

Student Work Plan: Statistics & Probability

Name of Student: _____

Start Date: _____

Learning Objectives	Mastery
<p>6.SP.1. Recognize a statistical question as one that anticipates variability in the data related to the question and accounts for it in the answers. For example, "How old am I?" is not a statistical question, but "How old are the students in my school?" is a statistical question because one anticipates variability in students' ages.</p> <p>Student: I can identify statistical questions and explain how data answers statistical questions.</p> <p>*Task 1 - 3</p>	<p>Beginner _____</p> <p>Developing _____</p> <p>Mastered! _____</p>
<p>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.</p> <p>Student: I can describe a statistical data set using center, spread, and shape.</p> <p>*Task 1 - 4</p>	<p>Beginner _____</p> <p>Developing _____</p> <p>Mastered! _____</p>
<p>6.SP.3. Recognize that a measure of center for a numerical data set summarizes all of its values with a single number, while a measure of variation describes how its values vary with a single number.</p> <p>Student: I can compare a measure of center with a measure of variation</p> <p>*Task 1 - 2</p>	<p>Beginner _____</p> <p>Developing _____</p> <p>Mastered! _____</p>

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<p>6.SP.4. Display numerical data in plots on a number line, including dot plots, histograms, and box plots.</p> <p>Student: I can communicate numerical data on a number line (dot plots, histograms, and box plots).</p> <p><i>*Task 5-8</i></p>	<p>Beginner _____</p> <p>Developing _____</p> <p>Mastered! _____</p>
<p>6.SP.5. A. Reporting the number of observations.</p> <p>Student: I can identify statistical observations</p> <p><i>*Task 5-8</i></p>	<p>Beginner _____</p> <p>Developing _____</p> <p>Mastered! _____</p>
<p>6.SP.5. B. Describing the nature of the attribute under investigation, including how it was measured and its units of measurement.</p> <p>Student: I can analyze the relationship between measures of center and the distribution.</p> <p><i>*Task 5-8</i></p>	<p>Beginner _____</p> <p>Developing _____</p> <p>Mastered! _____</p>
<p>6.SP.5. C. Giving quantitative measures of center (median and/or mean) and variability (interquartile range and/or mean absolute deviation), as well as describing any overall pattern and any striking deviations from the overall pattern with reference to the context in which the data were gathered.</p> <p>Student: I can analyze the relationship between measures of center and the distribution.</p> <p><i>*Task 5-8</i></p>	<p>Beginner _____</p> <p>Developing _____</p> <p>Mastered! _____</p>

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Mastery Checklist

6.SP.1 I can identify statistical questions **and** explain how data answers statistical questions.

6.SP.2 I can describe a statistical data set using center, spread, and shape.

6.SP.3 I can compare a measure of center with a measure of variation.

6.SP.4 I can communicate data on a number line (dot plots, histograms, and box plots).

6.SP.5.a I can identify statistical observations.

6.SP.5.b I can analyze the relationship between measures of center and the data distribution.

6.SP.5.c I can analyze the relationship between measures of center and the data distribution.

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Assignments: (Complete Math Journal Pages)

***Use your Everyday Math Student Reference book at anytime for help

Lessons	C.C. Strand	Student Reference Pages	Math Journal Pages	STUDENT COMMENTS I need help with(Or) I mastered it!
1.2	6.SP.1-4, 5a-5c	pp.136	6, 7, 8	
1.3	6.SP.1-3, 5a, 5c	pp.135	9, 10, 11, 12	
1.4	6.SP.2, 3,5c,5d	pp.136-137	14, 15	
1.5	6.SP.5d	pp. 136	17, 17c	
1.6	6.SP.5d	pp. 140	18, 19	
1.7	6.SP.1	pp. 138	21, 22, 22a, 23	
1.11	6.SP.5b	pp.138-141	36, 37, 38	
1.12	6.SP.5b,d	pp.132-133	40, 41	
2.1	6.SP.4	pp. 4-8	45, 46	
2.3	6.SP.4	pp. 31-34	52, 53	
2.7	6.SP.4	pp. 22-23	66, 67	

Vocabulary:

Data, Mean, Median, Range, Random Sample, Biased Sample, Standard Notation, Expanded Notation, estimate, quotient

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Performance Task: (*Collecting, Organizing, Analyzing Data*)

TASK # 1 : “How do we spend our time?”

