**Curriculum Sample Template**
Max.8Pages

| | | | |
|---|---|---|---|
| **Grade Level** | 8 | **Content Area** | Mathematics |
| **Course Title** (grades9-12Only) | | | |
| **Expected Prior Knowledge**<br>*The knowledge/skills mastered earlier in the year foundational to the mastery of the required Standard in the current sample.* | Construct and interpret scatter plots for bivariate measurement data to investigate patterns of association between two quantities. Describe patterns such as clustering, outliers, positive or negative association, linear association, and nonlinear association. | | |
| **Alignment to Program of Instruction**<br>*Briefly outline methods of instruction found in this sequence of lessons that align to the Program of Instruction described in A.3.* | As project based learning is a key feature in the school's mission, students will apply knowledge gained in math to complete projects and solve real world issues, and some may even be cross curricular. Lessons are aligned to both the program of instruction and common core standards by scaffolding knowledge, engaging students and requiring them to use higher depths of knowledge to demonstrate mastery and solve real world problems. | | |
| **Standard Number and Description**<br>*List the Number* and full description for the required Standard.* | SP.2<br>Know that straight lines are widely used to model relationships between two quantitative variables. For scatter plots that suggest a linear association, informally fit a straight line, and informally assess the model fit by judging the closeness of the data points to the line. | | |
| **Materials/Resources Needed** | All required class worksheets and tests. Poster board. | | |

*****StandardNumber***:ForEnglishLanguageArts(ReadingandWriting),useGrade,Strand,Standard(e.g.,3.RI.2).ForK-8Math,useGrade,Domain,Standard(e.g.,6.EE.7).ForHSMath,useConceptualCategory-Domain,Standard(e.g.,A-REI.6).ForScience,useGrade,Strand,Concept,PO(e.g.,4.1.3.1).*

| **Lesson** (add as needed | **Instruction** | **Student Activities** |
|---|---|---|
| **1** | **Objective: SWBAT Know that straight lines are widely used to model relationships between two quantitative variables. For scatter plots that suggest a linear association, informally fit a straight line, and informally assess the model fit by judging the closeness of the data points to the line.**<br>Teacher introduces the standard and reviews vocabulary of straight line and scatterplot. Teacher shows how to fit a straight line within scatterplot that best models the data, while ignoring outliers, and instruct students to take notes. Teacher will prepare scatterplot data of two quantative variables, in this case, each point will represent the data of the number of completed class assignments, and the grade in the class (this is anonymous). Data will be given for an entire class. Teacher will then demonstrate how to draw an informal line across as many of the data points as close as possible. Teacher will then facilitate a class discussion about how close the line represents the data in the class and have students take notes in their math notebooks. Teacher gives students a practice worksheet with practice problems, and facilitates guided practice. After students complete the worksheet of practice problems, Teacher then allows students time to review their answers with a partner, correcting each other's work as needed. | Students will learn and take notes on the topic of using a line to suggest a linear association between two quantative variables. Students will take notes on instruction and follow along with practice problem on the board, the relationship between turned in assignments and student grade in math class, and take notes in their math notebooks. Students then complete an independent practice worksheet. After completion of the worksheet, students will then have the opportunity to compare answers with a partner, and correct any incorrect work. |
| **2** | **Objective: SWBAT Know that straight lines are widely used to model relationships between two quantitative variables. For scatter plots that suggest a linear association, informally fit a straight line, and informally assess the model fit by judging the closeness of the data points to the line.**<br>Teacher will assign the first summative assessment in which students are to design their own set of bivariable data, collect the data, plot on a scatter plot, and fit a straight line to best represent the data. Teacher will allow students to circulate the room and question other students in order to collect data and allow 15 minutes for this portion. T will then allow students to individually complete graphing this data on a poster board. | Students will design their own set of data in which they decide on which two variables they will collect data. Students will circulate the room collecting 10-12 data points with a 15 minutes time period. Students will then individually create and plot their scatterplot, and fit a line into the model. Students will then individually graph this on a poster board. |

