**Curriculum Sample Template**

Max.8Pages

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| **Grade Level** | 6 | **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.* | Recognize a statistical question as one that anticipates variability in the data related to the question and accounts for it in the answers. Recall how to calculate the mean, median, mode and range for a set of numbers. Recall how to create a bar graph or a dot plot graph. | | |
| **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.* | 6.SP.2. Understand that a set of data collected to answer a statistical question has a distribution which can be described by its center, spread, and overall shape. | | |
| **Materials/Resources Needed** | Worksheet of 10 observation questions, Summative assessment 1 writing prompt and rubric, Summative assessment 2 project guidelines, questions and rubric, access to students in class to sample for project, and summative assessment 3 written assessment. | | |

***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: SW Understand that a set of data collected to answer a statistical question has a distribution which can be described by its center, spread, and overall shape.**<br>Discuss with students for bellwork: What is a statistical question? Give an example of a statistical question. Discuss your answer with your face partner. For example, how tall are the students in this class? Teacher facilitates as class brainstorms examples of statistical questions. Teacher introduces the lesson emphasizing the idea that data collected as an answer to a statistical question can be plotted on a graph and then analyzed for different observations, placing emphasis on the ideas of looking at its center, spread, and overall shape. Teacher facilitates independent practice by having the class complete a worksheet of 10 questions making observations about the center, spread and overall shape of a graph for a set of data. For example, how well did the class score on the last math test? Teacher reviews correct answers. Teacher instructs students to complete a writing prompt, which will serve as the first summative assessment, giving examples of observations that can be made when looking at the graph for a set of data collected as an answer to a statistical question. | Teacher gives students the following bellwork question: What is a Statistical Question? Give an example of a Statistical Question. Discuss by sharing answers with face partner. Students will use exactly 3 minutes to brainstorm as many examples as possible of statistical questioning. Students take notes on instruction of Statistical Questioning with emphasis on the idea that statistical questioning has a distribution which can be described by its center, spread, and overall shape. Students will independently practice by completing a worksheet making observations about the center, spread and overall shape of a graph for a set of data. Students will participate in teacher review of the worksheet. Students will complete a writing prompt giving examples of observations that can be made when looking at the graph for a set of data collected as an answer to a statistical question. |

| | | |
|---|---|---|
| **2** | **Objective: Using their knowledge from yesterday's lesson, SWBAT describe the distribution of the data collected to answer a statistical question by its center, spread, and overall shape.**<br>Teacher will review yesterday's lesson briefly and answer any questions. Teacher will display a list of 5 statistical questions taken from yesterday's brainstorming session. Students will be instructed on how to complete a project, which is the first summative assessment, using data collected from one of these questions. Teacher will instruct students to collect their data, graph their data, and lastly, make at least 3 observations from their graph.<br><br>Teacher collects the project /summative assessment.<br><br>As closure, students will be directed to answer the following questions in complete sentences and in paragraph form. What happens to the shape of a graph when you increase or decrease the lowest number, highest number, and the median of the data by five? | Students will ask any questions they have about yesterday's lesson before they begin their summative assessment project. Students will receive Project instructions and will begin by collecting data. Students will then create a graph displaying their data. Student will conclude their project by listing at least 3 observations from their graph.<br><br>Students will complete a critical thinking and writing activity as closure in which they answer . What happens to the shape of a graph when you increase or decrease the lowest number, highest number, and the median of the data by five? |
| **3** | **Objective: SWBAT describe the distribution of the data collected to answer a statistical question by its center, spread, and overall shape.**<br>Teacher will distribute summative assessment in a formal written format. Teacher will instruct students will complete written summative assessment, which will take up the timeframe of an entire class period. | Students will complete written summative assessment, which will take the time of an entire class period. |

**1. Writing Prompt:**

What are three to five observations that can be made when looking at the graph for a set of data collected as an answer to a statistical question? Be specific and use at least two examples.

