subtract the smaller digits from the greater digits. Assess students' understanding of *a ten* and provide more experiences modeling subtraction with grouped and pre-grouped base-ten materials.

<< Previous Year

Last Updated: Wednesday, October 24, 2012, 1:44PM

Atlas Version 7.2.6
© Rubicon International 2012. All rights reserved

Unit Map 2012-2013

Monroe #2 - Orleans BOCES (Regional Collaboration)

Collaboration / Math 2* / Grade 2 (Math Regional Curriculum)

Wednesday, October 31, 2012, 4:02PM

Standard/Module: Proficiency with Operations 2.NBT.8 (Week 15, 9 Weeks)

Stage 1: Desired Results

Standards Focus

- Major (70%) connects with 2.NBT.2,5,6,7,9; 2.OA.1-4

Gr. 2 Proficiency Map

Standards

NYS: CCLS:Mathematics, NYS: 2nd Grade , Number & Operations in Base Ten
2.NBT Use place value understanding and properties of operations to add and subtract.

- 8. Mentally add 10 or 100 to a given number 100–900, and mentally subtract 10 or 100 from a given number 100–900.

Enduring Understandings	Essential Questions
1. Patterns that have been discovered on a number chart can be applied to mentally add and subtract larger numbers. 2. The base ten system allows for faster and more efficient mental calculations.	1. Why would we want to add mentally? 2. Why is adding 10's or 100' easy? 3. What patterns do you see on the number chart?

Critical Content

1. Ability to skip count by 10's and 100's

2. Ability to skip count by 10's and 100's starting at various numbers. (37,47,57 etc.)

2. Ability to show a number pattern on a hundred or thousand chart.

Skills	Vocabulary
1. Mentally add 10 to a given three digit number to 900, such as 236. 2. Mentally add 100 to a given three digit number to 900, such as 236.3. 3. Mentally subtract 10 to a given three digit number to 900. 4. Mentally subtract 100 from a given three digit number to 900.	Tier two: skip count, number pattern Tier three: mentally add, mentally subtract

Stage 2: Assessment Evidence

Assessments

Add or Subtract 10 or 100
Formative: Other: Peer Assessment

Students take turns asking each other questions to add on 10 or 100 to a number or subtracting 10 or 100 from a number. Students record how many their partners get correct.

Stage 3: Learning Plan

Learning Activities	Resources
Students should have ample experiences working with the concept of adding and subtracting multiples of 10 or 100 that you are only changing the tens place (multiples of ten) or the digit in the hundreds place (multiples of 100). In this standard, problems that require students to move from 10's to 100's should be included. **Example: 273 + 60 = 333.** Students need many opportunities to practice mental math by adding and subtracting multiples of 10 and 100 up to 900 using different starting points. They can practice this by counting and thinking aloud, finding missing numbers in a sequence, and finding missing numbers on a number line or hundreds chart. Explorations should also include looking for relevant patterns. **Mental math strategies may include:** -counting on; 300, 400, 500, etc. -counting back; 550, 450, 350, etc. *Examples:*	www.illuminations.nctm.org www.illustrativemathematics.org

100 more than 653 is _____ (753) 10 less than 87 is _____ (77) "Start at 248. Count up by 10s until I tell you to stop." An interactive whiteboard or document camera may be used to help students develop these mental math skills.	

Differentiation Opportunities

A hundreds board of a thousands board might be a helpful tool to help student physically see the counting on or counting back. Open number lines are another good strategy to use with this standard.

<< Previous Year

Last Updated: Wednesday, October 24, 2012, 1:48PM

Atlas Version 7.2.6
© Rubicon International 2012. All rights reserved

Unit Map 2012-2013

Monroe #2 - Orleans BOCES (Regional Collaboration)

Collaboration / Math 2* / Grade 2 (Math Regional Curriculum)

Wednesday, October 31, 2012, 4:03PM

Standard/Module: Proficiency with Operations 2.NBT.9 (Week 15, 9 Weeks)

Stage 1: Desired Results

Standards Focus

- Major (70%) connects with 2.NBT.1-8; 2.OA.1-4; 2MD.5

Gr. 2 Proficiency Map

Standards

NYS: CCLS:Mathematics, NYS: 2nd Grade , Number & Operations in Base Ten
2.NBT Use place value understanding and properties of operations to add and subtract.

- 9. Explain why addition and subtraction strategies work, using place value and the properties of operations.

Enduring Understandings	Essential Questions
1. Numbers can be decomposed to make various combinations that are easier to compute.	1. **Why** can you break apart numbers to help you add or subtract? 2. How can you use what you know to solve more complex problems?

