## Unit 7 Lesson 10: Representing Large Numbers on the Number Line

### 1 Labeling Tick Marks on a Number Line (Warm up)

#### Student Task Statement

Label the tick marks on the number line. Be prepared to explain your reasoning.



### 2 Comparing Large Numbers with a Number Line

#### Student Task Statement



1. Place the numbers on the number line. Be prepared to explain your reasoning.
	1. 4,000,000
	2. $5⋅10^{6}$
	3. $5⋅10^{5}$
	4. $75⋅10^{5}$
	5. $\left(0.6\right)⋅10^{7}$
2. Trade number lines with a partner, and check each other’s work. How did your partner decide how to place the numbers? If you disagree about a placement, work to reach an agreement.
3. Which is larger, 4,000,000 or $75⋅10^{5}$? Estimate how many times larger.

### 3 The Speeds of Light

#### Images for Launch



#### Student Task Statement

The table shows how fast light waves or electricity can travel through different materials.

| material | speed (meters per second) |
| --- | --- |
| space | 300,000,000 |
| water | $\left(2.25\right)⋅10^{8}$ |
| copper wire (electricity) | 280,000,000 |
| diamond | $124⋅10^{6}$ |
| ice | $\left(2.3\right)⋅10^{8}$ |
| olive oil | 200,000,000 |

1. Which is faster, light through diamond or light through ice? How can you tell from the expressions for speed?

Let’s zoom in to highlight the values between $\left(2.0\right)⋅10^{8}$ and $\left(3.0\right)⋅10^{8}$.
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1. Label the tick marks between $\left(2.0\right)⋅10^{8}$ and $\left(3.0\right)⋅10^{8}$.
2. Plot a point for each speed on both number lines, and label it with the corresponding material.
3. There is one speed that you cannot plot on the bottom number line. Which is it? Plot it on the top number line instead.
4. Which is faster, light through ice or light through diamond? How can you tell from the number line?



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