| **Category** | **Level 4: Achieves Standards at a High Level** | **Level 3: Performance at Standard** | **Level 2: Performance below Standard** | **Level 1: Demonstrates Minimal Success** |
|---|---|---|---|---|
| Completion | I completed all the work. 25 points. | I completed most of the work. 20 points. | I completed some of the work. 15 points. | I completed just a little of the work. 10 points. |
| Understanding | I completely understood the assignment and my observations show it. 25 points. | I understood the assignment and my observations mostly show it. 20 points. | I understood part of the assignment but not all of it. Only a few observations were made. 15 points. | I did not understand the assignment or no observations were made. 10 points. |
| Explanations | I clearly used words to show my understanding of the assignment. 25 points. | I used words to tell how I solved the assignment. 20 points. | I tried to use words to explain some of what I did in this assignment. 15 points. | I don't know how to explain how I completed this assignment. 10 points. |
| Neatness | My writing is clear and organized. 25 points. | My writing in clear but not organized well. 20 points. | My writing is messy and not organized well. 15 points. | My writing is scribbled and very hard to read. 10 points. |

**2. Project**

NAME _____

1. Which Question will you use? _____

2. Gather your data using your classmates:

| | | | | | |
|---|---|---|---|---|---|
| Student 1 | | Student 9 | | Student 17 | |
| Student 2 | | Student 10 | | Student 18 | |
| Student 3 | | Student 11 | | Student 19 | |
| Student 4 | | Student 12 | | Student 20 | |
| Student 5 | | Student 13 | | Student 21 | |
| Student 6 | | Student 14 | | Student 22 | |
| Student 7 | | Student 15 | | Student 23 | |
| Student 8 | | Student 16 | | Student 24 | |

3. Draw your graph and attach it to the assignment.

**4.** Write at least three observations you can make based on the data included in your graph.

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_____

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_____

_____

**Scoring Rubric:**

1. Identify which question you will be using. 5 points
2. Record your data on the provided table. 5 points.
3. Draw a graph of your collected data. Labeling each axis, title your graph, and including a key is necessary. 10 points.
4. Responses will vary, observations should resemble the data collected in class, should reflect logic based on collected samples. 10 points.

**3. Written Comprehensive Assessment**

The following is a list of heights for 6 six-year-olds: 48 inches, 47 inches, 36 inches, 42 inches, 47 inches and 45 inches.

1. What would happen to the range of heights if 48 inches was dropped from this set of data?

2. What would happen to the median of heights if 48 inches was changed to 47 inches?

3. The following is a list of temperatures from the past week: 68°F, 57°F, 61°F, 59°F, 63°F, 54°F, 54°F. What would happen to the median of temperatures if 68°F was dropped from this set of data?

4. Meals at a restaurant are priced $29.99, $19.99, $39.99, $9.99, and $21.99. What is the range of the prices of the meals?

5. Warren counted the number of articles in several different magazines.

**Articles per magazine**

| Stem | Leaf |
|---|---|
| 1 | 0 3 6 |
| 2 | 0 4 5 7 8 8 8 9 |
| 3 | 0 3 3 4 5 5 5 |
| 4 | 0 1 2 3 4 8 |

What observation can be made about this graph?

6. Stephanie counted the number of words per page in her new book.

**Words per page**

| Stem | Leaf |
|---|---|
| 1 | 3 5 5 9 |
| 2 | 3 5 |
| 3 | 8 9 |
| 4 | 1 2 7 8 |
| 5 | 9 9 9 |
| 6 | 1 |
| 7 | 1 1 4 6 8 9 |
| 8 | 1 4 |
| 9 | 0 |

What observation can be made about this graph?

7. As part of a stuffed animal drive for the local children's hospital, the students at Barrett Elementary School record how many stuffed animals they have collected. Use the data to create a line plot.
1 3 3 1 1 3 3 0 2 0 1 4 3 1 1 1 2 1 0 0 3 1 3

8. What observation can be made about this graph?

9. Some students in sixth grade compared how many times they went to the park last week. Use the data to create a line plot.
5 4 0 2 5 4 1 3 0 3 1 0 2 0 6

10. What observation can be made about this graph?

**Answer Key**
1. The range would decrease.
2. The median would stay the same.
3. The median would decrease.
4. The range is $30.00.
5. Answers will vary. A possible answer is that most Magazines contain over 30 articles.
6. Answers will vary. A possible answer is that 59 is the median count for words on a page.
7. Line Plot
8. Answers will vary. A possible answer is that most students collected only one stuffed animal.
9. Line Plot
10. Answers will vary. A possible answer is most students went to the park only 3 times or less.