Curriculum Sample Template
Max. 8 Pages

Grade Level	4th Grade	**Content Area**	Math
Course Title (grades 9-12 Only)	Mathematics 4		
Expected Prior Knowledge *The knowledge/skills mastered earlier in the year foundational to the mastery of the required Standard in the current sample.*	• Students understand how to work in precision partnerships effectively. • Students know how to use their math journals effectively. • Students are familiar with, and have used, the 8 CCSS mathematical practices.		
Alignment to Program of Instruction *Briefly outline methods of instruction found in this sequence of lessons that align to the Program of Instruction described in A.3.*	This unit is built on the framework of the SIOP Model and incorporates all 8 of the SIOP Model components. Sentence framing and precision partnering are instructional strategies which promote the use and mastery of academic language. Instructional technology is incorporated by teacher and students. The core curriculum is implemented with fidelity. All teachers also actively engage in rigorous questioning that uses the answer as the starting point, requiring students to use evidence and reasoning to justify how they found their answers and why they believe they are correct. A wide variety of algorithms and methods are honored, and process is highly valued. All math instruction grades K-8 explicitly teaches, models, and honors the 8 CCSS mathematical practices: 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		
Standard Number and Description *List the Number* and the full description for the Required Standard or Science Performance Objective listed in section A.6.*	Domain: Measurement and Data Cluster: Solve problems involving measurement and conversion of measurements form a larger unit to a smaller unit. Standard: #2: Use the four operations to solve word problems involving distances, intervals of time, liquid volumes, masses of objects, and money, including problems involving simple fractions or		

	decimals, and problems that require expressing measurements given in a larger unit in terms of a smaller unit. Represent measurement quantities using diagrams such as number line diagrams that feature a measurement scale.
Materials/Resources Needed	• SMART Board • Metric/English system video • Millions to Measure • Summative assessments • Ruler, yard stick, tape measure, thermometers, measuring cups, tablespoon, liter beakers, gallon, balance scales with gram, kilogram, ounce, pound weights, stopwatch, analog clock, digital clock, mile, kilometer & meter representations from a running track, dollar, quarters, dimes, pennies • Scavenger hunt posted problems • Iditarod data and video

* ***Standard Number****: For English Language Arts (Reading and Writing), use Grade, Strand, Standard (e.g., 3.RI.2). For K-8 Math, use Grade, Domain, Standard (e.g., 6.EE.7). For HS Math, use Conceptual Category-Domain, Standard (e.g., A-REI.6). For Science, use Grade, Strand, Concept, PO (e.g., 4.1.3.1)*

Lesson (add as needed)	**Instructional Strategies**	**Student Activities**
1	Unit Vocabulary: **metric system** **English system** **mass (grams, kilograms, ounces, pounds)** **volume (liters, milliliters, gallons, pints, cups)** **distance (meter, kilometer, miles, feet, inches)** **time (seconds, minutes, hours)** **temperature (Farenheit and Celcius)** 1. Teacher asks an introductory question to partners: "What measurements exist for us, and what things do they help us measure?" 2. Teacher provides a video on the origins of the metric and English systems of measurement to give students a context for conversion: http://www.cutsmart.com/pages/articles/METRIC_VS_ENGLISH_SYSTEM_OF_MEASUREMENT.html or	1. Student partnerships access prior knowledge and working vocabulary to describe: "What measurements exist for us, and what things do they help us measure?" **Unit of Measurement** | **What it Measures** 2. Partnerships share their findings with the class. 3. Students add new vocabulary definitions, pictures, and sentences to their vocabulary journals. 4. In pairs, students view the clip about the development and differences of the metric and English systems and then complete a Venn diagram to represent their findings. 5. Students write an independent summary of how we measure things and why there are dual systems. Students also need to anticipate at least one challenge of having two systems.

	http://www.youtube.com/watch?v=DQPQ_q59xyw 3. Teacher collects responses then has students sort them into 'metric' vs. 'English' system categories using a Venn diagram. 4. Teacher leads a class reading of Millions to Measure by David Schwartz.	
2	1. Teacher sets up stations around the classroom designed to give students 'hands-on' experiences with measurement: #1: Ruler, yard stick, tape measure #2: Thermometers #3: Measuring cups, tablespoon, liter beakers, gallon #4: Balance scales with gram, kilogram, ounce, and pound weights #5: Stopwatch, analog clock, digital clock #6: Mile, kilometer, meter representations from a running track #7: Dollar, quarters, dimes, pennies 2. Teacher will provide one operational problem at a time (on the SMART Board) and ask groups to complete them. These problems use the data collected by students during the 'hands-on' experience.	1. Students circulate through the six stations in groups of 4 to complete measurements using the tools provided using larger and smaller units. 2. Students will reconvene to participate in a debrief/analysis of their experiences. They will reflect on the difference between using the English and metric measurements. 3. Students work in partnerships on operational problems provided by the teacher.
3	1. Teacher facilitates a 'Scavenger Hunt' for students by placing posted operational problems around the room that students need to solve. Scavenger hunt problems include items about distance, money, time, mass, volume, and temperature. 2. Teacher assigns one 'Scavenger Hunt' problem per partnership and has students share their solutions and process on the classroom document camera. 3. Teacher asks for other partnerships that solved problems in another way to share their answers and methods with the class.	1. Circulate throughout the room in partnerships to find and solve operational problems involving distance, time, volume, mass, and money. 2. Partnerships present their answer and process for one problem to the whole class and field questions. 3. Students evaluate the accuracy and logic behind the solutions and processes of their peers.
4	1.Teacher presents Iditarod background information to the class and has students view a video of mushers and teams from the prior year from: http://iditarod.com/race/ 2. Teacher provides data point (checkpoint) data from last year's race: 20 of the 24 data points. Teachers also provides distances between all of the data points. 3. Teacher asks students to determine the difference in miles	1. Students watch several video clips about the Iditarod to build background. 2. Students determine the difference in kilometers between each of the Iditarod checkpoints. 3. Students pick a team to 'champion' and determine the time it took their team to move from one checkpoint to the next in hours/minutes.