| | | |
|---|---|---|
| **3** | **Objective: SWBAT Know that straight lines are widely used to model relationships between two quantitative variables. For scatter plots that suggest a linear association, informally fit a straight line, and informally assess the model fit by judging the closeness of the data points to the line.** Teacher will assign second summative assessment in which students will complete an extended writing assignment, describing in detail how to plot data on a scatter plot, and how to draw the line of best fit. Students should address outliers and how to determine the line of best fit. Teacher will instruct students to cite examples, and to mainly refer to their own project they completed yesterday. Teacher will also instruct students to explain how they determine where the line of best fit should be placed, and how they can judge the model fit (using the closeness of the data point on the line). | Students will complete their second summative assessment in which they write an extended writing piece. Students will first write step by step instructions about how to plot two variables and draw the line of best fit, paying special attention to how they know it is the line of best fit. Students will be able to use their first summative assessment (the project completed the previous day) as an example in which they can refer. Students will then describe how they would assess the model fit by judging the closeness of the data points on the line. Students can again use their own project completed the previous day as an example, and discuss the closeness of their own data points on their line of best fit, and what that means. |
| **4** | **Objective: SWBAT Know that straight lines are widely used to model relationships between two quantitative variables. For scatter plots that suggest a linear association, informally fit a straight line, and informally assess the model fit by judging the closeness of the data points to the line.**<br>Teacher will distribute third summative assessment, a written comprehensive assessment. | Students will complete a written comprehensive summative assessment during the entire class period. |

***Paste Summative Assessment Here:***

***1. Design Your Own Project***

| Category | Level 4:<br>Achieves Standards at a<br>High Level | Level 3:<br>Performance at Standard | Level 2:<br>Performance below<br>Standard | Level 1:<br>Demonstrates<br>Minimal Success |
|---|---|---|---|---|
| Question/<br>Purpose | The purpose of the question during the lab is clearly identified and stated. 20 points | The purpose of the question to be answered during the lab is stated but is identified, but is stated in a somewhat unclear manner. 16 points | The purpose of the question to be answered is partially identified and stated in a somewhat unclear manner. 12 | The purpose of the question to be answered during the lab is erroneous or irrelevant. 8 points. |
| Mathematical Concepts | Explanation shows complete understanding of the mathematical concepts used to solve the problem(s). 20 points | Explanation shows substantial understanding of the mathematical concepts used to solve the problem(s). 16 points | Explanation shows some understanding of the mathematical concepts needed to solve the problem(s). 12 points | Explanation shows very limited understanding of the underlying concepts needed to solve the problem(s) OR is not written. 8 points |
| Data | Explanation is detailed and clear. 20 points | Explanation is clear. 16 points | Explanation is a little difficult to understand, but includes critical components. 12 points | Explanation is difficult to understand and is missing several components OR was not included. 8 points |
| Strategy/<br>Procedures | Typically, uses an efficient and effective strategy to solve the problem(s). 20 points | Typically, uses an effective strategy to solve the problem(s). 16 points | Sometimes uses an effective strategy to solve problems, but does not do it consistently. 12 points | Rarely uses an effective strategy to solve problems. 8 points |
| Mathematical Terminology and Notation | Correct terminology and notation are always used, making it easy to understand what was done. 20 points | Correct terminology and notation are usually used, making it fairly easy to understand what was done. 16 points | Correct terminology and notation are used, but it is sometimes not easy to understand what was done. 12 points | There is little use, or a lot of inappropriate use, of terminology and notation. 8 points |

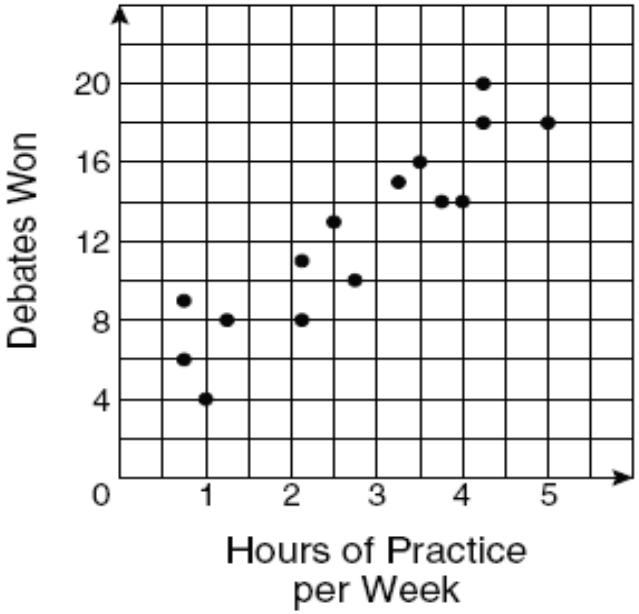
2. ***Extended Writing Summative Assessment***

