GRADE 2 UNIT 3 – COMPARE LENGTHS – MEASURES IN STANDARDS UNITS – FOUNDATIONS OF MULTIPLICATION

Established Goals:

Standards

Operations & Algebraic thinking

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

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

Measurement and Data

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

2.MD.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.

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

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

Numbers in Base Ten

2. NBT.2 Count within 1000; skip-count by 5s, 10s, and100s.

2.NBT.5 Add and subtract fluently within ten using mental strategies (within 10)

Transfer

Students will be able to:

Measure objects with different units of measurement, and estimate and measure lengths of objects using the appropriate unit of measure.

Compare the length of two objects to determine which is longer by using the same standard of measure.

Add fluently within 20 using mental strategies.

Meaning

ENDURING UNDERSTANDING	ESSENTIAL QUESTIONS
• You can estimate the length of an object by using standard units of measure and objects can be measured to find their actual length. • Objects lengths can be compared and measured to find which is greater. • You can find the number of objects arranged in equal rows by using repeated addition	• How do we decide which unit of measurement to use? • Which unit of measure should I use to measure an object? • Which operation or strategy will I use to solve a problem

Acquisition

KNOWLEDGE	SKILLS
Students will know how to… • Write an addition equation with equal addends. • Sum numbers, within 20, by composing and decomposing numbers using 10 as the benchmark number. • Estimate or measure lengths of objects using the correct tools (inches, centimeters, feet, and meters). • Measure the same object using different units of measurement, and the difference is related	*Students will be skilled at…* • Creating arrays with up to 5 rows and 5 columns to match a number sentence and vice versa • Using mental strategies to add all numbers within 20. • Skip counting by 5's, 10's, and 100's within a 1,000. • Estimating or measuring lengths of objects using the correct tools and units of

	to the size of the unit chosen (i.e. feet and inches) • Compare the lengths of two objects to find how much longer one object is by using the same standard of measure	measure (inches, centimeters, feet, and meters). • Finding which of two objects is longer by using the same unit of measure.

Vocabulary	Instruction and Pacing (suggested order to teach)	
Array Equal Unit Length Inch Height Meter Centimeter Nearest centimeter Foot Yard Place Value Ones Tens Hundreds Thousands Compose Operations Addition Subtraction Addends Sum Difference Skip Count Table Arrange Equals Match Measure Longer than Shorter than Mental Math	**Measurement**	**3 Weeks**
	Using Rectangular Arrays to solve addition problems	**2 Weeks**
	Number Sense and Fluency	**1 Week**
	Benchmark Testing & Reteaching	**2 Weeks**

Common Misconceptions	Proper Conceptions
In word problems children have difficulty choosing the operation	Acting out or explaining the story and deciding if you are taking away from a group or putting two groups together helps to "see" the problem
Students have difficulty skip counting when starting at the beginning of a sequence	A hundreds chart and number lines can help to skip count by 2's., 5's and 10's
Students confuse rows and columns in arrays	Columns are up and down. Rows go across
Students incorrectly draw arrays for the given groups	Arrays are equal groups of rows and columns. Graph paper can help us to organize rows and columns.
Students reverse the numbers when recording the number of rows and columns	The # of rows is the first number in the equation, the # in each row is the second
Students make errors in measuring	Line up "end to end" when measuring objects to align
Students have difficulty estimating measurement	Using an anchor or benchmark can help with estimating for measurement
Students lose count or cannot track when measuring	Marking and writing down measurements help you keep track
Students become confused when the measurement falls between two numbers	Use the number that is closer to the "end" of the object
Students confuse inches/centimeters on a ruler	Inches are larger than centimeters. Before measuring always find the correct side of the ruler marked cm. or in.

Resources
Common Core Standards, New Jersey Model Curriculum Envisions Math Program Suggested Topics Topic 15 Measuring Length Topic 14 – Arrays MANIPULATIVES AND GRAPHIC ORGANIZERS – Centimeter and Inch Rulers, Measurement Tape, Large and Small everyday items to measure, graph paper for arrays, small cubes/blocks for creating arrays **Use additional links below to continually review , Place Value, Counting and working with numbers within 1000 and Addition & Subtraction https://grade2commoncoremath.wikispaces.hcpss.org/ http://illuminations.nctm.org, https://www.illustrativemathematics.org **Additional Resources for ELL Learners** http://www.dreambox.com/teachertools activities for interactive whiteboard, some available in Spanish http://www.mathinenglish.com/worksheetsgrade2.php printables for second grade math http://www.lessonstudygroup.net/lg/conference/-456048990.pdf (multiple strategies for regrouping) http://www.njctl.org/courses/math/2nd-grade/facts/ http://www.njctl.org/courses/math/2nd-grade/place-value/ http://www.njctl.org/courses/math/2nd-grade/2-digit-addition-subtraction/ http://www.state.nj.us/education/modelcurriculum/math/ellscaffolding/2u3.pdf Math site for parents and Math from different countries http://www.aaamatematicas.com/

