Curriculum Sample Template – 8 Pages Max. (12 pages for integrated ELA sample)

Grade Level	11th	**Content Area**	Math
Course Title (grades 9-12 Only)	Algebra 2		
Expected Prior Knowledge *List the knowledge/skills mastered earlier in the year that are foundational to the mastery of the Required Standard(s).*	Basic understanding of common units; have solved simple proportions; have used basic formulas; knows different types of graphs and charts such as line graphs, bar graphs, histographs, pie charts, etc.		
Alignment to Program of Instruction *Describe how the methods of instruction found in this sequence of lessons align to the Program of Instruction described in the application package.*	During this unit SDAIE strategies are being employed to engage English learners, but also for the general benefit of the entire student population. Students who are engaged in small group lessons will benefit from the type of instruction described here. SDAIE strategies include math journals, special attention to vocabulary; heterogeneous grouping; student friendly objectives; etc. This lesson also adheres to the philosophy laid out by the Understanding by Design framework. For example, "transfer of learning" is used during each objective, relating units to where students will likely use them in the real-world. Desired results are clearly stated throughout the lesson. Class, group, and individual discussions are throughout the lesson as well ensuring deeper understanding and that the teacher is not simply a "purveyor of knowledge." Finally, students are engaged in higher levels of cognitive thought in accordance with Bloom's Taxonomy.		
Standard Number* and Description *The standard number and description of the Required Standard(s) being instructed and assessed to mastery in the curriculum sample.*	N-Q.A.1 Use units as a way to understand problems and to guide the solution of multi-step problems; choose and interpret units consistently in formulas; choose and interpret the scale and the origin in graphs and data displays.		
Materials/Resources Needed *List all items the teacher and students will need for the entire sequence of instruction (excluding common consumables)*	Smart Board and computer with Smart Notebook Software, Guided Notes, Student math journals, Math glossary, Estimation180.com, Prompts for graphs, Data prepared for students creating graphs, Practice problems		

* ***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, Cluster, Standard (e.g., 6.EE.B.7). For HS Math, use Conceptual Category-Domain, Cluster, Standard (e.g., A-REI.C.6).*

Lesson (add as needed)	**Instructional Strategies -** *List and describe teacher actions, lesson by lesson, which will provide students with opportunities to engage the grade-level rigor defined by the Required Standard(s). Indicate alignment of instructional strategies to specific component(s) or content/skill(s) of the Required Standard/component.*	**Student Activities -** *Describe the activities, lesson by lesson, in which students will engage to allow them to master the grade-level rigor defined by the Required Standard(s). Indicate alignment of student activities to specific component(s) or content/skill(s) of the Required Standard/component.*
1	**Objective:** Students will use units to understand problems and guide the solution of multi-step problems **(Key/Advancing Questions)** • Why do we have different units to measure the same thing? For example, length can be measured in inches, feet, yards, miles, meters, and so on. • Why might you want to convert between units? **Activation of Prior Knowledge:** Using the Smart Board, the **teacher will** access the website www.estimation180.com. The **teacher will** give the students an estimation problem from the website (units will be used in the problem). The **teacher will** collect student answers and show the students the answer. The **teacher will** ask students that were close to the answer, how they estimated. **Introduction to New Material ("INM") / Modeling:** The **teacher will** pass out the guided notes that go with the day's lesson. Using the Smart Board, the **teacher will** show the students various pictures of things that can be measured in some way (height, length, weight, amount, volume, mph, etc.). The **teacher will** ask for appropriate units and estimations for what the measurements of the objects should be. The **teacher will** then start to show students real-world problems that involve units and some unit conversion (grocery store price comparisons, speed of a car, etc.). The **teacher will** then model how to solve these problems asking students basic questions as they teach. The **teacher will** use the different colors of the Smart Board to highlight key parts of the problem and differentiate each step. The **teacher will** frontload material with key vocabulary. **Guided Practice.** The **teacher will** pass out poster paper to the students. The **teacher will** assign the students into heterogeneous groups of 3 and the students will need to create a couple problems, given a few conditions and show how to solve them. The teacher will give each group a guided instruction sheet and provide a rubric. The **teacher will** check for understanding while each group is working.	**Students will** write the objective in their guided notes. **Students will** write down the key/advancing questions in their journal to answer at the end of class. These questions will serve as a closure/self-reflection for students. **Students will** work on the estimation problem. **Students will** fill out a slip of paper and write their name down to see if they can estimate the answer. **Students will** explain how they estimated their answers to a peer and the class. **Students will** follow along, writing examples from the board in their guided notes to use units as a way to understand problems and to guide the solution of multi-step problems. **Students will** answer all questions from the teacher, and write down significant information **Students will** answer questions as the teacher poses them. **Students will** discuss answers with a peer or to the entire group. **Students will** also highlight key vocabulary words that they do not understand throughout the course of the lessons. After a class discussion about the words, looking them up in the math glossary, or during group work time students can rewrite them in their notes using student friendly language. Key vocabulary such as sine, cosine, tangent. **Students will** work together in their groups to create a poster with 2 problems on units. If there is a student in their group that doesn't understand then the rest of the **group will** explain it to them. After this peer interaction, if there are still students that don't know how to solve the problems, the **students will** call the teacher over to help. **Student will** have created 2 problems with solutions and steps.