You will answer the following three questions and then survey 15 of your classmates. Then turn that data into a stem-and-leaf plot. Use the plot to analyze the data, and then reflect on how a stem-and-leaf plot is helpful.

**Note:* a stem-and-leaf plot helps us organize our data numerically so it is easier to read.

- How many hours per week (all seven days) do you spend visiting with your family? _____ hrs
- How many hours per week do you spend watching TV? _____ hrs
- How many hours per week do you spend surfing the internet? _____ hrs

Keep track of your data in the chart below:

Student Name	Family	TV	Internet

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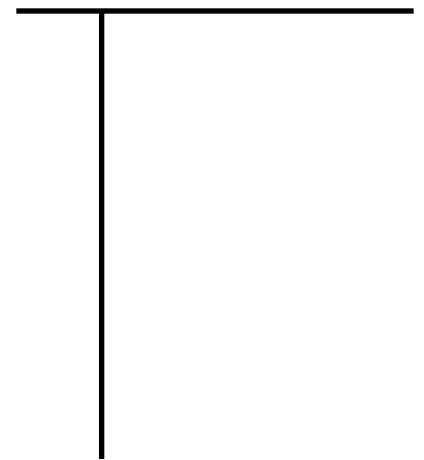
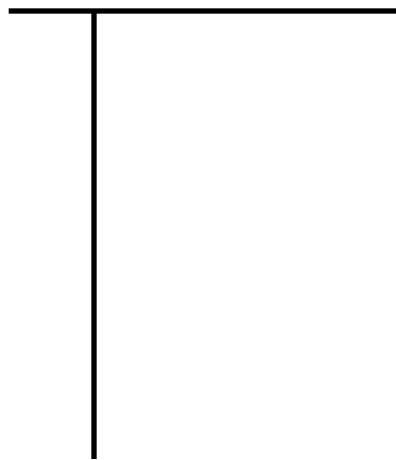
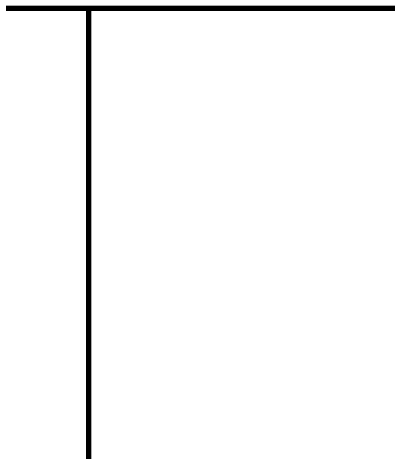
Student Name	Family	TV	Internet

Use the data from your chart to construct a stem-and-leaf plot for all three columns:

Family hrs

TV hrs

Video Game hrs



Which piece of data is the median number of set? (family) _____ (TV) _____ (Video Games) _____

Which number of hours is the mode of set? (family) _____ (TV) _____ (Video Games) _____

How does a stem-and-leaf plot help you analyze data? _____

Based on the data you gathered, what assumptions can be made about how we spend our time? _____

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TASK # 2 “Scatter Plot”

Students will be generating their own data and turning it into a scatter plot. They will examine and answer questions pertaining to this scatter plot.

Materials:

- ruler
- 2-number cubes (1-6)

Task:

At this station, you will find two number cubes. You will be using these number cubes to generate data which you will then graph.

