

Grade 8 Math C1 TA

Claim 1: Concepts and Procedures Students can explain and apply mathematical concepts and carry out mathematical procedures with precision and fluency.	
Content Domain: The Number System	
Target A [s]: Know that there are numbers that are not rational, and approximate them by rational numbers. (DOK 1, 2) Tasks for this target will require students to convert between rational numbers and decimal expansions of rational numbers. Other tasks will ask students to approximate irrational numbers on a number line or as rational numbers with a certain degree of precision. This target may be combined with 8.EE Target B (e.g., by asking students to express the solution to a cube root equation as a point on the number line).	
Standards:	8.NS.1, 8.NS.2
DOK Target(s):	1, 2
Evidence Required:	<ol style="list-style-type: none"> 1. The student classifies real numbers as rational or irrational. 2. The student writes rational numbers as terminating or repeating decimals. 3. The student writes approximations of irrational numbers as rational numbers. 4. The student converts repeating decimals into rational numbers. 5. The student compares the size of irrational numbers by using rational approximations of irrational numbers. 6. The student approximates the location of irrational numbers on the number line by using rational approximations of irrational numbers. 7. The student estimates the value of expressions that involve irrational numbers by using rational approximations of the irrational numbers.
Allowable Item Types*:	SR, CR, TE
Task Models:	<ol style="list-style-type: none"> 1. SR (DOK 1) Prompt Features: The student is prompted to classify real numbers as rational or irrational. Stimulus: The student is presented with a list of rational and irrational numbers. 1. CR (DOK 2) Prompt Features: The student is prompted to explain why numbers are classified as rational or irrational. Stimulus: The student is presented with a list of rational and irrational numbers.

1. TE (DOK 1)

Prompt Features: The student is prompted to classify real numbers as rational or irrational.

Stimulus: The student is presented with a list of rational and irrational numbers.

Interaction: The student uses a tool that will drag and drop rational and irrational numbers into a classification table.

2. SR (DOK 1)

Prompt Features: The student is prompted to identify the decimal form of a rational number.

Stimulus: The student is presented with a rational number.

2. CR (DOK 1)

Prompt Features: The student is prompted to write the decimal form of a rational number. Or the student is prompted to show the process of converting a given rational number to a decimal.

Stimulus: The student is presented with a rational number.

3. CR (DOK 2)

Prompt Features: The student is prompted to write a decimal approximation of an irrational number and explain why he or she chose to represent the irrational number as he or she did.

Stimulus: The student is presented with an irrational number.

4. SR (DOK 1)

Prompt Features: The student is prompted to identify the rational number that is equivalent to a given repeating decimal.

Stimulus: The student is presented with a repeating decimal.

4. CR (DOK 1,2)

Prompt Features: The student is prompted to write the rational number that is equivalent to a given repeating decimal. Or the student is prompted to show the process of converting a given repeating decimal to a rational number.

Stimulus: The student is presented with a repeating decimal.

5. SR (DOK 2)

Prompt Features: The student is prompted to compare irrational numbers (e.g., which irrational number is the greatest, how many times greater one irrational number is than another, etc.).

Stimulus: The student is presented with multiple irrational numbers.

5. CR (DOK 2)

Prompt Features: The student is prompted to state approximately how many times greater one irrational number is than another. Or the student is prompted to explain the process of finding approximately how many times greater one irrational

	<p>number is than another. Stimulus: The student is presented with multiple irrational numbers.</p> <p>6. SR (DOK 1) Prompt Features: The student is prompted to identify the approximate locations of irrational numbers on a number line. Stimulus: The student is presented with irrational numbers and a number line showing tenths or hundredths.</p> <p>6. TE (DOK 1) Prompt Features: The student is prompted to click on a number line to show the approximate locations of irrational numbers. Stimulus: The student is presented with irrational numbers and a number line showing tenths or hundredths. Interaction: The student uses a tool that will plot and label points on a number line.</p> <p>7. SR (DOK 1, 2) Prompt Features: The student is prompted to estimate the value of an expression that involves irrational numbers. Or the student is prompted to identify expressions that involve irrational numbers that have a given approximate value. Stimulus 1: The student is presented with an expression that involves irrational numbers. Stimulus 2: The student is presented with a decimal approximation of the value of one or more expressions that involve irrational numbers.</p> <p>7. CR (DOK 1, 2) Prompt Features: The student is prompted to estimate the value of an expression that involves irrational numbers. Or the student is prompted to explain the process of estimating the value of an expression that involves irrational numbers. Stimulus: The student is presented with an expression that involves irrational numbers.</p>
Allowable Stimulus Materials:	Rational numbers, irrational numbers, expressions involving irrational numbers, explanations of processes, number lines
Allowable Disciplinary Vocabulary:	Rational number, irrational number, decimal expansion, estimate, repeating decimal, terminating decimal
Allowable Tools:	
Target-Specific Attributes	Irrational numbers should be square roots, cube roots, or pi (π). Calculators are not allowed for this target.
Key Nontargeted Constructs:	
Accessibility Concerns:	
Sample Items:	

*SR = selected-response item; CR = constructed-response item; TE = technology-enhanced item; ER = extended-response item; PT = performance task