Annotated 9 - 12 Mathematics Student Work Samples

Scoring Criteria

PERFORMANCE INDICATOR	BEGINNING	DEVELOPING	PROFICIENT	EXPANDING
#6 Data, Statistics, and Probability: A Summarize, represent, and interpret data. (HS.S-ID.A, B, C)	Construct a representation of data and identify a distribution or pattern of the data.	Construct a representation of data, identify the distribution or pattern of the data, and communicate the meaning of the data.	Construct an appropriate representation of data, describe the distribution or pattern of the data, and communicate the meaning of the data.	Construct and use appropriate representation(s) of data to make predictions and justify conclusions.
#1 Mathematical Reasoning and Communication: B Select strategies and appropriate tools to develop and implement a plan to solve a problem. (MP1, 5)	Identify strategies and/or tools that could be used to solve a problem.	Select strategies and tools to solve a problem and apply initial strategies to attempt to solve a problem.	Design and implement a plan, including appropriate tools and strategies, to solve a problem.	Design, implement, and refine a plan including appropriate tools and strategies, to solve a problem.
#1 Mathematical Reasoning and Communication: E Precisely communicate mathematical understandings and connections using a variety of representations. (MP1)	Communicate understanding using language and representations.	Communicate mathematical understanding and connections using mathematical language and representation(s).	Clearly and logically communicate mathematical understanding and connections using technical mathematical language and appropriate representation(s).	Enhance communication through the intentional sequencing and presentation of ideas and the strategic selection and use of representations.
Communication: 3 Choose and apply an appropriate communication strategy according	Identify audience and purpose of communication. Use a method of communication	Use some appropriate aspects of style, tone and language to partially address	Use appropriate style, tone, and language to address intended audience and purpose.	Use strategic, engaging, and creative style, tone, and language to effectively

to audience and purpose.	(e.g., written, oral, visual, graphic, audio, and/or interactive) to present ideas.	the needs of the audience and purpose. Select and use a method of communication (e.g., written, oral, visual, graphic, audio, and/ or interactive) to present ideas.	Select and use a method of communication (e.g., written, oral, visual, graphic, audio, and/or interactive) that fits the audience and purpose.	address the intended audience and purpose. Select and use a strategic method of communication (e.g., written, oral, visual, graphic, audio, and/or interactive) that effectively addresses the audience and purpose.

Are Female Hurricanes stronger than Male?

Male Hurricanes:
Name, Deaths

king-4	Hugo-21	Georges- 1	Fredric-5	Dennis-15
Able-3	Jerry-3	Bret- 0	Allen-2	Humberto- 1
Ione-7	Bob-15	Floyd- 56	Bob- 0	Gustav- 52
Juan- 12	Andrew-62	Alex- 1	Danny- 1	Ike- 84
Charley-5	Danny-10	Bob- 1	Gastan- 8	Isaac- 5
Floyd-0	Earl-3	David- 15	Ivan- 25	Charley- 10
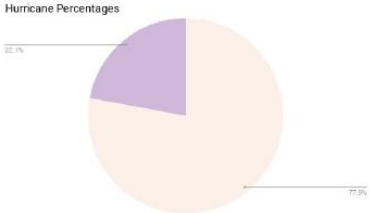
Female Hurricanes:
Names, Deaths

Easy-2	Diane- 200	Carla- 46	Alma- 6	Kate- 5	Bertha-8
Barbra- 0	Flossy- 15	Cindy- 3	Inez- 3	Bonnie- 3	Fran- 26
Florence- 0	Hellen- 1	Cleo- 3	Beuleah- 15	Florence- 1	Bonnie- 3
Carol- 60	Debra- 0	Dora- 5	Gladys- 3	Chantal- 13	Irene- 8
Edna- 20	Gracie- 22	Hilda- 37	Camille- 256	Emily- 3	Lily- 2
Hazel- 20	Donna- 50	Isbell- 3	Elena- 4	Erin- 6	Claudette- 3
Connie- 0	Ethel- 0	Betsy- 75	Gloria- 8	Opal- 9	Isabel- 51

Celia- 22	Fern- 2	Agnes- 117	Eloiese- 21	Babe- 0	Diana- 3	Janine- 5	Cindy- 1	Wilma- 5	Irene- 41
Edith- 0	Ginger- 0	Carmen- 1	Belle- 5	Alicia- 21	Frances- 7	Ophelia- 1	Rita- 62	Dolly- 1	Sandy- 159

