**Interdisciplinary Unit Plan Template**

<table>
<thead>
<tr>
<th>Title: DATA</th>
<th>Content Areas: Math/Language Arts</th>
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<tbody>
<tr>
<td>Topic: Math</td>
<td>Grade: 5</td>
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<tr>
<td>Designer(s):Rebecca RojiJohn</td>
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**Stage 1: Desired Results**

**Established Goals: (AERO Standards)**

**Math**

9.1a The student will be able to use a variety of graphical representations including line graphs, stem-and-leaf plots, histograms, and box and whisker plots to organize and represent data.

9.1b The student will be able to pose questions that can be used to guide the collection of categorical and numerical data.

9.3a The student will be able to make predictions and draw conclusions based on data collected from a sample group

**Language Arts**

7 a. (By the end of 4th grade) The student will be able to present effective introductions and conclusions that guide and inform the listener's understanding of key ideas and evidence.

**Understandings:**

_Students will understand that…_

Data starts with a question

Data is used to inform decisions or give concrete evidence

Data landmarks and graphs help us present our data to others in an organized and understandable way and can be used to support an opinion/decision

The sample should reflect the population the question is asking about and be large enough to make the data reliable

It is important to organize our thoughts when we speak in front of others to make sure our important ideas are clearly presented to the listener

_Students will know…_

Data landmarks (maximum, minimum, range, mean, median, mode)

A sample group is a group of people you ask your survey question to that reflects the whole population your question is about

Stem-and-leaf plots, histograms, box-and-whisker plot, line graphs

Numerical data is a list of numbers that can be presented on a plot

Categorical data is a collection of answers to a question that can be tallied and presented in a histogram, bar graph, or circle graph

An introduction tells your listeners what the main points of your presentation is

**Essential Questions:**

What can data be used for?/Why do we collect and study data?

Where does data come from?

What is the best way to present this data?

How can a large sample be unreliable?

How do I communicate clearly to a group?

How should I organize a presentation?

What kinds of data are there?

_Students will be able to…_

Give a presentation with an effective introduction and conclusion

Read and make graphs and plots from given data

Design survey questions for both numerical and categorical data

Choose an appropriate sample to involve in a survey

Analyze the sample of a given data set for reliability

Collect and analyze data

Draw conclusions and make decisions/recommendations based on data

Decide what would be the best way to present given data
A conclusion summarizes for your listener what the main message of your presentation was

### Stage 2: Assessment Evidence

<table>
<thead>
<tr>
<th>Performance Tasks: Summative:</th>
<th>Other Evidence:</th>
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<tbody>
<tr>
<td>- Data project: come up with a question about the students at our school, choose a sample, collect data, analyze and make graphic representations of the data and present your data to the class using it to make decisions or suggest changes within the school</td>
<td><strong>Unit test:</strong> analyzing data and graphs</td>
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<tr>
<td>- Excel graph: use Microsoft Excel to create a graph from data collected</td>
<td><strong>Quiz:</strong> making graphs from provided data and identifying landmarks</td>
</tr>
<tr>
<td>- Evaluate sample group: Given a description of data and sample group, evaluate the reliability of data, giving suggestions for improvement and present to the class</td>
<td><strong>Use given data and describe a decision or change that it could be used to support</strong></td>
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<th>Formative:</th>
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<tr>
<td>- choose appropriate graphical means to present data (numerical and categorical) and defend your choice to a small group</td>
<td><strong>Assess other students’ presentations with rubric developed with student input</strong></td>
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<tr>
<td>- Practice project I and II: come up with a numerical/categorical data question for the class, choose a sample, collect data, analyze and make graphic representations of the data and present your data to a small group of 3 people</td>
<td><strong>Self-assess presentation with the same rubric</strong></td>
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Stage 3: Learning Plan

Learning Activities:

1. Pre-assessment of data landmarks and graphs-set up learning centers for students who need background practice with vocabulary (ESL students) and basic data concepts (readiness differentiation) (R&T)

2. “Where does data come from?” examine graphs and discuss what the data could be (what are the questions) (O)

3. Vocabulary introductionreview-data, graph, question, survey, median, reliable, sample, sample size (new words). Activity investigating how sample size affects reliability (die rolling) (E1&E2)

4. “What is the point of data?” what do we do with it? Introduce end of unit project-they will come up with a question and sample and use the data to make a suggested change in the elementary school. They will present their data to the class with the option of using the data in a persuasive letter to the principal. (W&H)

5. “How/why do we organize data?” Graphs vs. Plots-review different graphs and plots the students know. Given data, students (independently or in groups(T)) will decide the most effective way to display generalize- number data (introduce numerical data) can be plotted, but “word answers” (introduce categorical data) cannot. (E1&R)

6. Box-and-Whisker plots (not in our textbook but in the standards)-teach students how to make, have them make 2 with a partner, 1 independently, and several for homework (E1&O)

7. Evaluating the most appropriate way to display data-each student receives data and decides how to best display it and defends the choice with evidence to a small group (E1, R, & T)

8. Quiz-graphing data and finding landmarks (R)

9. Practice project I-come up with a question about students in our class and collect categorical data from a sample, display the data somehow, and describe a change that can be made using that data or that the data supports. (E1&R)

10. Practice project II- same as above except with numerical data. They must both plot and graph the data, then they have to present their mini-project to a small group. The small group assesses the presenters on criteria discussed as a class (introduction, summarize at end, eye contact, pace, volume, etc.) and gives the presenter feedback. (E1, R, & E2)

11. Excel graphs-using excel, make graphs from both your categorical and numerical data. (H&T)

12. Small groups get a set of data with a written description of the sample, students prepare an analysis of the sample and evaluate how that may affect the data’s reliability and present it to the class. Students self-assess their presentation. (R, E2)

13. Final project-self assess presentation (R&E2)