Critical Content

1. Properties of operations.

2. Various strategies for adding and subtracting

3. Connections between the strategies for addition and subtraction and place value (24+38= 24+30+8 = 54+8= 54+6+2= 60+2)

Skills	Vocabulary
1. Various adding and subtraction strategies. 2. Apply the properties of operations. 3. Explain in writing how the addition and subtraction strategies work. 4. Explain orally how the addition and subtraction strategies work.	Tier two: strategies, part, whole Tier three: properties of operations, decompose numbers, compose numbers

Stage 2: Assessment Evidence

Assessments

Add, Subtract, Justify!
Formative: Test: Written

Students add and subtract given problems, and explain their answers using precise language that reflects knowledge of place value and properties of operations.

Stage 3: Learning Plan

Learning Activities	Resources
Students explain using concrete objects, pictures and words (oral or written) **why** addition or subtraction strategies work. The expectation is that students apply their knowledge of place value and the properties of operations in their explanation. Students should have the opportunity to solve problems and then explain why their strategies work. *Example:* "here are 36 birds in the park. 25 more birds arrive. How many birds are there? Solve the problem and show your work." Students could also have experiences examining strategies and explaining why they work. Also include incorrect examples for students to examine. Operations embedded within meaningful context promote development of reasoning and justification. **Example:** One of your classmates solved the problem 56 - 34 = __ by writing "I know that I need to add 2 to the number 4 to get 6. I also know that I need to add 20 to 30 to get 20 to get to 50. So, the answer is 22." Is their strategy correct? Explain why or why not.	www.illuminations.nctm.org www.illustrativemathematics.org

Example: One of your classmates solved the problem 25 + 35 by adding 20 + 30 + 5 + 5. Is their strategy correct? Explain why or why not.	

Differentiation Opportunities

Example

Mason read 473 pages in June. He read 227 pages in July. How many pages did Mason read altogether?

Karla's explanation: 473 + 227 = _____. I added the ones together (3 + 7) and got 10. Then I added the tens together (70 + 20) and got 90. I knew that 400 + 200 was 600. So I added 10 + 90 for 100 and added 100 + 600 and found out that Mason had read 700 pages altogether.

Debbie's explanation: 473 + 227 = _____. I started by adding 200 to 473 and got 673. Then I added 20 to 673 and I got 693 and finally I added 7 to 693 and I knew that Mason had read 700 pages altogether.

Becky's explanation: I used base ten blocks on a base ten mat to help me solve this problem. I added 3 ones (units) plus 7 ones and got 10 ones which made one ten. I moved the 1 ten to the tens place. I then added 7 tens rods plus 2 tens rods plus 1 tens rod and got 10 tens or 100. I moved the 1 hundred to the hundreds place. Then I added 4 hundreds plus 2 hundreds plus 1 hundred and got 7 hundreds or 700. So Mason read 700 books.

Students should be able to connect different representations and explain the connections. Representations can include numbers, words (including mathematical language), pictures,

number lines, and/or physical objects. Students should be able to use any/all of these representations as needed.

An interactive whiteboard or document camera can be used to help students develop and explain their thinking.

<< Previous Year

Last Updated: Wednesday, October 24, 2012, 1:57PM

Atlas Version 7.2.6
© Rubicon International 2012. All rights reserved

Unit Map 2012-2013

Monroe #2 - Orleans BOCES (Regional Collaboration)

Collaboration / Math 2* / Grade 2 (Math Regional Curriculum)

Wednesday, October 31, 2012, 4:04PM

Standard/Module: Proficiency with Operations 2.OA.3 (Week 24, 9 Weeks)

Stage 1: Desired Results

Standards Focus

- Major (70%) connects with 2.OA.1,2,4; 2.NBT.2,5,6,7,8,9

Gr. 2 Proficiency Map

Standards

NYS: CCLS:Mathematics, NYS: 2nd Grade , Operations & Algebraic Thinking
2.OA Work with equal groups of objects to gain foundations for multiplication.

- 3. Determine whether a group of objects (up to 20) has an odd or even number of members, e.g., by pairing objects or counting them by 2s; write an equation to express an even number as a sum of two equal addends.

Enduring Understandings	Essential Questions
1. Numbers are odd or even. 2. Numbers are even when that quantity of objects can be counted by 2's. 3. Odd and even attributes can be expressed using models. 4. Odd and even attributes can be expressed using an equation.	1. How do you determine if a number is odd or even?

Critical Content

1. concept of odd and even

   a. expressing odd and even numbers using objects

   b. expressing odd and even numbers using an equation.