4 Quadrant math problems:

Show with numbers:	Show with picture or graph:
Female Deaths- 1452 = 77.9% Male Deaths- 412 = 22.1% Total deaths- 1864 (female deaths + male deaths) = total deaths	Hurricane Percentages 22.1% 77.9%
Show with words: The way I found the answers was that I took all the female deaths added them together, and all the male deaths and added them together, getting 1864. After that I found how much percentage of that was male, and how much was female, and they came out to 77.9% for female and 22.1% for male. After that, I created a pie chart.	Explain your thinking: I believe that Female hurricanes are more dangerous. They cause deaths nearly 3x more than male deaths. The highest death rate in the male Hurricanes is 62, but the highest for the female Hurricanes are 256. Proving that Female hurricanes are more powerful and deadlier.

#1 Mathematical Reasoning and Communication: B - *Proficient* - There is clear evidence of a plan that was implemented to solve the problem using appropriate tools and strategies.
#1 Mathematical Reasoning and Communication: E - *Expanding* - Communication is enhanced through sequencing of ideas and using representations strategically.
#6 Data, Statistics, and Probability: A - *Proficient* - The selected representation of a pie chart is appropriate, there is a description of the data's distribution, and the meaning of the data is communicated.
Communication: 3 - The scoring team did not use this cross curricular scoring criteria during their calibration session since they did not witness the student presentations.

December 4, 2018

Males

Name	Year	Deaths	427 Deaths Total
King	1950	4	Smallest 0
Able	1957	3	Middle 5
Ione	1955	7	15
Juan	1985	12	Largest 84
Charley	1486	5	
Floyd	1987	0	
Hugo	1987	2.1	
Jemy	1987	3	
Bob	1971	15	
Andrew	1992	62	
Danny	1997	10	
Earl	1998	3	
Georges	1998	1	
Bret	1999	0	
Floyd	1999	56	
Alex	2004	1	
Bob	1979	1	
David	1979	15	
Frederic	1979	5	
Allen	1980	2	
Bob	1985	0	
Danny	1985	1	
Charley	2004	10	
Gerston	2004	8	
Ivan	2004	25	
Dennis	2005	15	
Humberto	2007	1	
Gustav	2008	52	
Ike	2008	84	
Isaac	2912	5	

Females
1,473 Deaths in Total

Smallest 0
2
Middle 5
21
Largest 250

0
0
0
0
0
0
0
0
1
1
1
2
13
15
15
20
20
21
21
22
26
37
41
46
50
51
62
75
117
157
160
250

0
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4
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5
7
8
10
10
12
15
15
15
21
25
52
56
62
84

December 13, 2[

Reflection

The most valuable statistical was using a box and whisker plot. The box and whisker plot shows the smallest number of deaths to the largest amount. This use of measurement clearly shows my statement of who had more deaths. One thing I could have done to improve my final product was add a little bit more work. My results were the same as my prediction from the beginning to the end. My prediction was Female hurricanes are stronger than male hurricanes. My work and evidence proves my prediction was correct. My strategic to figure out my data was making a box and whisker plot. I listed the deaths for both male and female from least to greatest. Then I found the numbers and plotted them. The box and whisker plot clearly and openly shows which had the most deaths. A major problem I had was calculating all my work in order. To fix this problem I underlined my numbers after I completed my calculations. I selected the box and whisker plot because It is an advanced way of showing your work when showing which product is higher or lesser than another.

Student Work Sample #2 (page 3 of 6 - self-assessment)

The Perfect Storm (Name): Gale vs. Gail
Self-Assessment

Scoring Criteria

Directions: This rubric will be used to score your final product(s). Review your work so far against the scoring criteria and mark the box that describes your work. Make notes about ways you could improve your work.

Indicator	Beginning	Developing	Proficient	Expanding
Data, Statistics, and Probability 6.A Summarize, represent, and interpret data. HSS.ID.A HSS.ID.B HSS.ID.C	Construct a representation of data and identify a distribution or pattern of the data.	Construct a representation of data, **identify** the distribution or pattern of the data, and **communicate** the meaning of the data	Construct an appropriate representation of data, **describe** the distribution or pattern of the data, and **communicate** the meaning of the data.	Construct and use appropriate representation(s) of data to make predictions and justify conclusions.
Notes for improvement: Data, Statistics, and Probability 6.A	My box and whisker plot is very understanding for saroche to understand, work and numbers show.			

