

# Number Lines – Whole Numbers

## Understanding the Relative Magnitude of Numbers

Students use reasoning skills and their understanding of numbers to place numbers on a number line. Students use what they know about one number to determine where a second number should be placed. As the numbers change and as the scale changes, students draw upon their understanding of the system of tens. Number lines allow students to better understand relationships between numbers and to better understand the relative magnitude of numbers.

### Materials:

- A large, blank number line easily visible to all students
- Attached black line master (number lines)

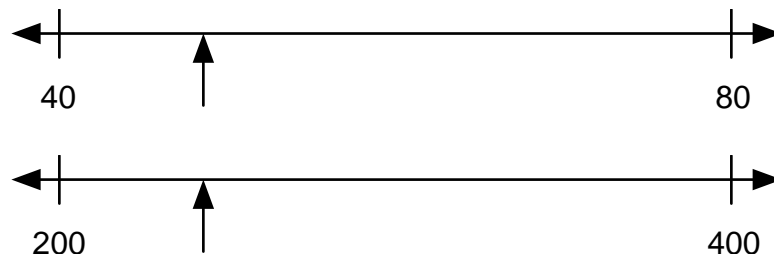
**CAUTION:** Always include arrows on both ends of your number line representations so students learn that we are only looking at a section of the number line. The number line is infinite.

### VARIATION 1

1. Label two marks on the number line (e.g., 40 and 80).



2. Place an arrow somewhere between the two marks.



3. The class suggests reasonable values for the number at the arrow.  
The students give reasons why the numbers they suggest are reasonable

**If students experience difficulty with this task:**

- Give the students several numbers to choose from. Students select the number that makes the most sense to them and explain their reasoning. For example:

*The arrow is pointing to which of the following numbers?*

85, 49, 78

350, 250, 205, 380

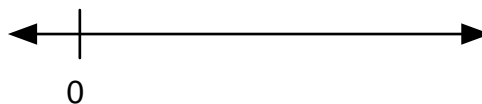
*Support your response with a mathematically convincing argument.*

**Guiding questions for Variation 1:**

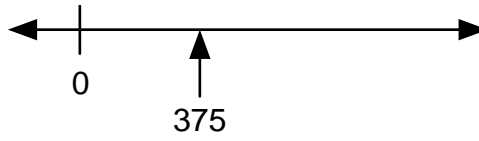
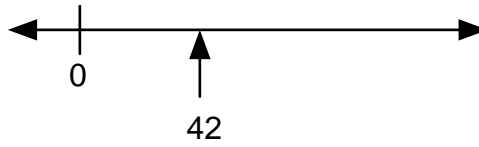
- Name a number that is greater than where the arrow is pointing.
- How much greater? Prove it on the number line.
- Name a number that is less than where the arrow is pointing.
- How much less? Prove it on the number line.
- If you had three more tens where would your number be?
- If you had three more ones where would your number be?
- If you had 20 more where would your number be?
- If you had two more where would your number be?
- If you had one more hundred where would your number be?
- If you had eight more tens where would your number be?
- If you had 10 more ones where would your number be?

**VARIATION 2**

1. Label the mark on the left with a zero.



2. Tell the students the arrow is pointing to a particular number (e.g., The arrow is pointing to 42 or 375).



3. Ask where other numbers would be. This helps students look at the relative positions of values. For example:
- “About where would 83 be? Explain your thinking.”*
  - “About where would 21 be? Explain your thinking.”*
  - “About where would 31 be? Explain your thinking.”*
  - “About where would 750 be? Explain your thinking.”*
  - “About where would 190 be? Explain your thinking.”*
  - “About where would 300 be? Explain your thinking.”*