2. use skip counting by two's to justify if a number is odd or even

3. apply their work with doubles addition facts to the concept of odd or

   even numbers

Skills	Vocabulary

1. skip-counting objects by two's 2. determine if a number is odd or even using various ways a. models b. equation c. skip-counting by two's d. apply concept of doubles	Tier two: array Tier three: equation, sum, skip count, odd numbers, even numbers, justify (will be used in fourth grade)

Stage 2: Assessment Evidence

Assessments

Justify Odd or Even
Formative: Performance: Skill Demonstration

Students work with square tiles to build problems that are given to them and determine whether the result is even or odd. Students justify their answers with precise mathematical vocuabulary.

Stage 3: Learning Plan

Learning Activities	Resources
Students need to understand that a collection of objects can be one thing or one group and that a group contains a given number of objects. Investigate separating no more than 20 objects into two equal groups. Find the numbers that will have some objects remaining and no objects remaining after separating the collections into two equal groups. Odd numbers will have some objects remaining while even numbers will not. For an even number of objects in a collection, show the total as the sum of equal addends (repeated addition). A rectangular array is an arrangement of objects in horizontal rows and vertical columns. Arrays can be made out of any number of objects that can be put into rows and columns. All rows contain the same number of items and all columns contain an equal number of items. Have students use objects to build all the arrays possible with no more than 25 objects. Their arrays should have up to 5 rows and up to 5 columns. Ask students to draw the arrays on grid paper and write two different equations under the arrays: one showing the total as a sum by rows and the	Math and Movement by Suzy Koontz www.K-5mathteachingresources.com www.livebinders.com www.illustrativemathematics.com www.illuminations.nctm.org

other showing the total as a sum by columns. Both equations will show the total as a sum of equal addends. The equation by rows: 20 = 5 + 5 + 5 +5 The equation by columns: 20 = 4 + 4 + 4 + 4 + 4 Build on knowledge of composing and decomposing numbers to investigate arrays with up to 5 rows and up to 5 columns in different orientations. For example, form an array with 3 rows and 4 objects in each row. Represent the total number of objects with equations showing a sum of equal addends two different ways: by rows, 12 = 4 + 4 + 4; by columns, 12 = 3 + 3 + 3 + 3. Show that by rotating the array 90° to form 4 rows with 3 objects in each row. Write two different equations to represent 12 as a sum of equal addends: by rows, 12 = 3 + 3 + 3 + 3; by columns, 12 = 4 + 4 + 4. Have students discuss why the 90 degree rotation produces the same sum in two different ways, and explain their reasoning: The two arrays are different and yet the same. Ask students to think of a full ten-frame showing 10 circles as an array. One view of the ten-frame is 5 rows with 2 circles in each row. Students count by rows to 10 and write the equation 10 = 2 + 2 + 2 + 2 + 2. Then students put two full ten-frames together end-to-end so they form 10 rows of 2 circles or (10 columns of 2 circles). They use this larger array to count by 2's up to 20 and write an equation that shows 20 equal to the sum of ten 2's.	

Differentiation Opportunities

This is an activity that students should be doing in pairs or triads to allow for discussions. This provides a natural differentiation for students of all levels.

<< Previous Year

Last Updated: Wednesday, October 24, 2012, 2:00PM

© Rubicon International 2012. All rights reserved

Unit Map 2012-2013

Monroe #2 - Orleans BOCES (Regional Collaboration)

Collaboration / Math 2* / Grade 2 (Math Regional Curriculum)

Wednesday, October 31, 2012, 4:04PM

Standard/Module: Proficiency with Operations 2.OA.4 (Week 24, 9 Weeks)

Stage 1: Desired Results

Standards Focus

- Major (70%) connects with 2.OA.1,2,3; 2.NBT.2,5,6,7,8,9; 2.G.2

Gr. 2 Proficiency Map

Standards

NYS: CCLS:Mathematics, NYS: 2nd Grade , Operations & Algebraic Thinking
2.OA Work with equal groups of objects to gain foundations for multiplication.

- 4. Use addition to find the total number of objects arranged in rectangular arrays with up to 5 rows and up to 5 columns; write an equation to express the total as a sum of equal addends.

Enduring Understandings	Essential Questions
1. A collection of objects can be one thing or one group. 2. Objects can be organized into groups and arrays. 3. An array involves joining equal groups and is one way to represent multiplication 4. An array can be expressed with a mathematical equation.	1. Why do we put items in an array? 2. How can we find the total number of items in a group? 3. How can we use math facts to help us create an array?