(Proficient is circled)

Student Work Sample #2 (page 4 of 6 - self-assessment)

Indicator	Beginning	Developing	Proficient	Expanding
Mathematical Reasoning and Communication 1.B Select strategies and appropriate tools to develop and implement a plan to solve a problem. MP1, MP5	**Identify** strategies and/or tools that could be used to solve a problem	**Select** strategies and tools to solve a problem and **apply** initial strategies to attempt to solve a problem.	**Design and implement** a plan, including appropriate tools and strategies, to **solve** a problem	**Design, implement,** and **refine** a plan including appropriate tools and strategies, to solve a problem
Notes for improvement: Mathematical Reasoning and Communication 1.B	I believe my design, implement and refine was very good.			

Student Work Sample #2 (page 5 of 6 - self-assessment)

Indicator	Beginning	Developing	Proficient	Expanding
Mathematical Reasoning and Communication 1.E Precisely communicate mathematical understandings and connections using a variety of representations. MP1	**Communicate** understanding **using** language and representations.	**Communicate** mathematical understanding and connections **using** mathematical language and representation(s).	Clearly and logically **communicate** mathematical understanding and connections **using** technical mathematical language and appropriate representation(s)	Enhance communication through the intentional **sequencing** and **presentation** of ideas and the strategic **selection** and **use** of representations
Notes for improvement: Mathematical Reasoning and Communication 1.E	Yes, I believe my work is expanding due to the fact all my work is clearly shown.			

Student Work Sample #2 (page 6 of 6 - self-assessment)

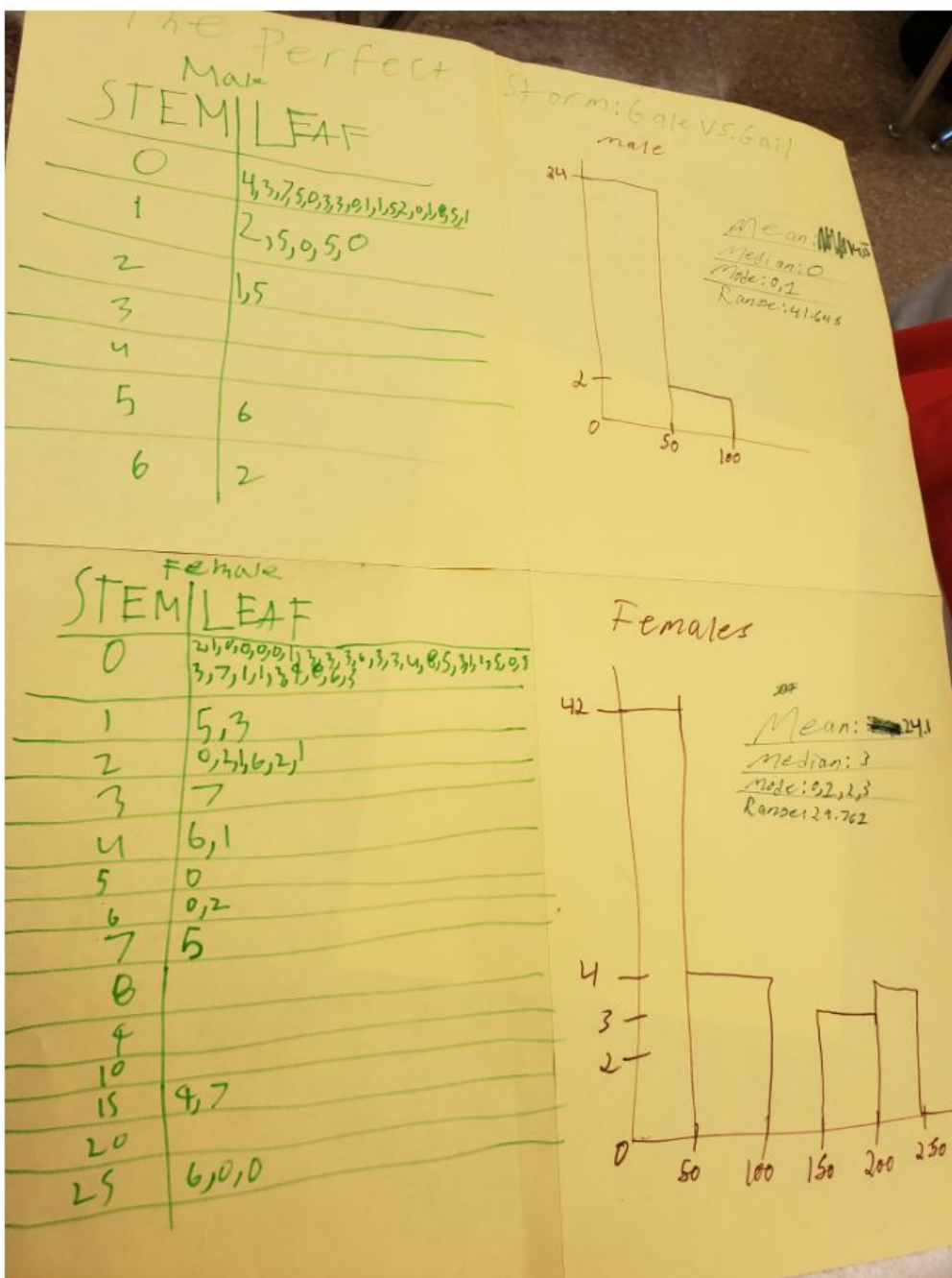| Indicator	Beginning	Developing	Proficient	Expanding
Communication Performance Indicator 3 Choose and apply an appropriate communication strategy according to audience and purpose.	Identify audience and purpose of communication. Use a method of communication (e.g., written, oral, visual, graphic, audio, and/or interactive) to present ideas.	Use some appropriate aspects of style, tone and language to partially address the needs of the audience and purpose. Select and use a method of communication (e.g., written, oral, visual, graphic, audio, and/or interactive) to present ideas.	Use appropriate style, tone, and language to address intended audience and purpose. Select and use a method of communication (e.g., written, oral, visual, graphic, audio, and/or interactive) that fits the audience and purpose.	Use strategic, engaging, and creative style, tone, and language to effectively address the intended audience and purpose. Select and use a strategic method of communication (e.g., written, oral, visual, graphic, audio, and/or interactive) that effectively addresses the audience and purpose.
Notes for improvement: Communication Performance Indicator 3	I think I was proficient because I showed my work. I also think I was proficient because I took my time reviewed it and put many details throughout my piece.			