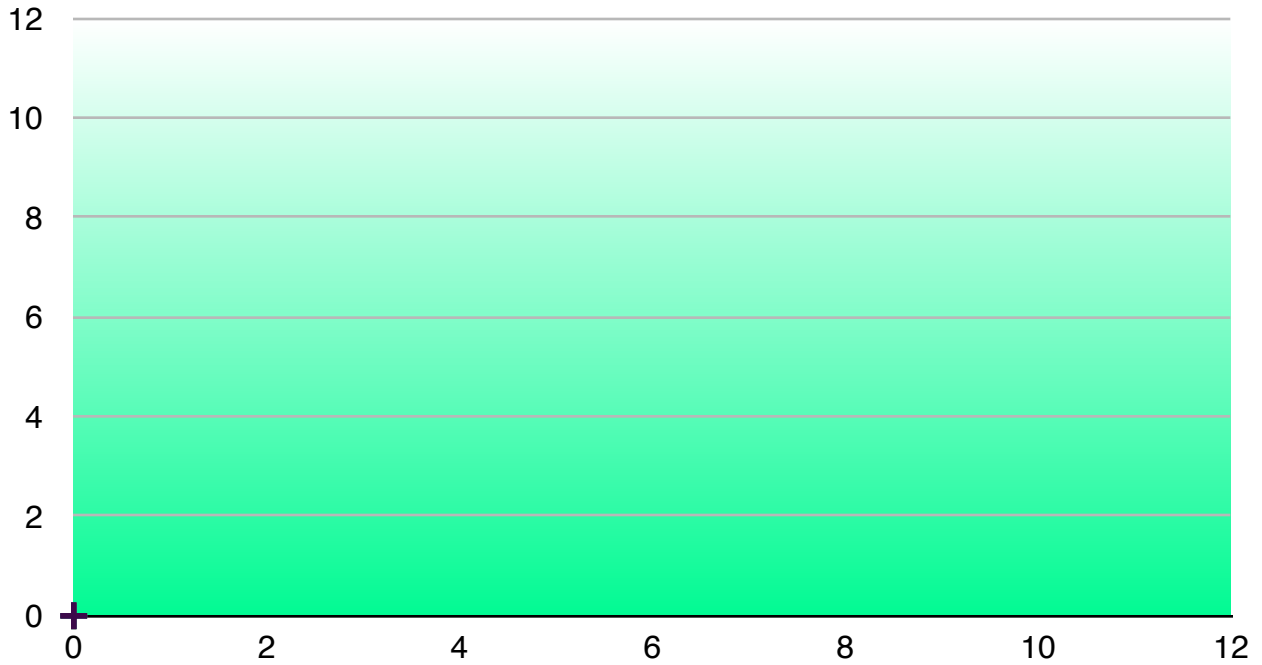
Roll the number cubes one at a time. Record the number that comes up on the first number cube. Roll the second number cube and record the number. Then record the sum of the two number cubes. Do this 10 times and record the data in the table below.

First Number Cube	Second Number Cube	Sum of number cubes

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Using the data from the first and second number cube, create a scatter plot in the space provided. Be sure to title the scatter plot and use appropriate labels.

Title: _____



What is the range of the sums? _____

What do you notice about your scatter plot?

Is there a general trend?

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TASK # 3 “Create a Question”

In this task, you will formulate different questions for which you would be able to answer by collecting data. Then you will choose one question to look at more closely. Reflect on how you would work toward answering that question.

Task:

Work with a group to come up with five questions you could answer by going out and collecting data (e.g., What is the average number of siblings students in our class have?).

1. _____
2. _____
3. _____
4. _____
5. _____

Choose one of those questions to focus on.

How would you gather data to answer your question? _____

What materials would you need to gather the data (e.g., number cubes, etc.)? _____

How would you present your data (e.g., bar graph, table, etc.)?

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TASK # 4 “Coin Toss”

Students try to answer the question of which comes up more, heads or tails, when flipping a coin. They conduct an experiment to help answer this question, then extend that to 10,000 flips.

Materials:

- Any Coin

Task:

At this station, you will try to answer the question of which side of a penny comes up more, heads or tails.

Each member of your group should flip a penny 25 times, keeping track of how many times heads and tails come up.

	Tally	Final Number
Heads		
Tails		

Combine your group’s data in the table below.

	Total
Heads	
Tails	

Based on this data, which do you think has a better chance of coming up, heads or tails? Why?

What do you think would happen if you flipped a penny 10,000 times? Do you think either heads or tails would come up more than the other? Why?