Critical Content

1. A group contains a given number of objects.

2. A rectangular array is an arrangement of objects in horizontal rows and vertical columns.

3. Arrays can be made out of any number of objects that can be put into rows and columns. (up to 5 rows and up to 5 columns)

4. All rows contain the same number of items and all columns contain an equal number of items.

5. Using repeated addition, adding the number of items in each row, will result in finding the number of items in the group. (4+4+4=12)

Skills	Vocabulary
1. Ability to identify what are rows, columns and groups	Tier two: rows, columns, groups

2. Create equal groups/sets 3. Create an array with up to 5 rows and up to 5 columns. 4. Write an addition equation using equal addends that expresses an array	Tier three: array, equation, addends, equal, repeated addition, multiplication, use group and set interchangeably

Stage 2: Assessment Evidence

Assessments

Building and Writing Arrays
Formative: Test: Written

Students work with square tiles to build arrays of numbers that are given to them and determine two different repeated addition equation for each array. Students justify their answers with precise mathematical vocabulary.

Stage 3: Learning Plan

Learning Activities	Resources
Learning activities for this will be similar to 2.OA.3. Students use rectangular arrays to work with repeated addition. This is a building block for multiplication in 3rd Grade. Students should explore this concept with concrete objects (e.g., counters, bears, square tiles, etc.) as well as pictorial representations on grid paper or other drawings. Based on the commutative property of addition, students can add either the rows or the columns and still arrive at the same solution. Students may arrange any set of objects into a rectangular array. Objects can be cubes, buttons, counters, etc. Objects do not have to be square to make an array.	www.iluminations.nctm.org www.illustrativemathematics.org

Geoboards can also be used to demonstrate rectangular arrays. Students then write equations that represent the total as the sum of equal addends as shown below.	

Differentiation Opportunities

Working in groups allows for natural differentiation through student discussions.

<< Previous Year

Last Updated: Wednesday, October 24, 2012, 2:04PM

Atlas Version 7.2.6
© Rubicon International 2012. All rights reserved

Unit Map 2012-2013

Monroe #2 - Orleans BOCES (Regional Collaboration)

Collaboration / Math 2* / Grade 2 (Math Regional Curriculum)

Wednesday, October 31, 2012, 4:05PM

Standard/Module: Proficiency with Shapes 2.G.2 (Week 24, 9 Weeks)

Stage 1: Desired Results

Standards Focus

- Supporting (20%) connects with 2.OA.4, 2.G.1,3

Gr. 2 Proficiency Map

Standards

NYS: CCLS:Mathematics, NYS: 2nd Grade , Geometry

2.G Reason with shapes and their attributes.

- 2. Partition a rectangle into rows and columns of same-size squares and count to find the total number of them.

Enduring Understandings	Essential Questions
1. There are different representations of fair shares 2. Rectangles can be partitioned into equal squares 3. We can count the number of columns and rows to find the total size.	1. How do you know when a rectangle is partitioned into fair shares? 2. How can you find the size of a rectangle?

Critical Content

1. Fair shares

   a. partition rectangles into equal squares

   b. partition rectangles into rows and columns of equal squares

2. How the size of the rectangle is found

Skills	Vocabulary
1. recognize fair shares 2. partition a rectangle into equal squares 3. find the size of a rectangle by counting the	Tier two: fair share, column, row, horizontal, vertical Tier three: partition,

number of partitions of equal squares (keeping track of what has been counted and not recounting squares)	

Stage 2: Assessment Evidence

Assessments

Splitting the Rectangle
Formative: Test: Written

Students are given a rectangle and asked to partition it into rows and columns of the same "square" size units and count to find the total number of them. The unit can be specified with grid paper or a square tile.

Stage 3: Learning Plan

Learning Activities	Resources
Students partition a rectangle into squares (to the best of their ability) and then determine the total number of squares. This relates to the standard 2.OA.4 where students are arranging objects in an array of rows and columns. Modeling multiplication with partitioned rectangles promotes students' understanding of multiplication. Tell students that they will be drawing a square on grid paper. The length of each side is equal to 2 units. Ask them to guess how many 1 unit by 1 unit squares will be inside this 2 unit by 2 unit square. Students now draw this square and count the 1 by 1 unit squares inside it. They compare this number to their guess. Next, students draw a 2 unit by 3 unit rectangle and count how many 1 unit by 1 unit squares are inside. Now they choose the two dimensions for a rectangle, predict the number of 1 unit by 1 unit squares inside, draw the rectangle, count the number of 1 unit by 1 unit squares inside and compare this number to their guess. Students repeat this process for different-size rectangles. Finally, ask them to what they observed as they worked on the task. **Example** "Split the rectangle into 2 rows and 4 columns. How	www.illuminations.nctm.org www.illustrativemathematics.org

many small squares did you make?" Teach students that rows are horizontal and columns are vertical.	

