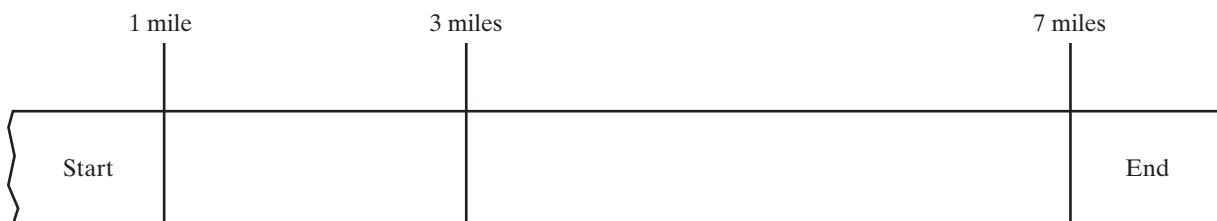


ENRICHMENT ACTIVITY 1-2**Marking the Trail**

A trail crew placed three mileage markers along an 8-mile hiking trail as shown below.



A park ranger wants to use the markers to describe all integral hikes of 1 mile to 8 miles in a guidebook. All hikes must be a continuous stretch of trail and no part can be covered more than once. For example, to describe a 5-mile hike, the ranger would say to go from marker 3 to the end of the trail.

- Describe how to take each length hike.
 - 1 mile
 - 2 miles
 - 3 miles
 - 4 miles
 - 6 miles
 - 7 miles
 - 8 miles
- Suppose the markers had been placed at 1 mile, 5 miles, and 6 miles. Could all hikes ranging from 1 to 8 miles be described using these markers? Justify your answer.
- Suppose the markers had been placed at 2 miles, 5 miles, and 7 miles. Could all hikes ranging from 1 to 8 miles be described using these markers? Justify your answer.
- Find another set of three markers that can be used to guide all hikes ranging from 1 to 8 miles.
- Could all eight hikes be described with a set of two markers? Explain.
- Suppose the trail was 12 miles long. What is the fewest number of trail markers needed to describe all hikes ranging from 1 to 12 miles? Where should the markers be placed?
- Suppose the trail was 10 miles long. What is the fewest number of trail markers that needed to describe all hikes ranging from 1 to 10 miles? Where should the markers be placed?
- A certain trail n miles long requires a minimum of 5 markers to describe all hikes ranging from 1 to n miles. What is the shortest possible length of this trail?