8.NS.1 Know that numbers that are not rational are called irrational. Understand informally that every number has a decimal expansion; for rational numbers show that the decimal expansion repeats eventually, and convert a decimal expansion which repeats eventually into a rational number.

Which of the following is an irrational number?

A. $\sqrt{21}$

B. 2.59×10^5

C. $\sqrt{81}$

D. $\frac{-1}{3}$

Select all the irrational numbers.

- ☐ $\frac{3}{2}$
- ☐ 1.5
- ☐ $\frac{1}{9}$
- ☐ $1.414213\ldots$
- ☐ $0.\overline{45}$
- ☐ $3.14159\ldots$

Which of the fractions shown below represents the repeating decimal $0.\overline{25}$?

A. $\frac{9}{25}$

B. $\frac{25}{99}$

C. $\frac{99}{25}$

D. $\frac{25}{9}$

Write the rational number $\frac{3}{8}$ in decimal form:

A. 2.67

B. 0.338

C. 8.3

D. 0.375

Part A

Explain in your own words what it means for a number to be rational. Provide two examples of numbers that are rational and two examples of numbers that are irrational.

Part B

Would the quotient of $35 \div 11$ be considered rational or irrational? Explain how you know.

Part C

What is the decimal equivalent to the quotient of $35 \div 11$ from Part B? Show your work.

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Which of the following is true about the decimal expansion of $\frac{1}{11}$?

A. ends in 625
B. 3 repeating
C. 09 repeating
D. 27 repeating

Which of the following sets contains only irrational numbers?

A. $\pi, \sqrt{2}, 4.238905 \ldots$
B. $\frac{1}{7}, 3.14, 5$
C. $2\frac{1}{4}, \sqrt{5}, 7.717$
D. $0.\overline{1}, 0.\overline{09}, 0.1\overline{6}$

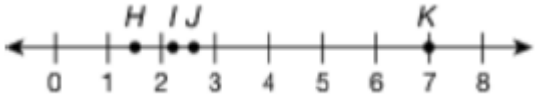
Which of the following fractions does not end with a decimal expansion of zeros?

A. $\frac{1}{3}$
B. $\frac{1}{4}$
C. $\frac{1}{5}$
D. $\frac{1}{8}$

A flagpole measures $25\frac{1}{11}$ feet tall. Which repeating decimal represents this height?

A. $25.08\overline{3}$ feet
B. $25.\overline{09}$ feet
C. $25.\overline{1}$ feet
D. $25.1\overline{6}$ feet

Points *H*, *I*, *J*, and *K* are plotted on the number line below.



Which point on the number line represents $\sqrt{7}$?

A. *H*
B. *I*
C. *J*
D. *K*

Which number is irrational?

A. $\frac{1}{8}$
B. $2.2\overline{5}$
C. $\sqrt{9}$
D. 10π

A middle school with 375 students has 125 in the eighth grade. Irene says that the eighth-grade class makes up $0.\overline{1}$ of the school. Yolanda says the eighth-grade class makes up $0.\overline{3}$ of the school. Fernando says that the eighth-grade class makes up $0.\overline{6}$ of the school.

Part A: Convert each student's decimal into a fraction.

Part B: Which student's decimal is correct? How do you know?

Part C: Which student's decimal represents the population of the rest of the middle school instead of the eighth-grade class? Explain your reasoning.