Differentiation and Accommodations	
Provide graphic organizers Provide additional examples and opportunities for additional problems for repetition Provide tutoring opportunities Provide retesting opportunities after remediation (up to teacher and district discretion) Teach for mastery not test Teaching concepts in different modalities Adjust pace and homework assignments	
ELL Modifications • Assess/teach prerequisite skills • Illustrated reference charts (i.e. measurement strategies, comparing units of measurement, arrays) • Use math manipulatives for all activities. (two color counters, multilink cubes, part part whole mats, base 10 blocks, place value mats, hundreds chart). Students should have ample practice with manipulatives prior to completing paper and pencil activities. • Teach a variety of strategies that students can use to problem solve (act it out, manipulatives, draw a picture, etc.) • Read all directions and word problems. Translate if necessary. • Use sentence frames to help students talk about whether or not to regroup. (Example: There are __ ones and ___ones. That is ___ in all. That is more/less than 10. I will/won't regroup.) • Utilize Envision Spanish Version/Interactive Path and Printable Resources	
21st Century Skills	Critical Thinking, Creative Thinking, Collaborating, Communicating, and Technology Literacy
Instructional Strategies	Fairfield Township School recognizes the importance of the varying methodologies that may be successfully employed by teachers within the classroom and, as a result, identifies a wide variety of possible instructional strategies that may be used effectively to support student achievement. These may include, but not be limited to, strategies that fall into categories identified by the Framework for Teaching by Charlotte Danielson: • Communicating with students • Using questioning and discussion techniques • Engaging students in learning

	• Using assessment in instruction • Demonstrating Flexibility and Responsiveness
Interdisciplinary Connections	ELA, Science, and Technology

Performance Task

Real World Measurement Activities utilizing Standard and Metric Systems of Measurement

- **Students will <u>estimate</u> the length of their classroom to the nearest <u>meter</u> and to the nearest <u>foot.</u>**
- **Students will work with a partner to measure the length of their classroom using a meter stick to find metric length in meters.**
- **Students will work with a partner to measure the length of their classroom using a ruler to find standard length in feet.**
- **Students will <u>estimate</u> the length of classroom door to the nearest meter and to the nearest foot.**
- **Alternate task students can measure the length of their desk in centimeters.**
- **Alternate task students can measure the length of their desk in inches.**
- **Students will explain which unit of measure needed more units to measure the room and why.**
- **Given the height of the classroom door to the nearest foot, find the difference between the length of the classroom and the height of the door.**

Item Measured	Estimate in Meters	Actual Measurement in Meters	Estimate in Feet	Actual Measurement in Feet
Length of Classroom				
Height of Classroom Door				
Distance to the Water Fountain				

ALTERNATE OR ADDITIONAL TASK

Item Measured	Estimate in centimeters	Actual Measurement in centimeters	Estimate in inches	Actual Measurement in inches
Length of Desk				
Width of desk chair				
Length of their shoe				

Rubric

3 The student's estimate in feet is greater than his/her estimate in meters. The student's measurement of the classroom's length is within 1 meter or 2 feet, explains that it takes more feet to measure the classroom, because meters are a larger unit, correctly finds the difference between the length of the room and height of the door in feet and writes a sentence for their answer.

2 Student makes an estimate of the length of the room in feet and meters and measurement of the classroom is within 2 meters or 4 feet. The student states that it takes more feet than meters to measure the classroom, but his/her explanation is not clear. The student correctly finds the difference between the length of the room and the height of the door/or makes a computation mistake and answers the question in a sentence.

1 The student estimates the length of the classroom in meters or feet and measurement of the classroom is within 2 meters or 6 feet. The student states that it takes more feet or meters to measure the classroom and it either lacks an explanation or their reasoning is unclear. The student attempts to solve a subtraction problem to find the difference between the length of the room and the height of the door, or they correctly solve an addition problem.

0-The student lacks an estimate for the length of the room. And does not complete any of the tasks correctly or has no response at all

ASSESSMENTS

Suggested Formative Assessment

Problem of the Day

Lesson Quizzes

Exit Ticket

Anecdotal Records (Topic Observation Checklist)

Suggested Summative Assessment - Grade Level developed Unit/Envisions Topic Tests/ Ed Connect Tests/ State Unit Benchmark/Performance Task