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TASK 1-4 Essential Questions: (6.SP.1 - 6.SP.3)

1. How does conducting an experiment help us answer questions?

2. What types of questions are best answered by numerical data?

3. What is an example of a real-life situation where we might want to conduct a survey to answer a question?

4. When would it be a good idea to use a stem-and-leaf plot in a real-world situation?

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Performance Task: (*Constructing Frequency Distributions*)

TASK # 5 “Frequency Table”

In this task, you will be learning about the frequency that letters appear on a single page. By yourself or with your group, count the number of each letter on a selected page from your favorite chapter book. Create a frequency table by recording your data in the table below. Place a mark for each letter in the column titled “Tally.” Then write the total number of marks in the “Total number” column after you have finished counting all the letters.

Letter	Tally	Total Number	Letter	Tally	Total Number
A			N		
B			O		
C			P		
D			Q		
E			R		
F			S		
G			T		
H			U		
I			V		
J			W		
K			X		
L			Y		
M			Z		

E is the most frequently used letter in the English language. Do your results support this statement? _____

What letter(s) appears the most frequently? _____

What letter(s) appears the least frequently? _____

How does the “Tally” column help you organize your data?

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TASK # 6 “Line Graph”

Students will look at the average monthly temperature for Fraser, MI, construct a line graph using this information, and answer questions based on their line graph.

The average temperature in Fraser, MI for each month is shown in the table below.

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Temp	26°F	29°F	37°F	49°F	60°F	69°F	74°F	72°F	65°F	53°F	42°F	31°F

Source: <http://www.weather.com/weather/wxclimatology/monthly/48026>

Construct a line graph using this information in the space below.

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TASK # 7 “Number Cube”

In this task, you will roll a number cube **30 times** and put your data into a frequency table below. You will use this data to answer appropriate questions and reflect on how the distribution table helped you.

Number on Dice	Tally	Total Occurrences
1		
2		
3		
4		
5		
6		

What do you notice about the overall trend of the data? Did you roll about the same amount of each number?

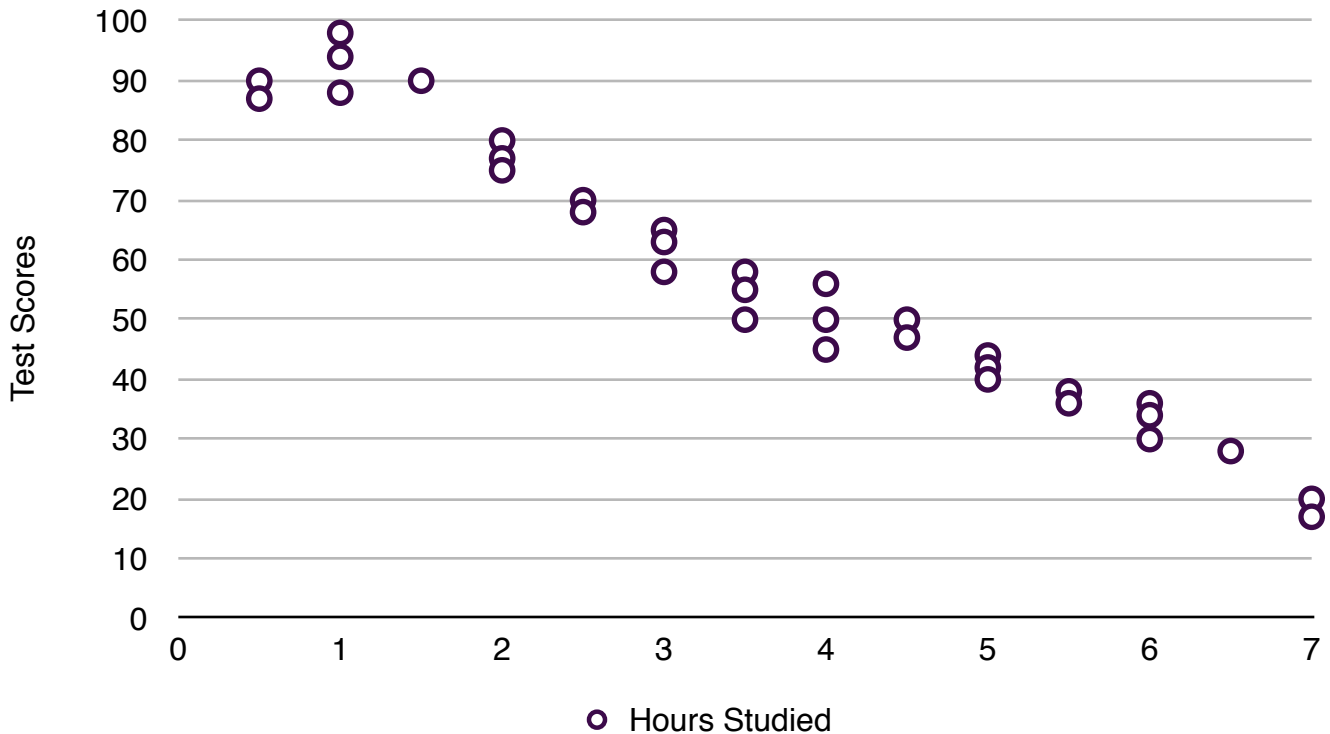
How does the “Tally” column help you organize your data?

