8.NS Irrational Numbers on the Number Line

Alignments to Content Standards: 8.NS.A.2

Task

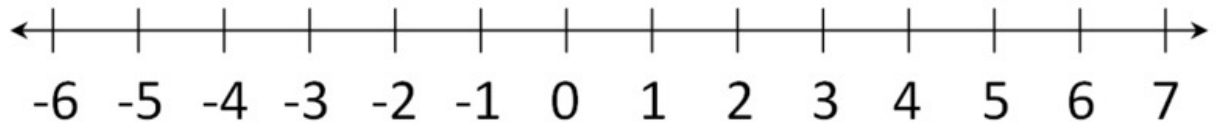
Without using your calculator, label approximate locations for the following numbers on the number line.

a. π

b. $-(\frac{1}{2} \times \pi)$

c. $2\sqrt{2}$

d. $\sqrt{17}$



IM Commentary

When students plot irrational numbers on the number line, it helps reinforce the idea that they fit into a number system that includes the more familiar integer and rational numbers. This is a good time for teachers to start using the term "real number line" to emphasize the fact that the number system represented by the number line is the real numbers. When students begin to study complex numbers in high school, they will

encounter numbers that are not on the real number line (and are, in fact, on a "number plane"). This task could be used for assessment, or if elaborated a bit, could be used in an instructional setting.

Edit this solution

Solution

a. π is slightly greater than 3.

b. $-(\frac{1}{2} \times \pi)$ is slightly less than -1.5.

c. $(2\sqrt{2})^2 = 4 \cdot 2 = 8$ and $3^2 = 9$, so $2\sqrt{2}$ is slightly less than 3.

d. $\sqrt{16} = 4$, so $\sqrt{17}$ is slightly greater than 4.