(Proficient column is circled in red.)

#1 Mathematical Reasoning and Communication: B - *Developing* - Strategies/tools applied in an attempt to solve the problem.
#1 Mathematical Reasoning and Communication: E - *Developing* - Mathematical language is used to help explain the student's reasoning process.
#6 Data, Statistics, and Probability: A - *Developing* - A representation and a method of showing the distribution of the data is used to communicate the meaning of the data.
Communication: 3 - The scoring team did not use this cross curricular scoring criteria during their calibration session since they did not witness the student presentations.

The Perfect Storm: Gale vs. Gale

female

male

Male Hurricanes

Mean: 14.2

Medium: 5

Mode: 1

Female Hurricanes

Mean: 24

Meadiun: 5

Mode: 3

Female hurricanes are more deadly than male hurricanes because in my research, female hurricanes have a mean of 9.37 more deaths per hurricane with a mode that is 2 deaths higher than males.

https://www.google.com/amp/s/amp.cnn.com/cnn/2016/09/01/health/female-hurricanes-deadlier-than-male-hurricanes-trnd/index.html

https://www.pnas.org/content/111/24/8782

#1 Mathematical Reasoning and Communication: B - *Developing* - Strategies/tools applied in an attempt to solve the problem.
#1 Mathematical Reasoning and Communication: E - *Beginning* - Language is used to communicate understanding.
#6 Data, Statistics, and Probability: A - *Beginning* - Identification of patterns of data are present.
Communication: 3 - The scoring team did not use this cross curricular scoring criteria during their calibration session since they did not witness the student presentations.

4 Quadrant Math Problem

Problem male

Show with Numbers

[illegible handwritten numbers]

0,0,0,1,1,1,1,1,2,3,3,3,4,5,5,5,7,8
0,10,12,15,15,15,21,25,52,56,62,84

Show with a Picture or Graph

Mean - $14.13

med - 5

mode - 1

Show with Words

Explain your Thinking

4 Quadrant Math Problem

Problem female

Show with Numbers

[illegible crossed-out numbers]

0,0,0,0,0,0,0,1,1,1,1,1,1,1²,2²,2,3,3,3,3,
3,3,3,3,3,3,3,4,5,5,5,5,5,6,6,7,8,8,8,9
13,15,15,15,20,20,21,22,22,24,37,41,46
50,51,60,62,75,117,159,200,284

Show with a Picture or Graph

mean - 24

med - 5

mode - 3

Show with Words

I agree that females cause more deaths because it has a higher mean and a higher mode.

