

Lesson 1

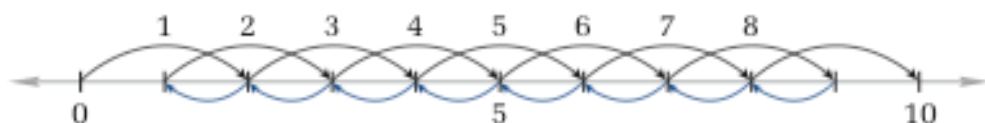
Number Line: Comparing and Ordering Integers

Problem: A robot is programmed to take two steps forward, then one step back. The robot will repeat this until it reaches its charger unit, which is ten steps in front of the robot. How many steps back will the robot take before it reaches the charger unit?

Understand We are told a robot takes two steps forward and then one step back. We are asked to find how many steps back the robot will take before it reaches the charger unit, which is ten steps away.

Plan We will draw a diagram to help us count the steps. Your teacher might also select a student to act out the robot's movements for the class.

Solve We use a number line for our diagram. We count two spaces forward from zero and then one space back and write "1" above the tick mark for 1. From that point, we count two spaces forward and one space back and write "2" above the tick mark for 2. We continue until we reach the tick mark for 10. The numbers we write represent the total number of backward steps by the robot. We reach 10 after having taken eight steps back. The robot reaches the charger unit after taking eight steps back.



Check To check for reasonableness, we rethink the problem situation with our answer in mind. It makes sense that the robot takes eight steps back before reaching the charger unit. Two steps forward and one step back is the same as one step forward. After completing this pattern 8 times, we expect the robot to be able to take 2 steps forward and reach its destination.

Numbers

- Integers: $\{\dots-2,-1,0,1,2\dots\}$
- Counting numbers: $\{1,2,3\dots\}$
- Whole numbers: $\{0,1,2,3\dots\}$
- Absolute value- the positive value of what is inside $| |$
- $|-5| = 5$
- $|3-7| = 4$

Sets

- $\{1,2,3,4\dots\}$

Examples

Even/odd #s in Sequence

- -4,-2,0,2,4
- -3,-1,1,-3