Differentiation Opportunities

This standard is a precursor to learning about the area of a rectangle and using arrays for multiplication. An interactive whiteboard or manipulatives such as square tiles or other square shaped objects can be used to help students partition rectangles.

<< Previous Year

Last Updated: Wednesday, October 24, 2012, 2:11PM

Atlas Version 7.2.6
© Rubicon International 2012. All rights reserved

Unit Map 2012-2013

Monroe #2 - Orleans BOCES (Regional Collaboration)

Collaboration / Math 2* / Grade 2 (Math Regional Curriculum)

Wednesday, October 31, 2012, 4:07PM

Standard/Module: Proficiency with Measurement 2.MD.8 (Week 33, 4 Weeks)

Stage 1: Desired Results

Standards Focus

- Additional (10%) connects to 2.MD.7

Standards

NYS: CCLS:Mathematics, NYS: 2nd Grade , Measurement & Data
2.MD Work with time and money.

- 8. Solve word problems involving dollar bills, quarters, dimes, nickels, and pennies, using $ and ¢ symbols appropriately. Example: If you have 2 dimes and 3 pennies, how many cents do you have?

Enduring Understandings	Essential Questions
The penny is the smallest American monetary unit and all other values can be composed from pennies.	What does the ¢ symbol mean? What does the $ symbol mean?
All coins can be composed of other coin values to make equivlanet amounts.	How can you count combinations of coins and bills? How can you decompose a coin into more coins/bills with smaller values?
Money can be used as a way to solve problems.	How can you compose a coin out of lots of coins/bills with smaller values?

Critical Content

This standard calls for students to solve word problems involving either dollars or cents. Since students have not been introduced to decimals, problems should either have only

dollars or only cents. Students use their knowledge of composing and decomposing numbers to solve problems involving composing or decomposing monetary amounts.

Skills	Vocabulary
I can identify coins and their corresponding values. I can skip count by 5's, 10's, 20's and 25's. I can build equivalent expressions (such as 25 = 10	Tier 2: problems, symbols, appropriately

+ 10 + 5) I can determine the value of combinations of coins and bills	Tier 3: dollar bills, nickels, dimes, pennies, quarters

Stage 2: Assessment Evidence

Assessments

Money Money Money!
Formative: Performance: Skill Demonstration

Students demonstrate their money skills in a mock store or some type of semi-authentic situation where they would need to produce the correct amount of money using combinations of coins and bills.

Stage 3: Learning Plan

Learning Activities	Resources
Example: What are some possible combinations of coins (pennies, nickels, dimes, and quarters) that equal to 37 cents? **Example**: What are some possible combinations of dollar bills ($1, $5 and $10) that equal 12 dollars? Since money is not specifically addressed outside of grade 2 (except to identify coins and values in 1st grade), students should have multiple opportunities to identify, count, recognize, and use coins and bills in and out of context. They should also experience making equivalent amounts using both coins and bills. Dollar bills should include denominations up to one hundred ($1.00, $5.00, $10.00, $20.00, $100.00). Students should solve story problems connecting the different representations. These representations may include objects, pictures,	www.illuminations.nctm.org www.illustrativemathematics.org

charts, tables, words, and/or numbers. Students should communicate their mathematical thinking and justify their answers. An interactive whiteboard or document camera may be used to help students demonstrate and justify their thinking. **Example:** Sandra went to the store and received 76¢ in change. What are three different sets of coins she could have received?	

Differentiation Opportunities

Students who typically struggle with money concepts do so because they are struggling with number sense in some respects. For example, the physical motion one does of counting coins or bills is the same motion used in 1:1 correspondence when children are first learning to count. Later we use that same motion to skip-count coins and bills showing them that one piece of paper is equivalent to $5 for example, and continue a skip-counting sequence by 5's. This may be hard for students to understand. Try exchanging a $5 for five $1 and doing the skip counting sequence with piles of five $1. This visual may be a good intervention to help students bridge to carrying a $5 bill is easier than carrying lots of $1 but that they are equivalent amounts.

Sometimes students will record twenty-nine dollars as 29$. Remind them that the dollar

sign goes in front. The cent sign goes after the number and there is no decimal point

used with the cent sign.

<< Previous Year

Last Updated: Friday, September 28, 2012, 2:57PM

Atlas Version 7.2.6
© Rubicon International 2012. All rights reserved

Unit Map 2012-2013

Monroe #2 - Orleans BOCES (Regional Collaboration)

Collaboration / Math 2* / Grade 2 (Math Regional Curriculum)

Wednesday, October 31, 2012, 4:07PM

Standard/Module: Proficiency with Measurement 2.MD.9 (Week 33, 4 Weeks)

Stage 1: Desired Results

Standards Focus

- Additional (10%) Connects to 2.MD.1-4 & 10

Standards

NYS: CCLS:Mathematics, NYS: 2nd Grade , Measurement & Data
2.MD Represent and interpret data.

