# 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 <u>ELPS.c.1A</u> , <u>ELPS.c.2C</u> , <u>ELPS.c.2D</u> , <u>ELPS.c.2E</u> , <u>ELPS.c.3C</u> , <u>ELPS.c.3D</u> , <u>ELPS.c.3H</u> , <u>ELPS.c.4H</u> , <u>ELPS.c.4B</u>

#### **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)	Student demonstrates mathematical understandings and processes of PA expectation(s) with minimal error	1 Student demonstrates limited mathematical understandings and processes of PA expectation	O 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  • real numbers  • whole numbers  • whole numbers  • whole numbers  correct set or subset within the visual representation.  c. Record two additional numbers that belong in each set of counting	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 Accurate placement of Accurate placement of Accurate placement of	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 all numbers in the correct set or subset within the visual representation     Accurate placement of two new numbers that	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 accurate placement of accurate placement of accurate placement of	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	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 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	

numbers,

integers,

irrational

rational

numbers, and

numbers within

numbers within

representation

the visual

(counting

(natural)

numbers,

numbers that

belong in each

of the four sets

numbers within

or subsets of

the visual

of the four sets

numbers within

representation

or subsets of

the visual

(counting

numbers that

belong in three

of the four sets

numbers within

or subsets of

the visual

subset based

on their visual

representation

placement of

Accurate

two new

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.	<ul> <li>Accurate identification of both of the irrational numbers</li> <li>Accurate approximation for the value of both of the irrational numbers</li> <li>Thorough and accurate explanation that includes mathematical detail of how the irrational numbers were identified and the approximate values determined</li> <li>Appropriate, detailed, and clearly labeled number</li> </ul>	<ul> <li>Accurate identification of both of the irrational numbers</li> <li>Accurate approximation for the value of both of the irrational numbers</li> <li>Accurate explanation that includes mathematical detail of how the irrational numbers were identified and the approximate values determined</li> <li>Appropriate and clearly labeled number lineaccurately indicting the</li> </ul>	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

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

calculator

calculator