Curriculum Sample Template

Grade Level	8th grade	**Content Area**	Science
Course Title (grades 9-12 Only)	N/A		
Length of Unit	5 days + 1 day for the summative assessment	**Time of Year**	4th quarter
Expected Prior Knowledge *The knowledge/skills mastered earlier in the year foundational to the mastery of the required Standard in the current sample.*	Students will be able to read grade level text fluently. Students will be able to speak and write in full sentences to express their ideas. Students will understand and apply the appropriate norms for group discussion.		
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 aligns to the objectives described in the Core Knowledge Sequence. The skill of comprehending information from graphs is set forth in the Arizona State Standards, and revisited at increasing levels of rigor through each grade. The content knowledge of Life and Earth sciences is spiraled throughout the Core Knowledge Sequence from Kindergarten to 8th grade. As described in the Program of Instruction, Cooperative Learning will take place throughout this unit. Each lesson includes a combination of teacher-led instruction, small group interaction, independent practice, and ongoing assessment. Prior to beginning instruction, the teacher will administer an aligned pre-test to assess student understanding, and use data from this to target individual students' needs throughout the unit. Students will individually graph their results on both the pre- and post-tests, and graph their results in an individual portfolio, which serves as a visual representation of progress throughout the year.		
Standard Number and Description *List the Number* and full description for the required Standard.*	8.1.3.3 Interpret data that show a variety of possible relationships between two variables, including: • positive relationship • negative relationship • no relationship		
Summative Assessment *Describe a cumulative and comprehensive activity, clearly separate from instruction and guided or independent practice, which allows each student to individually demonstrate mastery of the required Standard. A copy of the summative assessment must be attached to the curriculum sample.*	At the end of this unit, students will take a two-part summative assessment. In Part I, students will answer multiple choice questions, using information learned from a graph. In Part II, students will analyze three graphs, and write sentences describing the correlations between their relative variables.		
Scoring Scale and Mastery Level *Explain how the assessment is scored, to include points per question, how points are awarded, total points possible, criteria necessary to demonstrate mastery, and grading scale. A copy*	In Part I, there are two multiple choice questions worth one point each. In Part II, there are three constructed response questions, worth two points each. Thus, a total of eight points is possible. Scoring will be based on the attached answer key/rubric. Grading will be based on the following scale: 0-4 points= Falls Far Below; 5 points=		

of the answer key and scoring rubric (whichever applicable) must be attached to the curriculum sample.	Approaches; 6-7 points = Meets; 8 points = Exceeds. According to the program of instruction, a score of 80% will indicate mastery. Thus, a score of 6, 7, or 8 points on this assessment will indicate student mastery of the standard.
Materials/Resources Needed	Document camera; examples of bar, line, and scatter plot graphs; materials for the Jeopardy! Game; student Science Journals, chart paper

Lesson (add as needed)	**Instruction** TW= Teacher will; SW = Student will; TPS= Think, Pair, Share; INM = Introduction to new material; CFU = Check for understanding; GP= Guided practice; IP = Independent practice	**Student Activities**
1	**Activation of Prior Knowledge:** TW ask students what kind of information they can learn from graphs.	SW TPS about the different kinds of information they can receive from graphs.
	Objective: Students will define and identify examples of "data," "variables," and "correlation."	SW discuss today's objective.
	INM: Key Points: 1. Graphs are resources that give us information about a topic or topics. 2. In order to read graphs, we have to understand their components: data, variables, and correlations. 3. "Data" is factual information, in the form of measurements or statistics. 4. "Variables" are the items that are being measured in an experiment. 5. "Correlation" is a non-causal relationship between two or more things.	SW actively listen to today's key points, and take notes in their Science Journal.
	Modeling: TW direct students to take out their "Science Journals," and take notes throughout INM. TW show examples of different types of data, variables, and correlations, and explain each thoroughly. TW ensure that all students have written the notes, then ask questions to check for understanding.	SW actively engage, and take guided notes, as the teacher defines and explains key vocabulary for this unit. SW answer questions to demonstrate understanding.
	Guided Practice: TW lead a "Vocabulary Jeopardy!" game. TW display pre-prepared questions and examples of the three terms introduced today. TW divide class into groups of three. TW allow each group to pick a question, and will read it to the entire class. TW call on groups to answer, identifying the correct term. TW ask questions to clarify student understanding.	SW work in pre-assigned teams of three. SW choose question items, and each group will work together to answer each item, identifying the examples as "data," "variables," or "correlations."
	Independent Practice: TW provide each student with a multiple-choice worksheet. TW direct students to read the questions and look at the examples, and identify "data," "variables," and "correlation."	SW complete the multiple choice worksheet, identifying examples as "data," "variables," or "correlations."