	Independent Practice: The **teacher will** give each student a set of practice problems for using units and solved multi-step problems. The **teacher will** ask the students to complete the problems – students must get at least 4 out of 5 to achieve mastery. **Assessment:** The **teacher will** give an exit ticket to correlate with the key questions to assess students' knowledge.	**Students will** answer the questions from the board in the Independent Practice section of their guided notes. **Students will** complete the key/advancing questions in their notes. The students will also complete the exit ticket questions and turn it in to the teacher.
2	**Objective:** Students will choose and interpret units consistently in formulas **(Key/Advancing Questions)** • Why do the units of an input change sometimes when you get the output? **Activation of Prior Knowledge:** Using the Smart Board, the **teacher will** assign "warm-up" problems plugging in values in various formulas. The **teacher will** check for understanding as students work on the "warm-up." Gauging the class' understanding of prior knowledge, the **teacher will** discuss the warm-up problems as needed. **Introduction to New Material ("INM") / Modeling:** The **teacher will** pass out the guided notes that go with the day's lesson. Using the Smart Board, the **teacher will** show the students several real-world formulas. The **teacher will** model how to solve the problems placing emphasis on the units plugged in and the units you get out. The **teacher will** model thinking and writing down all the values and units of each given fact. The **teacher will** use the different colors of the Smart Board to highlight key parts of the problem and differentiate each step. **Guided Practice.** The **teacher will** give the groups several formulas and several problems. The **teacher will** assign the students into heterogeneous groups of 3 The **teacher will** ask the students to solve the problems but not tell them which formula they need The **teacher will** check for understanding while each group is working on the task **Independent Practice**: The **teacher will** several problems to do involving units and formulas. The teacher will ask the students to complete the problems. HW will also be given. Students need to get 3 out of 4 correct to achieve mastery. **Assessment:** The **teacher will** give an exit ticket to correlate with the key questions to assess students' knowledge.	**Students will** write the objective in their guided notes. **Students will** write down the key/advancing questions in their journal to answer at the end of class. These questions will serve as a closure/self-reflection for students. **Students will** work on the warm-up problems. **Students will** look at their past notes, ask their peers, or call for the teacher as needed to complete the warm-up problems. **Students will** ask questions and discuss the warm-up problems until students understand them. **Students will** follow along, writing examples from the board in their guided notes, answer all questions from the teacher, and write down significant information about how choose and interpret units consistently in formulas. **Students will** ask questions if they are unsure of the method or steps. **Students will** also highlight key vocabulary words that they do not understand throughout the course of the lessons. After a class discussion about the words, looking them up in the math glossary, or during group work time students can rewrite them in their notes using student friendly language. **Students will** work together in their groups to work on the "formula and problems" task provided. **Students will** need to write down key pieces of information and use it to figure out which formula is needed. If there is a student in their group that doesn't understand then the rest of the **group will** explain it to them. After this peer interaction, if there are still students that don't know how to solve the problems, the **students will** call the teacher over to explain it. **Students will** quietly answer the independent practice questions given, complete the key/advancing questions, and exit ticket.