- 9. Generate measurement data by measuring lengths of several objects to the nearest whole unit, or by making repeated measurements of the same object. Show the measurements by making a line plot, where the horizontal scale is marked off in whole-number units.

Enduring Understandings	Essential Questions
Represent the length of several objects by making a line plot. This standard emphasizes representing data using a line plot. Students will use the measurement skills learned in earlier standards to measure objects. Line plots are first introduced in this grade level. A line plot can be thought of as plotting data on a number line.	What is a line plot used for? How is it helpful for analyzing data?

Critical Content

Measure objects and record the data on a line plot.

A line plot is a number line that has data plotted on it.

Skills	Vocabulary
I can measure the lengths of objects. I can record how many times I measure a particular length on a number line	Tier 2: measuring, lengths, repeated measurements Tier 3: line plot, number line, whole unit,

Stage 2: Assessment Evidence

Assessments

Making Line Plots
Formative: Performance: Skill Demonstration

Students are asked to measure the lengths of certain collection of objects and record their findings on a line plot. Students present their findings to the class.

Stage 3: Learning Plan

Learning Activities	Resources
Measure objects in your desk to the nearest inch, display data collected on a line plot. How many objects measured 2 inches? 3 inches? Which length had the most number of objects? How do you know? An interactive whiteboard may be used to create and/or model line plots as well as class line plots on chart paper. Line plots are useful tools for collecting data because they show the number of things along a numeric scale. The line plot is made by simply drawing a number line then placing an X above the corresponding value on the line that represents each piece of data. Line plots are essentially bar graphs with a potential bar for each value on the number line. Pose a question related to the lengths of several objects. Measure the objects to the nearest whole inch, foot, centimeter or meter. Create a line plot with whole-number units (0, 1, 2, ...) on the number line to represent the measurements. At first students should create real object or picture graphs (where the object is drawn rather than a number). On picture graphs record the number of countable parts. These graphs show items in a category and do not have a numerical scale. For	www.illuminations.nctm.org www.illustrativemathematics.org

example, a real object graph could show the students' shoes (one shoe per student) lined end to end in horizontal or vertical rows by their color. Students would simply count to find how many shoes are in each row or bar. The graphs should be limited to 2 to 4 rows or bars. Students would then move to making horizontal or vertical bar graphs with two to four categories and a single-unit scale. Use the information in the graphs to pose and solve simple put together, take-apart, and compare problems.	

Differentiation Opportunities

The attributes for the same kind of object can vary. This will cause equal values in an object graph to appear unequal. For example, when making an object graph using shoes for boys and girls, five adjacent boy shoes would likely appear longer than five adjacent girl shoes. To standardize the objects, place the objects on the same-sized construction paper or sticky-note, then make the object graph.

<< Previous Year

Last Updated: Friday, September 28, 2012, 3:05PM

Atlas Version 7.2.6
© Rubicon International 2012. All rights reserved

Unit Map 2012-2013

Monroe #2 - Orleans BOCES (Regional Collaboration)

Collaboration / Math 2* / Grade 2 (Math Regional Curriculum)

Wednesday, October 31, 2012, 4:08PM

Standard/Module: Proficiency with Measurement 2.MD.10 (Week 33, 4 Weeks)

Stage 1: Desired Results

Standards Focus

- Additional (10%) Connects to 2.MD.9

Standards

NYS: CCLS:Mathematics, NYS: 2nd Grade , Measurement & Data
2.MD Represent and interpret data.

- 10. Draw a picture graph and a bar graph (with single-unit scale) to represent a data set with up to four categories. Solve simple put-together, take-apart, and compare problems using information presented in a bar graph.

Enduring Understandings	Essential Questions
A picture graph or bar graph provides a visual representation of a data set and I can interpret information I see including drawing comparisons.	What kind of information can I derive from a picture graph or bar graph? How can I compare categories in a picture graph or bar graph? What do the numbers on the sides (axes) of the graph tell me? How can I solve put-together, take-apart, and compare problems with what I see in the graph?

Critical Content

Students work with categorical data by organizing, representing and interpreting data.

Students have experiences posing a question with 4 possible responses and then

work with the data that they collect.

Skills	Vocabulary
I can pose a question and collect responses from my peers. I can analyze and make sense of the responses I collect. I can display the data in ways that make sense.	Tier 2: categories, put-together, take-apart, compare Tier 3: picture graph, bar graph, single-unit scale, data

I can build a picture graph or bar graph. I can read a picture graph or bar graph. I can solve problems by looking at/reading the graph.	