	Assessment: TW use today's IP as an assessment of student learning. TW lead small group instruction for any student who did not show adequate understanding of the concept. **Closure:** TW direct students to review the notes in their Science Journals, and summarize what they've learned with a partner. TW explain this week's homework assignment: SW collect data on the number of hours students spend watching TV each evening. Then, SW collect data on the scores they get the following day on their Independent Practice work. At the end of this unit, SW be able to describe the relationship between the amount of TV they watch each evening and their academic performance in Science class. TW provide students with data collection templates.	SW review their notes and TPS with a neighbor to summarize their learning. As homework, SW record how many hours of TV they watch tonight.
2	**Activation of Prior Knowledge:** TW direct students to review their Science journals, and summarize what data, variables, and correlations are. **Objective:** Students will interpret a variety of graphs that show data with a positive relationship. **INM:** Key Points: 1. Another word for correlation is "relationship." 2. There are a number of different relationships two variables can have: positive, negative, or no relationship. 3. Two variables have a positive relationship when they *both* increase or *both* decrease. **Modeling:** TW direct students to take out their "Science Journals," and take notes throughout INM. TW show examples of line graphs, bar graphs, and scatter plots that show variables with positive correlation. TW explain and model how to read each data point, and see that as one variable increases, so does the other; or as one variable decreases, so does the other. Then, TW model how to write a sentence describing the positive correlation (The relationship between X and Y is positive, because…). TW ask questions to check for understanding. **Guided Practice:** Prior to the lesson, TW have prepared examples of bar, line, and scatter plot graphs that show positive relationships between two variables displayed around the room. TW direct S to work in pre-assigned groups of two, to analyze the graphs, and write a sentence	SW review their notes, and summarize the terms "data, variables, and correlations," with a partner. SW discuss today's objective. SW actively listen to today's key points, and take notes in their Science journals. SW actively engage as the teacher defines and explains what a "positive correlation" is. SW listen as the teacher shows several examples of graphs depicting variables with a positive correlation. SW answer questions to demonstrate understanding. SW work in pairs. They will walk from graph to graph, and analyze the data on each. For each graph, SW write a sentence that describes the relationship between the variables (they will all be positive, for today).

	describing each. Then, TW direct each group to share out their sentences, and students will discuss one another's ideas. **Independent Practice:** TW use the document camera to project images of 7 different graphs. TW direct students to write a sentence describing each, on a provided sheet of paper. **Assessment:** TW use today's IP as an assessment of student learning. TW lead small group instruction for any student who did not show adequate understanding of the concept. **Closure:** TW direct students to review their guided notes, and summarize what they've learned with a partner. TW direct students to graph the number of hours spent watching TV last night, and their score on the independent practice onto the graph paper provided. TW remind students to collect data again tonight, recording the amount of time they spend watching TV.	SW analyze the graphs shown, and write a sentence describing the relationship between the variables in each. (They will all be positive for today). SW review their notes and TPS with a neighbor to summarize their learning. As homework, SW record how many hours of TV they watch tonight.
3	**Activation of Prior Knowledge:** TW show the slides from yesterday's IP, and ask students to give a brief description of the relationship shown. **Objective:** Students will interpret a variety of graphs that show data with a negative relationship. **INM:** Key Points: 1. Another word for correlation is "relationship." 2. There are a number of different relationships two variables can have: positive, negative, or no relationship. 3. Two variables have a negative relationship when the data for one show an *increase* and the data for the other show a *decrease*. **Modeling:** TW direct students to take out their "Science Journals," and take notes throughout INM. TW explain today's key points, and show examples of line, bar, and scatter plot graphs showing negative correlations. TW use the "Think Aloud" strategy to show how to analyze the graph and determine the negative relationship. TW ask questions to check for understanding. **Guided Practice:** Prior to the lesson, TW have prepared examples of bar, line, and scatter plot graphs that show negative relationships between	SW review the slides, and discuss the relationships between the variables in each. SW summarize what a positive correlation between two variables is. SW discuss today's objective. SW actively listen and take notes on the key points. SW actively engage, as the teacher demonstrates examples of graphs showing variables with a negative correlation. SW answer questions to demonstrate understanding. SW work in pairs. They will walk from graph to graph, and analyze the data on each. For each graph, SW write a sentence that describes the