3	**Objective:** Students will choose and interpret the scale and the origin in graphs and data **(Key/Advancing Question)** • Why is picking an appropriate scale important for representing data on a graph? **Activation of Prior Knowledge:** Using the Smart Board, the **teacher will** show students a couple different graphs and ask them some basic questions about them. The **teacher will** check for understanding as students work on the problems. Gauging the class' understanding of prior knowledge, the **teacher will** discuss the problems as needed. **Introduction to New Material ("INM") / Modeling:** The **teacher will** pass out the guided notes that go with the day's lesson. Using the Smart Board, the **teacher will** show several graphs with scale for the axes that are inappropriate. The **teacher will** show the students why the scale should change and how to change it. The **teacher will** have some sample data and start a class discussion on what type of graph would be good to represent the data. The **teacher will** then complete the graph from the data on Microsoft Excel and discuss appropriate units, origin, and scale. **Guided Practice.** The **teacher will** pass out students laptops with Microsoft Excel. The **teacher will** assign the students into heterogeneous groups of 3 The **teacher will** ask the students to find data on the internet that relates to their prompt. The teacher will have the students create graphs for their data, picking appropriate scale. The **teacher will** check for understanding while each group is working on the task **Independent Practice**: The **teacher will** provide several problems asking students to finish or fix graphs. HW will also be given. Students need to score 3 out of 4 on a rubric. Rubric example continuum: Shows complete understanding, shows substantial understanding, limited understanding, no understanding. The **teacher will** also have an exit ticket to assess student's knowledge on the identities learned.	**Students will** write the objective in their guided notes. **Students will** write down the key/advancing question in their journal to answer at the end of class. **Students will** pull out their materials and work on the problems. **Students will** look at their past notes, ask their peers, or call for the teacher as needed to complete the problems. **Students will** ask questions and discuss the problems until students understand them. **Students will** follow along, writing examples from the board in their guided notes, answer all questions from the teacher, and write down significant information. **Students will** ask questions if they are unsure of the method or steps for Students will choose and interpret the scale and the origin in graphs and data. **Students will** also highlight key vocabulary words that they do not understand throughout the course of the lessons. After a class discussion about the words, looking them up in the math glossary, or during group work time students can rewrite them in their notes using student friendly language. **Students will** work together in their groups to work on the task provided. **Students will** not deviate from the task of finding data and using Excel to represent the data in a graph. If there is a student in their group that doesn't understand then the rest of the **group will** explain it to them. After this peer interaction, if there are still students that don't know how to solve the problems, the **students will** call the teacher over to explain it. **Students will** quietly answer the independent practice questions given, complete the key/advancing questions, and exit ticket.
4	The **teacher will** instruct students to complete the summative assessment.	The **students will** complete the summative assessment.

S.A.	*Provide an opportunity for the student to complete the summative assessment items which is clearly separate from instruction and guided or independent practice, and in which the student is assessed independently. In the Student Activities column, provide a brief description of the summative assessment (S.A.) items that will allow students to demonstrate mastery of the rigor of the Required Standard(s)/components, and the context in which the items will be administered.*	1. Students are challenged to pick the appropriate unit of measure. 2. Apply knowledge of multi-step equations to solve a word problem. 3. Apply knowledge of multi-step equations in temperature conversions. 4. Apply knowledge of graphs to build an appropriate representation of data.