	between all of the data points . . . then breaks students into partnerships and has each pick a team to champion and to determine the time difference between checkpoints 1-2, 5-6, 9-10, 13-14, and 18-19. 4. Teacher moves from group to group to support students in finding their answers. 5. Teacher asks a prediction question: "Based on the data you have been provided for 20 of the 24 checkpoints, which team do you believe will win . . . and why?". 6. Teacher provides the metric/English conversion for kilometers/miles and asks students to estimate their answers in miles. Teacher then guides students through metric/English conversion at http://www.metric-conversions.org/length/kilometers-to-miles.htm	4. Students share their predictions and justifications for their overall winner. 5. Students convert kilometers to miles.
5	1. Give summative assessment for unit.	1. Take the summative assessment independently.

Measurement and Data Problem Solving Quiz

Domain: Measurement and Data

Cluster: Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit.

Standard: Use the four operations to solve word problems involving distances, intervals of time, liquid volumes, masses of objects, and money, including problems involving simple fractions or decimals, and problems that require expressing measurements given in a larger unit in terms of a smaller unit. Represent measurement quantities using diagrams such as number line diagrams that feature a measurement scale.

Essential Student Question: Can you solve word problems about distance, time, volume, mass, and money using addition, subtraction, multiplication, and division?

1.The Tour de France is a famous bike race that includes 21 day-long segments of over 3,200 kilometers. Whew! If 1600 kilometers is equal to 994 miles, how many miles long, total, is the Tour de France?
a. 606 miles
b. 800 miles
c. 1,988 miles

d. 2,594 miles

2.How many meter sticks would it take to cover the entire length of the Tour de France?
a. 320,000
b. 3,200,000
c. 32,000,000
d. 320,000,000

3. Look at the map of Stage 16 of the Tour de France to the left. To earn the yellow jersey, this rider needs to complete Stage 16 in less than five hours and 35 minutes. He begins the ride at 10:00. By when must he finish to make his goal?
a. 4:35
b. 3:34
c. 2:36
d. 5:37

4. You bought 2 bags of Taki's for $1.50 at Safeway. You paid for your purchase with a $5 bill. The cashier helping you is out of dollars and needs to give you change in quarters, dimes, and nickels. Which answer represents the correct change?
a. 12 quarters and 5 dimes
b. 8 quarters, 10 dimes, and 3 nickels
c. 4 quarters, 30 dimes, and 10 nickels
d. 6 quarters, 5 dimes, and 20 nickels

5. You earn an allowance of $5 each week for completing household chores. You want to start saving money Nintendo DS, so you decide to save 1/2 of your allowance for that goal. How much would you save each week?
a. $3.00
b. $1.50
c. $2.00
d. $2.50

6. The beaker in the picture on the right contains a volume of 1 liter when it is completely full. How many milliliters can it hold when completely full?
a. 900
b. 100
c. 10,000
d. 1,000

7. Your teacher hands you a very large beaker that has milliliter markings on it but no liter markings. She asks you to fill it to the 4 liter mark. What will the correct reading be in milliliters when you have finished?
a. 400
b. 4,000
c. 44,000
d, 40,000

8. You need to purchase 2 pounds of cheese to make a pizza, but the store only sells mozzarella cheese in 8 ounce packs. How many 8 ounce packs must you buy to be able to make the pizza?
a. 2 packs
b. 4 packs
c. 6 packs
d. 8 packs

9. You are at the airport and your bag is too large to check for free. If you can't get it to 50 pounds, then you have to pay a $35 fee to check it. The scale shows that it currently weighs 54 pounds and 7 ounces. How many ounces must you remove to get its mass to 50 pounds?
a. 64 ounces
b. 55 ounces
c. 71 ounces
d. 83 ounces

10. In science class, you are needing to put 1 kilogram of rock into a beaker to prepare for an experiment. The scale is showing that you have 760 grams in the beaker. How many more grams do you need to achieve the 1 kilogram requirement?
a. 3,400 grams
b. 34 grams
c. 340 grams
d, 34,000 grams

Measurement and Data Problem Solving Answer Key

1. C
2. C
3. B
4. A
5. D
6. D
7. B
8. B
9. C
10. C

Measurement and Data Problem Solving Quiz Scoring Guide

10 questions weighted at 1 point each **10 points total**

Raw score_____X____/10 = _____/100 points

The 100 points possible assessment will reflect the school's grading scale:
90 -100 = A – Mastery

80 – 89 = B - Mastery
70 – 79 = C – Needs Screening for Remediation
60 – 69 = D – Needs Remediation
0 – 59 = F – Needs Intensive Remediation