	two variables displayed around the room. TW direct S to work in pre-assigned groups of two, to analyze the graphs, and write a sentence describing each. Then, TW direct each group to share out their sentences, and students will discuss one another's ideas. **Independent Practice:** TW use the document camera to project images of 7 different graphs. TW direct students to write a sentence describing each correlation, on a provided sheet of paper. **Assessment:** TW use today's IP as an assessment of student learning. TW lead small group instruction for any student who did not show adequate understanding of the concept. **Closure:** TW direct students to review the notes in their Science Journals, and summarize what they've learned with a partner. TW direct students to graph the number of hours spent watching TV last night, and their score on the independent practice onto the graph. TW remind students that their homework tonight is to collect data on the amount of TV they watch.	relationship between the variables (There will be a mixture of positive and negative relationships shown). SW analyze the graphs shown, and write a sentence describing the relationship between the variables in each. (There will be a mixture of positive and negative relationships shown). SW review their notes and TPS with a neighbor to summarize their learning. As homework, SW record how many hours of TV they watch tonight.
4	**Activation of Prior Knowledge:** TW direct students to graph the number of hours spent watching TV last night, and their score on the independent practice onto the graph paper provided. TW show the slides from yesterday's IP, and ask students to give a brief description of the relationship shown. **Objective:** Student will interpret a variety of graphs that show data with no relationship. **INM:** Key Points: 1. Another word for correlation is "relationship." 2. There are a number of different relationships two variables can have: positive, negative, or no relationship. 3. Two variables have no relationship when the data from one show no predictable connection to the data on the other. **Modeling:** TW direct students to take out their "Science Journals," and take notes throughout INM. TW explain today's key points, and show examples of line, bar, and scatter plot graphs showing no correlation between variables. TW use the "Think Aloud" strategy to show how to	SW review the slides, and discuss the relationships between the variables in each. SW summarize what a negative correlation between two variables is. SW discuss today's objective. SW actively listen to today's key points, and take notes in their Science Journals. SW actively engage as the teacher demonstrates how to determine there is "no relationship" between two variables. SW answer questions to demonstrate understanding.

	analyze the graph and determine there's no relationship. TW ask questions to check for understanding. **Guided Practice:** Prior to the lesson, TW have prepared examples of bar, line, and scatter plot graphs that show no relationship between two variables displayed around the room. TW direct S to work in pre-assigned groups of two, to analyze the graphs, and write a sentence describing each. Then, TW direct each group to share out their sentences, and students will discuss one another's ideas. TW ask students why they there's no relationship between the different variables, and lead the discussion. **Independent Practice:** TW use the document camera to project images of 7 different graphs—with positive, negative, and no relationships. TW direct students to write a sentence describing each correlation, on a provided sheet of paper. **Assessment:** TW use today's IP as an assessment of student learning. TW lead small group instruction for any student who did not show adequate understanding of the concept. In addition, TW have each student analyze his/her individual graph, and write a paragraph to explain the correlation between the number of hours they've spent watching TV and their scores on the independent practice sheets. TW ask volunteers to share their graph and explanation aloud. **Closure:** TW direct students to review their guided notes, and summarize what they've learned with a partner.	SW work in pairs. They will walk from graph to graph, and analyze the data on each. For each graph, SW write a sentence that describes the relationship between the variables (There will be a mixture of all three relationships shown). SW analyze the graphs shown, and write a sentence describing the relationship between the variables in each. (There will be a mixture of positive and negative relationships shown). Then, SW individually create a graph, using the data they've been collecting on the number of hours of TV they've watched and their scores on the Independent practice worksheets. SW then write a sentence describing the relationship between these variables, and volunteer to share their analysis with the class. SW TPS to summarize what they've learned about correlations between variables.