Explain your Thinking

The mean is 9.37 higher as a female.

The mode is 2 higher as a female.

Student Work Sample #5 (page 3 of 6 - self-assessment)

Name: _____

The Perfect Storm (Name): Gale vs. Gail
Self-Assessment

Scoring Criteria

<u>Directions</u>: This rubric will be used to score your final product(s). Review your work so far against the scoring criteria and mark the box that describes your work. Make notes about ways you could improve your work.

Indicator	Beginning	Developing	Proficient	Expanding
Data, Statistics, and Probability 6.A Summarize, represent, and interpret data. HSS.ID.A HSS.ID.B HSS.ID.C	Construct a representation of data and **identify** a distribution or pattern of the data.	Construct a representation of data, **identify** the distribution or pattern of the data, and communicate the meaning of the data	Construct an appropriate representation of data, **describe** the distribution or pattern of the data, and communicate the meaning of the data.	Construct and use appropriate representation(s) of data to make predictions and justify conclusions.
Notes for improvement: Data, Statistics, and Probability 6.A	I could have improved by using a better calculator, or making a graph. I was proficient because I used all my tools to answer the question			

Student Work Sample #5 (page 4 of 6 - self-assessment)

Name: _____

Indicator	Beginning	Developing	Proficient	Expanding
Mathematical Reasoning and Communication 1.B Select strategies and appropriate tools to develop and implement a plan to solve a problem. MP1, MP5	Identify strategies and/or tools that could be used to solve a problem	Select strategies and tools to solve a problem and apply initial strategies to attempt to solve a problem.	Design and implement a plan, including appropriate tools and strategies, to solve a problem	Design, implement, and refine a plan including appropriate tools and strategies, to solve a problem
Notes for improvement: Mathematical Reasoning and Communication 1.B	proficient. I could have used more scrap paper to show more of my work. I think I was proficient because I implemented a plan to show the data with appropriate tools			

Student Work Sample #5 (page 5 of 6 - self-assessment)

Name: _____

Indicator	Beginning	Developing	Proficient	Expanding
Mathematical Reasoning and Communication 1.E Precisely communicate mathematical understandings and connections using a variety of representations. MP1	Communicate understanding **using** language and representations.	Communicate mathematical understanding and connections **using** mathematical language and representation(s).	Clearly and logically **communicate** mathematical understanding and connections **using** technical mathematical language and appropriate representation(s)	Enhance communication through the intentional **sequencing** and **presentation** of ideas and the strategic **selection** and **use** of representations
Notes for improvement: Mathematical Reasoning and Communication 1.E	I think I was proficient because I logically communicated mathematical understanding and connections using technical mathematical language and appropriate representations			

Student Work Sample #5 (page 6 of 6 - self-assessment)

Name: _____

Indicator	Beginning	Developing	Proficient	Expanding
Communication Performance Indicator 3 Choose and apply an appropriate communication strategy according to audience and purpose.	Identify audience and purpose of communication. Use a method of communication (e.g., written, oral, visual, graphic, audio, and/or interactive) to present ideas.	Use some appropriate aspects of style, tone and language to partially address the needs of the audience and purpose. Select and use a method of communication (e.g., written, oral, visual, graphic, audio, and/or interactive) to present ideas.	Use appropriate style, tone, and language to address intended audience and purpose. Select and use a method of communication (e.g., written, oral, visual, graphic, audio, and/or interactive) that fits the audience and purpose.	Use strategic, engaging, and creative style, tone, and language to effectively address the intended audience and purpose. Select and use a strategic method of communication (e.g., written, oral, visual, graphic, audio, and/or interactive) that effectively addresses the audience and purpose.
Notes for improvement: Communication Performance Indicator 3	I used a visual method of communication by making a powerpoint that shows all my information met.			

```
...1950 - 4 deaths
...le 1952 - 3 deaths
...e 1957 - 7 deaths
...b 1979 - 1 death
...nd 1979 - 15 deaths
...ric 1979 - 5 deaths
...on 1980 - 3 deaths
...e 1985 - 0 deaths
...ny 1975 - 1 death
...n 1985 - 12 deaths
...ley 1986 - 5 deaths
...yd 1987 - 0 deaths
...e 1987 - 31 deaths
...y 1989 - 3 deaths
...  1991 - 15 deaths
...  1993 - 62 deaths
...ry 1997 - 10 deaths
...  1998 - 3 deaths
...  ...
...  1999 - 0 deaths
...od 1999 - 56 deaths
...  2000 - 1 death
...my 2004 - 10 deaths
...ston 2004 - 8 deaths
...  2004 - 25 deaths
...ms 2005 - 15 deaths
...  2007 - ... deaths
...  2008 - 52 deaths
...e 2008 - 84 deaths
...  2012 - 5 deaths
```