Summative Assessment Items and Scoring: *Below, provide at least three Summative Assessment Items that together accurately measure student mastery of the application of the content and/or skills as defined by the grade-level rigor in the Required Standard(s). For each assessment item, provide an answer key or scoring rubric which clearly describes how assessment items are to be scored and how points will be awarded, such that mastery of the application of the content and/or skills as defined by the grade-level rigor in the Required Standard is clearly demonstrated by an acceptable score.*

Summative Assessment Item 1 (clearly identify answer key/scoring rubric, and acceptable score):

(1) Which would be the most appropriate unit of measurement for a chef buying meat for his restaurant for the next week? (1 point)

(a) Ounces
(b) Feet
(c) Pounds
(d) Tons
(e) Square Centimeters

(2) Max can read about 150 words per minute. Unfortunately for Max, he has waited until this weekend to do all his reading. The book he has to read is 310 pages long. If a typical paperback has about 350 words per page, how many hours should he set aside for this reading? (1 point)

Total__/2; 0-1.3 = Incomplete; 1.4-1.5 = C; 1.6-1.7 = B; 1.8 = A (1.4=Mastery)

Summative Assessment Item 2 (clearly identify answer key/scoring rubric, and acceptable score):

Objective 2

(3) As Margaret packs for her trip to Fiji, she looks up the average daily temperature for July and finds that it's about 14 degrees Celsius. She knows that $F = 1.8C + 32$, where F represents degrees in Fahrenheit and C represents degrees Celsius. About what temperature should she expect in degrees Fahrenheit? (1 point)

Total__/1; 0-.69 = Incomplete; .7-.79 = C; .8-.89 = B; .9-1.0 = A (.7=Mastery)

Summative Assessment Item 3 (clearly identify answer key/scoring rubric, and acceptable score): (add as needed):

(4) Height growth in humans is affected by genetic factors, diet, standard of life, etc.; However, the main trends in height are: (2 points)

- Fastest growth from birth – 2 years old
- Slower increase until there is a rapid rise at puberty (around age 12)
- After puberty, there is a slow increase until age 18 when your height remains constant.

Create a data display to represent this information. Be sure to be clear about what is being represented.

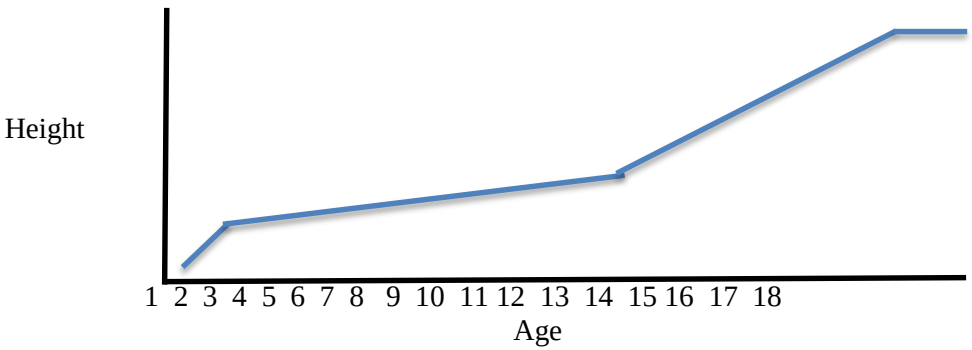
Total__/2; 0-1.3 = Incomplete; 1.4-1.5 = C; 1.6-1.7 = B; 1.8 = A (1.4=Mastery)

(1) Pounds
An ounce is also in weight, but a chef will probably need a lot for an entire restaurant. Tons are an outrageously large unit for meat because just 1 ton is 2000 pounds. The other choices are not in weight.

(2) 12 *hours*

(3) Answer can be rounded to 57°F or exactly 57.2°F.

(4)



Graphs may vary slightly

Total_____/5; 0-3.5 = Incomplete; 3.5 = C; 4 = B; 4.5 = A (3.5 = mastery)

To achieve mastery of Standard N-Q.A.1 students must receive 3.5 out of 5 or 70% on the summative assessment items.