Science Unit Assessment

Name: _____

AZ State Standard: S1C3PO3 Interpret data that show a variety of possible relationships between two variables, including: positive relationship,, negative relationship, and no relationship.

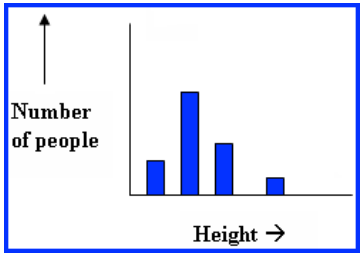
Part I: Multiple Choice Directions: Read each graph and answer the questions.

1. During an experiment, Walter measures the increase in a population of mealworms over time. His data is shown in the table below.

Days	0	1	2	3	4	5
No. of Mealworms	2	4	8	16	32	64

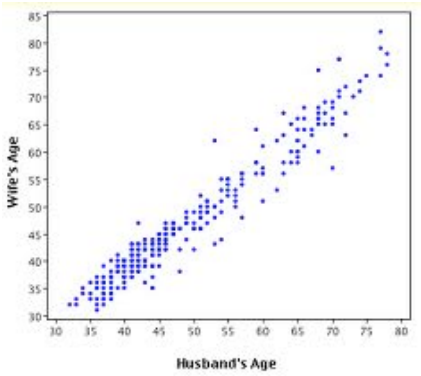
If this information was put into a graph, what type of relationship would it show? _____

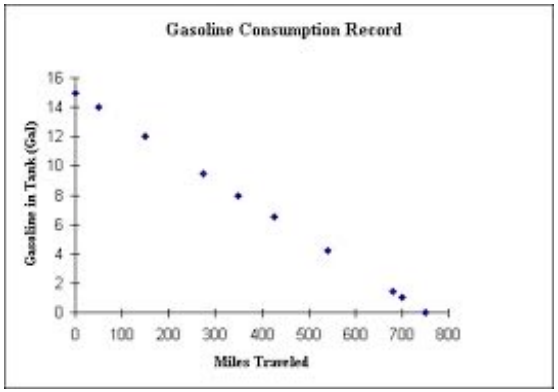
2. The graphs below show the distribution of heights among people who live in various neighborhoods of Chicago. Based on this information, what can you tell about the relationship between the number of people who live in a neighborhood, and their average height?

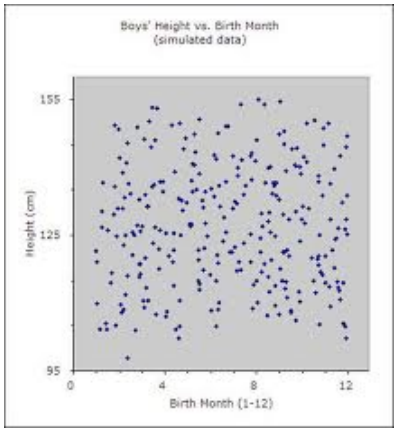


- ◯ **A.** There is a positive correlation between the number of people who live in a country, and their average height.
- ◯ **B.** There is a negative correlation between the number of people who live in a country, and their average height.
- ◯ **C.** There is no correlation between the number of people who live in a country, and their average height.
- ◯ **D.** There is not enough information to tell.

Part II: Directions: Read each graph. Describe the relationship that the data shows, using a complete sentence.

A. 

B. 

C. 

A: _____

B: _____

C: _____

Answer Key:

Item Number	Correct Answer	Points
1	Positive relationship	1
2	C	1
3	There is a positive correlation between a husband's age and his wife's age.	2
4	There is a negative correlation between miles traveled and the amount of gas in the gas tank.	2
5	There is no correlation between	2

Total score: _____/8 Grading scale: 0-4= Falls Far Below; 5= Approaches; 6-7 = Meets; 8 = Exceeds.