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TASK # 8 “Analyze Scatter Plot”

Your task is to work as a group to analyze a scatter plot. You will draw conclusions based on your observations, and use those conclusions to make general statements and predictions.

Discuss the following scatter plot with your group members. Then work together to answer the questions that follow.



What two pieces of data are being compared in this scatter plot? _____

What do you notice about the general trend of the data in this scatterplot? _____

If you were told that a student spent half an hour studying, approximately what grade would you expect that student to earn on the test? _____

What information did you use to make your last prediction? _____

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TASK 5 - 8 Essential Questions: (6.SP.4 - 6.SP.5)

5. How do frequency tables help us sort data?

6. What conclusions can you draw from a scatter plot if all the points are in a line? if the points are randomly distributed?

7. What is a good, real-life situation to model with a scatter plot?

8. When should a line graph be used?

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Performance Task: (*Using Tables and Graphs*)

TASK # 9 “Double Line Graph”

Your task is to construct a double line graph, using the average monthly temperature highs and lows for Fraser, MI. Then answer questions pertaining to their graph and reflect on why it is useful.

Month	High	Low
January	31°F	26°F
February	35°F	29°F
March	44°F	37°F
April	57°F	49°F
May	69°F	60°F
June	78°F	69°F
July	83°F	74°F
August	80°F	72°F
September	73°F	65°F
October	60°F	53°F
November	48°F	42°F
December	36°F	31°F

Source: <http://www.weather.com/weather/wxclimatology/monthly/48026>

Use this data to construct a double line graph in the space below. Be sure to title the graph and use appropriate labels. Then answer the questions on the next page.

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Do the two lines ever cross? Why or why not?

What does the distance between the two lines represent?

Why is a double line graph an appropriate way to display this data?

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TASK # 10 “Skittles Scatter Plot”

In this task, each group member will receive a **fun-size** bag of Skittles. Do not eat these because you need to use them to find how much the contents vary between bags. Each group member should open his/her bag of Skittles. Record the number of each color of Skittle in the table below.

Group Member	Purple	Red	Yellow	Orange	Green
TOTALS					

What is the **mean** number of red Skittles in each bag? _____

What is the overall **mean** number of Skittles in each bag? _____

What is the **range** number of green Skittles? _____

What is the **range** number when looking at the total for each color? _____

Are the totals about the same for each color? _____

What conclusions can you draw about the make-up of the average bag of fun-size Skittles?

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TASK 9 - 10 Essential Questions: (6.SP.4 - 6.SP.5)

1. What is a real-life situation when you might want to know the range of data?

2. When is a double line graph a better choice than a scatter plot?

3. If the range in a set of data is very large, what does that say about the data?

4. What are some other ways to compare variation between two sets of data, besides looking at their means and range?