| Category | Level 4:<br>Achieves Standards at a<br>High Level | Level 3:<br>Performance at Standard | Level 2:<br>Performance below<br>Standard | Level 1:<br>Demonstrates<br>Minimal Success |
|---|---|---|---|---|
| Mathematical Concepts | Explanation shows complete understanding of the mathematical concepts used to solve the problem(s). 25 points. | Explanation shows substantial understanding of the mathematical concepts used to solve the problem(s). 20 points | Explanation shows some understanding of the mathematical concepts needed to solve the problem(s). 15 points | Explanation shows very limited understanding of the underlying concepts needed to solve the problem(s) OR is not written. 10 points |
| Explanation | Explanation is detailed and clear. 25 points | Explanation is clear. 20 points | Explanation is a little difficult to understand, but includes critical components. 15 points | Explanation is difficult to understand and is missing several components OR was not included. 10 points |
| Strategy/ Procedures | Typically, uses an efficient and effective strategy to solve the problem(s). 25 points | Typically, uses an effective strategy to solve the problem(s). 20 points | Sometimes uses an effective strategy to solve problems, but does not do it consistently. 15 points | Rarely uses an effective strategy to solve problems. 10 points |
| Mathematical Terminology and Notation | Correct terminology and notation are always used, making it easy to understand what was done. 25 points | Correct terminology and notation are usually used, making it fairly easy to understand what was done. 20 points | Correct terminology and notation are used, but it is sometimes not easy to understand what was done. 15 points | There is little use, or a lot of inappropriate use, of terminology and notation. 10 points |

3. ***Comprehensive Written Assessment***

**Instructions: Choose the best answer for each multiple choice question. Circle the answer. Worth 10 points each. Half credit may be given for answers partially correct.**

**The coaches of a group of debate teams answered a survey about hours of debate, team practice and number of team wins. The graph shows the results of this survey.**



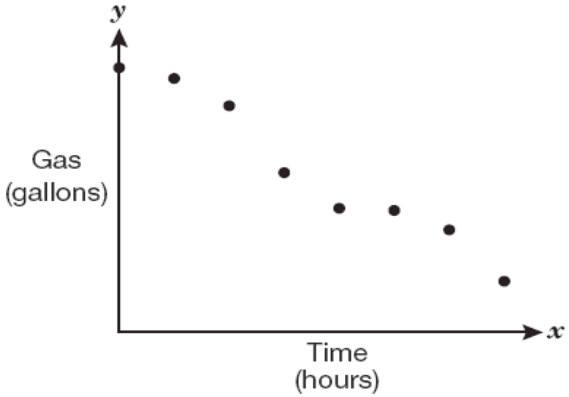

1. **The scatterplot indicates which of the following?**

   **A a positive correlation**
   **B a negative correlation**
   **C no correlation**
   **D a parallel correlation**

2. **Based on these results, if a team practices 4 hours per week next season, which is the best estimate of the number of debates the team can expect to win?**

   **A 20**
   **B 16**
   **C 12**
   **D 1**

3. **Josie and some of her friends rode motorcycles all day on Saturday. She made a table that showed the number of gallons of gas remaining at the end of each hour. The scatterplot below shows the gas that remained in terms of the hours that had passed.**



