Mathematics Grade 8 Unit 08 – Rubric 1

Grade/Subject/(Course)
Grade 8 / Mathematics

Course Version

Performance Assessment(s)

Mathematics Grade 8 Unit 08 PA 01

Analyze the situation(s) described below. Organize and record your work for each of the following tasks. Using precise mathematical language, justify and explain each mathematical process.

1. Consider the numbers below.

$$-\sqrt{14.2},\ -4,\ 0.2,\ \sqrt{2},\ 4\frac{1}{5},\ 0,\ -2.4,\ \sqrt{6.25}$$

   a. Create a visual representation to organize and display the relationship between the sets and subsets of numbers:
      - counting (natural) numbers
      - integers
      - irrational numbers
      - rational numbers
      - real numbers
      - whole numbers

   b. Place the numbers in the correct set or subset within the visual representation.

   c. Record two additional numbers that belong in each set of counting (natural) numbers, integers, irrational numbers, and rational numbers within the visual representation.

   d. Approximate the value of each of the irrational numbers and locate those approximations on a number line.

   e. Place all of the numbers recorded within the visual representation in ascending order and verify the order using a calculator.

Standard(s): 8.1C , 8.1D , 8.1E , 8.1F , 8.1G , 8.2A , 8.2B , 8.2D
ELPS ELPS.c.1A , ELPS.c.2C , ELPS.c.2D , ELPS.c.2E , ELPS.c.3C , ELPS.c.3D , ELPS.c.3H , ELPS.c.4C , ELPS.c.4D , ELPS.c.4F , ELPS.c.4H , ELPS.c.5B

Teacher Information
Notes for Students:
For each task:

- Analyze the situation(s).
- Organize and record your work.
- Use precise mathematical language to justify and explain each mathematical process.

Rubric(s)

Mathematics Grade 8 Unit 08 Rubric 01					

	4 **Student demonstrates mathematical understandings and processes beyond PA expectation(s)**	3 **Student demonstrates mathematical understandings and processes of PA expectation(s)**	2 **Student demonstrates mathematical understandings and processes of PA expectation(s) with minimal error**	1 **Student demonstrates limited mathematical understandings and processes of PA expectation**	0 **Student is unable to demonstrate mathematical understandings and processes of PA expectation**
1. Consider the numbers below. $-\sqrt{14.2}$ -4, 0.2, $\sqrt{2}$, $4\frac{1}{5}$, 0, -2.4, $\sqrt{6.25}$					
a. Create a visual representation to organize and display the relationship between the sets and subsets of numbers: • counting (natural) numbers • integers • irrational numbers • rational numbers • real numbers • whole numbers b. Place the numbers in the correct set or subset within the visual representation. c. Record two additional numbers that belong in each set of counting (natural) numbers, integers, irrational numbers, and rational numbers within	• Appropriate and detailed visual representation with all sets and subsets of numbers labeled accurately • Thorough and accurate explanation that includes mathematical detail of the relationships between the sets and subsets of numbers in the visual representation • Accurate placement of all numbers in the correct set or subset within the visual representation • Accurate placement of two new numbers that belong in each of the four sets or subsets of numbers within the visual	• Appropriate visual representation with all sets and subsets of numbers labeled accurately • Accurate explanation that includes mathematical detail of the relationships between the sets and subsets of numbers in the visual representation • Accurate placement of all numbers in the correct set or subset within the visual representation • Accurate placement of two new numbers that belong in each of the four sets or subsets of numbers within the visual representation (counting	• Appropriate visual representation with at least five sets and subsets of numbers labeled accurately • Limited explanation that includes some mathematical detail of the relationships between the sets and subsets of numbers in the visual representation • Accurate placement of at least five numbers in the correct set or subset based on their visual representation • Accurate placement of two new numbers that belong in three of the four sets or subsets of numbers within the visual	• Appropriate visual representation with at least four sets and subsets of numbers labeled accurately OR inappropriate visual of representation due to all subsets being listed in reverse order • Limited explanation that lacks mathematical detail of the relationships between the sets and subsets of numbers in the visual representation • Accurate placement of at least four numbers in the correct set or subset based on their visual representation • Accurate placement of two new	• Inaccurate visual representation with minimal or no labeling of sets and subsets of numbers • Inaccurate or no explanation of the relationships between the sets and subsets of numbers in the visual representation • Inaccurate placement of all numbers in the incorrect set or subset based on their visual representation • Inaccurate placement of any new numbers that belong in each of the four sets or subsets of numbers within the visual representation (counting (natural) numbers,

the visual representation.	representation (counting (natural) numbers, integers, irrational numbers, and rational numbers)	(natural) numbers, integers, irrational numbers, and rational numbers)	representation OR accurate placement of one new number that belongs in each of the four sets or subsets of numbers within the visual representation (counting (natural) numbers, integers, irrational numbers, and rational numbers)	numbers that belong in two of the four sets or subsets of numbers within the visual representation OR accurate placement of one new number that belongs in three of the four sets or subsets of numbers within the visual representation (counting (natural) numbers, integers, irrational numbers, and rational numbers)	integers, irrational numbers, and rational numbers) OR • No response
d. Approximate the value of each of the irrational numbers and locate those approximations on a number line. e. Place all of the numbers recorded within the visual representation in ascending order and verify the order using a calculator.	• Accurate identification of both of the irrational numbers • Accurate approximation for the value of both of the irrational numbers • Thorough and accurate explanation that includes mathematical detail of how the irrational numbers were identified and the approximate values determined • Appropriate, detailed, and clearly labeled number	• Accurate identification of both of the irrational numbers • Accurate approximation for the value of both of the irrational numbers • Accurate explanation that includes mathematical detail of how the irrational numbers were identified and the approximate values determined • Appropriate and clearly labeled number lineaccurately indicting the	• Accurate identification of both of the irrational numbers • Accurate approximation for the value of one of the irrational numbers • Limited explanation that includes some mathematical detail of how the irrational numbers were identified and the approximate values determined • Appropriate but not clearly labeled number line accurately	• Accurate identification of both of the irrational numbers • Inaccurate approximation for the value of both of the irrational numbers • Limited explanation that lacks mathematical detail of how the irrational numbers were identified and the approximate values determined • Appropriate number line accurately indicting the location of one	• Inaccurate identification of both of the irrational numbers • Inaccurate approximation for the value of both of the irrational numbers • Inaccurate or no explanation of how the irrational numbers were identified and the approximate values determined • Inappropriate number line inaccurately indicting the location of both irrational number

	lineaccurately indicting the location of both irrational number approximations • Accurate placement of all numbers in ascending order • Thorough and accurate explanation that includes mathematical detail of how the order was verified using a calculator	location of both irrational number approximations • Accurate placement of all numbers in ascending order • Accurate explanation that includes mathematical detail of how the order was verified using a calculator	indicting the location of both irrational numbers based on their approximations • Accurate placement of most numbers in ascending order • Limited explanation that includes some mathematical detail of how the order was verified using a calculator	of the irrational numbers based on their approximations • Accurate placement of some numbers in ascending order • Limited explanation that lacks mathematical detail of how the order was verified using a calculator	approximations • Inaccurate placement of all or most numbers in ascending order • Inaccurate or no explanation of how the order was verified using a calculator OR • No response