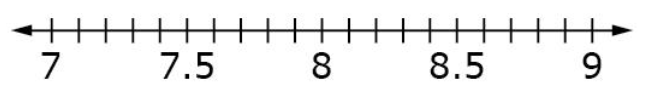
8.NS.A

Know that there are numbers that are not rational, and approximate them by rational numbers.

1. Determine for each expression whether it represents a rational number or an irrational number.

| **Number** | **Rational** | **Irrational** |
| --- | --- | --- |
| 3.5 10–3 |  |  |
|  |  |  |
| (3)2 |  |  |
|  |  |  |

1. Which interval contains the value of ?  
     
   A. between 4 to 5  
   B. between 5 to 6  
   C. between 11 to 12  
   D. between 15 to 16
2. Order these four expressions from least value to greatest value.  
     
   10 2 1.34 102 90
3. Write the repeating decimal as a fraction. Use only whole numbers for the numerator and denominator.
4. Marvin knows the formula for the area of a circle is *A* = *r*2. He claims that because is an irrational number, the area of all circles are irrational. Do you agree or disagree with Marvin’s claim? If you agree, explain why. If you disagree, provide a counterexample.
5. Plot a point on the number line to approximate the value of to the nearest tenth.  
     
   
6. Write the fraction as a decimal.

**Teacher Material**

8.NS.A

Know that there are numbers that are not rational, and approximate them by rational numbers.

| **Question** | **Claim** | **Key/Suggested Rubric** |
| --- | --- | --- |
| 1[[1]](#footnote-1) | 1 | **1 point:**   | **Number** | **Rational** | **Irrational** | | --- | --- | --- | | 3.5 10–3 | **x** |  | |  | **x** |  | | (3)2 |  | **x** | |  |  | **x** | |
| 21 | 1 | **1 point:** Selects C |
| 3[[2]](#footnote-2) | 1 | **1 point:** Orders, 90, 10 2, 1.34 102 |
| 41 | 1 | **1 point:** , or equivalent fraction |
| 52 | 3 | **1 point:** Provides an explanation for agreeing OR a counterexample for disagreeing. Example 1: I agree because when the radius is any rational number, then the radius squared is also a rational number. And a rational number time is an irrational number. Example 2: I disagree because when the radius is , then the area of the circle is 16, which is rational. |
| 61 | 1 | **1 point:** A number line from 7 to 9. Increments of tenths are shown, with the intervals 7, 7.5, 8, 8.5, and 9 labeled. A point is plotted at 7.9. |
| 72 | 1 | **1 point:** |

1. From Smarterbalanced.org. Grade 8, Claim 1, Target A Item Specifications. Internet. Available from <http://www.smarterbalanced.org/smarter-balanced-assessments/>; accessed 11/2015. [↑](#footnote-ref-1)
2. Adapted from the Mathematics K–12 Learning Standards. Internet. Available from <http://www.k12.wa.us/Mathematics/Standards.aspx>; accessed 11/2015. [↑](#footnote-ref-2)