Females

Easy 1950 - 2 deaths   15   Fran 1906 - 26 deaths
Barbara 1953 - 1 death   8   Bonnie 1998 - 3 deaths   26
Florence 1953 - 0 deaths   1   Irene 1999 - 8 deaths
Carol 1954 - 66 deaths   Lili 2002 - 2 deaths   17
Edna 1954 - 20 deaths   Claudette 2003 - 3 deaths   27
Hazel 1954 - 20 deaths   Isabel 2003 - 51 deaths
Connie 1955 - 0 deaths   2   Ivan 2004 - 7 deaths   36
Diane 1955 - 200 deaths   Jeanne 2004 - 6 deaths
Flossy 1956 - 15 deaths   Cindy 2005 - deaths   12
Helene 1958 - 1 death   9   Ophelia 2005 - 1   13
Debra 1959 - 0 deaths   3   Rita 2005 - 63 deaths
Gracie 1959 - 23 deaths   Wilma 2005 -   deaths
Donna 1960 - 50 deaths   Dolly 2008 -   b   14
Ethel 1960 - 0 deaths   4   Irene 2011 - 41 death
Carla 1961 - 46 deaths   Sandy 2012 - 159 deaths
Cindy 1963 - 3 deaths   18
Cleo 1964 - 3 deaths   19
Dora 1964 - 5 deaths   29   median
Hilda 1964 - 37 deaths
Isbell 1964 - 3 deaths   26
Betsy 1965 - 75 deaths
Alma 1966 - 6 deaths   34
Inez 1966 - 3 deaths   21
Beulah 1967 - 15 deaths
Gladys 1968 - 3 deaths   22
Camille 1969 - 256 deaths - biggest
Edith 1971 - 0 deaths   5
Fern 1971 - 2 deaths   16
Ginger 1971 - 0 deaths   6
Agnes 1972 - 117 deaths
Gilda 1974 - 1 death   10
Eloise 1975 - 21 deaths
Belle 1976 - 5 deaths   36
Anita 1977 - 0 deaths   7
Alicia 1983 - 21 deaths
Diana 1984 - 3 deaths   23
Elena 1985 - 4 deaths   22
Gloria 1985 - 8 deaths
Kate 1985 - 5 deaths   31
Bonnie 1986 - 3 deaths   24
Florence 1988 - 1 death   11
            1989 - 13 deaths
        1991 - 3 deaths   25
                deaths   35
            1991
        1991,

Box - and - Whisker plot

Student Work Sample #6 (page 3 of 3 - self-assessment)

Name: _____

Indicator	Beginning	Developing	Proficient	Expanding
Mathematical Reasoning and Communication 1.B Select strategies and appropriate tools to develop and implement a plan to solve a problem. MP1, MP5	Identify strategies and/or tools that could be used to solve a problem	Select strategies and tools to solve a problem and **apply** initial strategies to attempt to solve a problem.	**Design** and **implement** a plan, including appropriate tools and strategies, to **solve** a problem	**Design, implement**, and **refine** a plan including appropriate tools and strategies, to solve a problem
Notes for improvement: Mathematical Reasoning and Communication 1.B	I give myself Developing or Proficient. I could of done better if I had more time.			

#1 Mathematical Reasoning and Communication: B - *Beginning* - Strategies are used to attempt to solve the problem.
#1 Mathematical Reasoning and Communication: E - *Beginning*- Representations are used to communicate understanding.
#6 Data, Statistics, and Probability: A - *Beginning* - Attempt at a representation of the data and its distribution.
Communication: 3 - The scoring team did not use this cross curricular scoring criteria during their calibration session since they did not witness the student presentations.