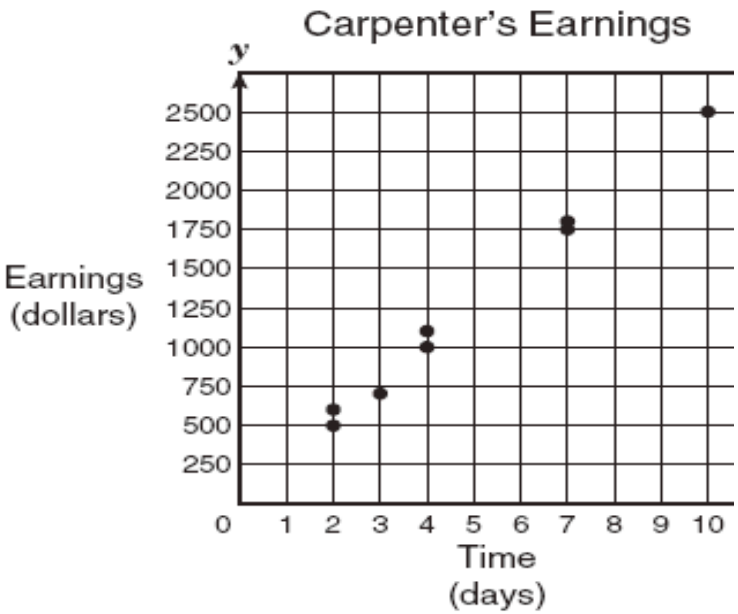

**Which of the following describes the correlation between the gas that remained and the hours that had passed?**

   **A Positive correlation**
   **B No correlation**
   **C Negative correlation**
   **D Undefined correlation**

4. **Teresa records the ages and weights of 12 children in her neighborhood. If she records this data in a scatterplot, what type of relationship will she most likely see?**

   **A Positive correlation**
   **B Negative correlation**
   **C No correlation**
   **D Constant correlation**

**A carpenter recorded the amount of money he earned for different jobs and the amount of time he spent on each job. The data is shown in the scatterplot below:**



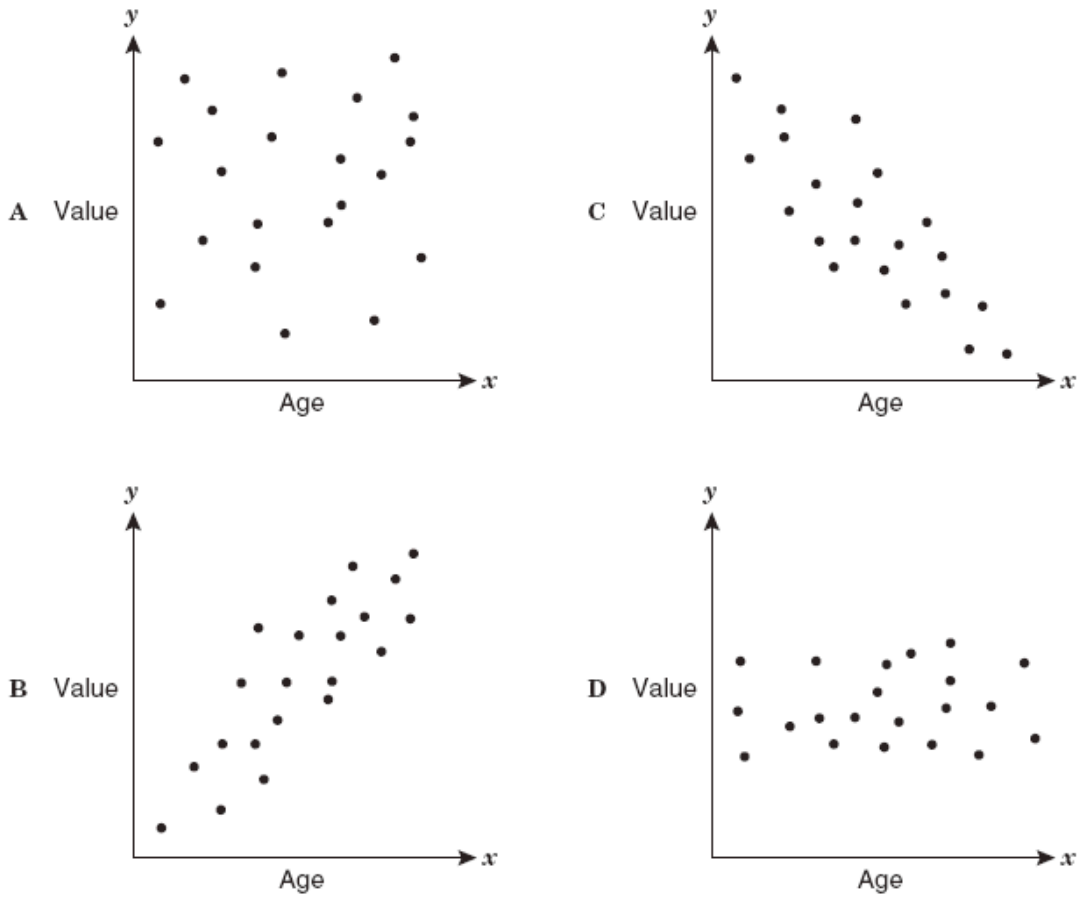

**5. Based on the data, which best represents the amount of money the carpenter would earn from a job that took 5 days to complete?**