Stage 2: Assessment Evidence

Assessments

Graphing Our Data
Formative: Performance: Skill Demonstration

Students collect data and organize it into a pictograph or bar graph. Students present their data to the class and explain what the graph is showing.

Stage 3: Learning Plan

Learning Activities	Resources
Students pose a question and the 4 possible responses. Which is your favorite flavor of ice cream? Chocolate, vanilla, strawberry, or cherry? Students collect their data by using tallies or another way of keeping track. Students organize their data by totaling each category in a chart or table. Picture and bar graphs are introduced in Second Grade. - **Example:** *Flavor & Number of People Who Voted For It:* Chocolate 12 Vanilla 5 Strawberry 6 Cherry 9	www.illuminations.nctm.org www.illustrativemathematics.org

Students display their data using a picture graph or bar graph using a single unit scale. Students answer simple problems related to addition and subtraction that ask them to put together, take apart, and compare numbers. Students should draw both picture and bar graphs representing data that can be sorted up to four categories using single unit scales (e.g., scales should count by ones). The data should be used to solve put together, take-apart, and compare problems. In second grade, picture graphs (pictographs) include symbols that represent single units. Pictographs should include a title, categories, category label, key, and data. Second graders should draw both horizontal and vertical bar graphs. Bar graphs include a title, scale, scale label, categories, category label, and data.	

Differentiation Opportunities

Students often get the labels of the graphs confused. Put the titles for the axes and for the whole graph on different "Post-It" notes and let students move them around to determine what makes the most sense (*Does "ice cream flavors" make sense on the y-axis where we see numbers? Do these numbers tell us ice cream flavors?)* Eventually, ask them to determine the titles for themselves based on what each part of the graph is "telling." Relate the graph to telling a story and ask students what story the graph is telling.

Practice reading graphs from the bottom up instead of the top down because it gives more information earlier on about the story that is being told by the graph.

Last Updated: Friday, September 28, 2012, 3:17PM

© Rubicon International 2012. All rights reserved

Unit Map 2012-2013

Monroe #2 - Orleans BOCES (Regional Collaboration)

Collaboration / Math 2* / Grade 2 (Math Regional Curriculum)

Wednesday, October 31, 2012, 4:09PM

Standard/Module: Proficiency with Shapes 2.G.1 (Week 37, 3 Weeks)

Stage 1: Desired Results

Standards Focus

- Supporting (20%) connects with 2.G.2,3

Gr. 2 Proficiency Map

Standards

NYS: CCLS:Mathematics, NYS: 2nd Grade , Geometry
2.G Reason with shapes and their attributes.

- 1. Recognize and draw shapes having specified attributes, such as a given number of angles or a given number of equal faces. Identify triangles, quadrilaterals, pentagons, hexagons, and cubes.

Enduring Understandings	Essential Questions
1. Shapes can be identified by their number of sides or angles or faces. 2. Changing the orientation of a shape does not change the shape.	How can we describe the difference between shapes? How do sides, angles, and faces help us categorize shapes?

Critical Content

1. Sizes are compared directly or visually, not compared by measuring

2. Identify and draw squares, rectangles, trapezoids, pentagons, hexagons and cubes.

3. Recognize shapes by their attributes.

4. Quadrilaterals can have more than one name (a square is also a rectangle, both are also quadrilaterals)

Skills	Vocabulary
	Tier two: attributes
1. Identify (recognize) and draw shapes based on a given set of attributes such as number of sides,	Tier three: triangle, quadrilateral, pentagon, hexagons, cube attributes, angle, faces, sides

angles or faces. a. triangles b. quadrilaterals (squares, rectangles, and trapezoids) c. pentagons, hexagons and cubes.	

Stage 2: Assessment Evidence

Assessments

Name that Shape
Formative: Test: Written

Students name shapes that are presented to them and justify their responses using precise vocabulary about the attributes of the shapes.

Stage 3: Learning Plan

Learning Activities	Resources
Draw a closed shape that has five sides. What is the name of the shape? Students identify, describe, and draw triangles, quadrilaterals, pentagons, and hexagons. Pentagons, triangles, and hexagons should appear as both regular (equal sides and equal angles) and irregular. Students recognize all four sided shapes as quadrilaterals. Students use the vocabulary word "angle" in place of "corner" but they do not need to name angle types. Geosticks, geoboards, interactive whiteboards and document cameras may be used to help identify shapes and their attributes. Shapes should be presented in a variety of orientations and configurations.	www.illustrativemathematics.com www.illuminations.nctm.org

Differentiation Opportunities

Shapes should be presented in a variety of orientations and configurations. Presenting shapes in only one orientation multiple times sets up misconceptions about the attributes of shapes. Some students may think that a shape is changed by its orientation. They may see a rectanglewith the longer side as the base, but claim that the same rectangle with the shorter side as the base is a different shape. This is why is it so important to have young students handle shapes and physically feel that the shape does not change regardless of the orientation.

<< Previous Year

Atlas Version 7.2.6
© Rubicon International 2012. All rights reserved

Unit Map 2012-2013

Monroe #2 - Orleans BOCES (Regional Collaboration)

Collaboration / Math 2* / Grade 2 (Math Regional Curriculum)

Wednesday, October 31, 2012, 4:09PM

Standard/Module: Proficiency with Shapes 2.G.3 (Week 37, 3 Weeks)

Stage 1: Desired Results

Standards Focus

- Supporting (20%) connects with 2.G.1,3

Gr. 2 Proficiency Map

Standards

NYS: CCLS:Mathematics, NYS: 2nd Grade , Geometry

2.G Reason with shapes and their attributes.

- 3. Partition circles and rectangles into two, three, or four equal shares, describe the shares using the words halves, thirds, half of, a third of, etc., and describe the whole as two halves, three thirds, four fourths. Recognize that equal shares of identical wholes need not have the same shape.

Enduring Understandings	Essential Questions
1. A shape can be partitioned into equal-sized parts. 2. Equal shares of identical wholes can be different shapes 3. The equal parts of a whole can be named as fractions (halves, thirds, fourths). 4. The whole shape is composed of all of its equal parts (3 thirds, 4 fourths,etc.)	1. How many ways can you partition a given shape into *n* equal part? (*n*=2,3,4) 2. How can you justify that the parts are equal?

Critical Content

1. Equally partitioned shapes can be named as fractions.

2. Use the number of equal parts to determine the names of the fractional pieces (halves, thirds, fourths)

Skills	Vocabulary
1. Partition shapes into a given number of equal parts. 2. Name those parts as fractions. (halves, thirds, fourths)	Tier two: partition Tier three: fraction, half (halves), third, fourth

Stage 2: Assessment Evidence

Assessments

Fair Share It!

Formative: Test: Written

Students are asked to "fair share" items with their friends such as a brownie or a cookie or a pizza. Students must create a drawing to show how much each person will get if something is shared equally and write the amount as "half of", "a third of", "a fourth of", etc.

Students can be asked to break up an item into a particular fraction in at least three different ways (for example: S*how how you could cut this brownie into halves in at least three different ways so that each person gets exactly the same amount*.)

Stage 3: Learning Plan

Learning Activities	Resources
It is vital that students understand different representations of fair shares. Provide a collection of different-size circles and rectangles cut from paper. Ask students to fold some shapes into halves, some into thirds, and some into fourths. They compare the locations of the folds in their shapes as a class and discuss the different representations for the fractional parts. To fold rectangles into thirds, ask students if they have ever seen how letters are folded to be placed in envelopes. Have them fold the paper very carefully to make sure the three parts are the same size. Ask them to discuss why the same process does not work to fold a circle into thirds. Students should be given ample experiences to explore this concept with paper strips and pictorial representations. Students should also work with the vocabulary terms halves, thirds, half of, third of, and fourth (or quarter) of. While students are working on this standard, teachers should help them to make the connection that a "whole" is composed of two halves, three thirds, or four fourths. This standard also addresses the idea that equal shares of identical wholes may not have the same shape.	www.illuminations.nctm.org www.illustrativemathematics.org

Example: *Divide each rectangle into fourths a different way.* This standard introduces fractions in an **area model**. Students need experiences with different sizes, circles, and rectangles. For example, students should recognize that when they cut a circle into three equal pieces, each piece will equal one third of its original whole. In this case, students should describe the whole as three thirds. If a circle is cut into four equal pieces, each piece will equal one fourth of its original whole and the whole is described as four fourths. It is important for students to see circles and rectangles partitioned in multiple ways so they learn to recognize that equal shares can be different shapes within the same whole. An interactive whiteboard may be used to show partitions of shapes.	

Differentiation Opportunities

Students may believe that a region model represents one out of two, three or four fractional parts without regard to the fact that the parts have to be equal shares, e.g., a circle divided by two equally spaced horizontal lines represents three thirds. Show students how to partition circles starting at the center and making radii to the outside edge of the circle. In some cases, drawing diameters across the circle will work as well.

<< Previous Year

© Rubicon International 2012. All rights reserved