**A $2500**
**B $500**
**C $1250**
**D $200**

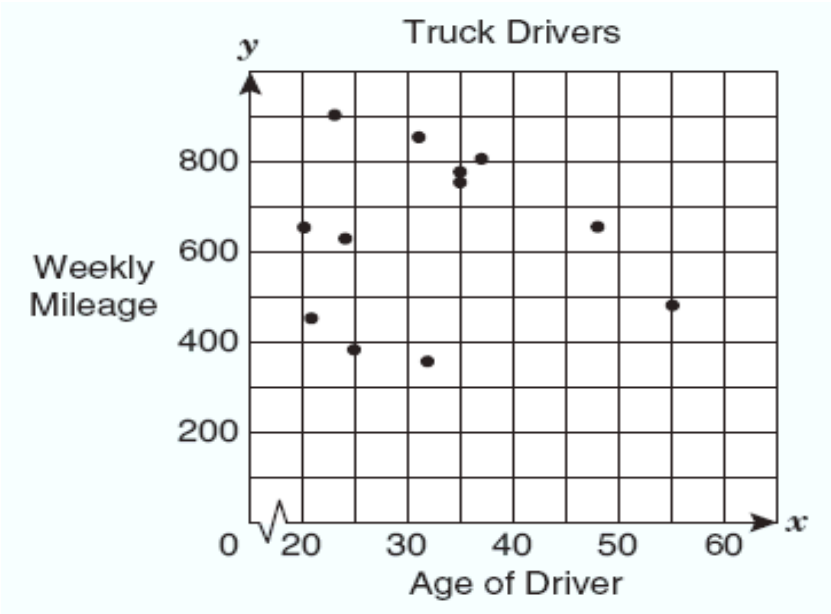
**6. According to the graph in question #5, the relationship between the carpenter's earnings and the amount of time he spent on jobs is:**

**A a positive correlation**
**B a negative correlation**
**C no correlation**
**D multiple correlations**

**7. As the age of a car increases, its value decreases. Which scatterplot best represents this relationship?**



8. **A trucking company keeps track of the number of miles each of its drivers logs each week. The graph shows the relationship between a driver's age and the number of miles the driver drove last week.**



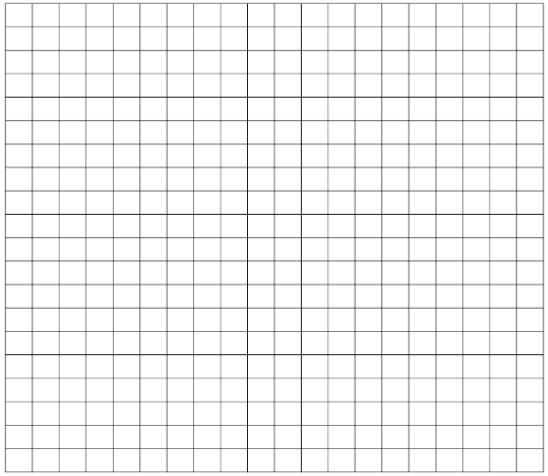

**Describe the correlation between the number of miles a driver logs and the drivers age.**

**A There is a positive correlation between the number of miles a driver logs and the drivers age**
**B There is a negative correlation between the number of miles a driver logs and the drivers age.**
**C There is no correlation between the number of miles a driver logs and the drivers age.**
**D There is a parallel correlation between the number of miles a driver logs and the drivers age.**

**The table below shows Cobi's hours of exercise and weight loss each week.**

| Hours of exercise | Weight loss (pounds) |
|---|---|
| 1.3 | 0.5 |
| 3 | 2.8 |
| 5 | 3.5 |
| 2 | 2.5 |
| 4 | 3 |

9. **Create a scatterplot from the data in the table.**



10. **What type of correlation did you find between hours of exercise and weight loss?**

Answer Key:
1.A 2.B 3.D 4.A 5.C 6.A 7.C 8.C 9.Scatterplot should accurately reflect data.
10. Positive Correlation.