Thunder and Lightning


Light travels almost instantly, but sound travels at approximately 1/5 miles per second in dry air. That explains why, during a thunderstorm, the farther away the lightning strikes, the longer it takes to hear the thunder. Moreover, two individuals located miles apart may hear thunder at the same time if lightning strikes at a point that is equidistant from where each individual is located.

1. Suppose that two individuals are located miles apart, and at two different points P and Q. If lightning struck and both individuals heard the thunder at the same time, find all the possible places where lightning might have struck. Explain your answer.

■ Q

■ P

2. Suppose that three people are standing at the noncollinear points P, Q, and R. Lightning struck and the person at P and the person at Q both heard the thunder after the same amount of time. Is it possible that the person at R heard the thunder at the same time as the persons at P and Q? If so, can you locate where the lightning struck by means of a geometric argument?

■ Q

■ R

■ P
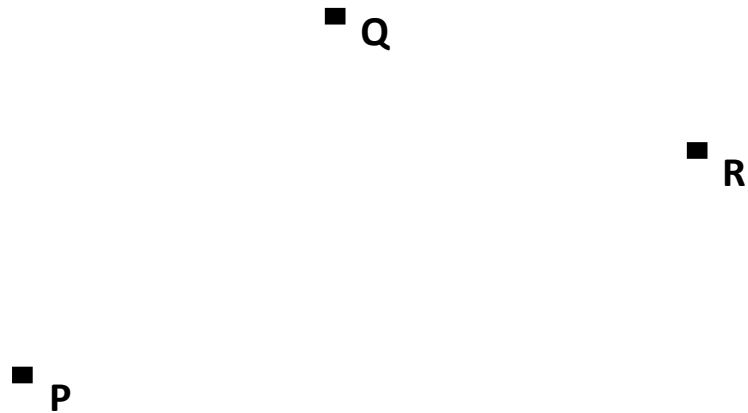
Reference

Wilcox, S. K., Dennis, M., & Zielinski, R. (2000). Geometric constructions: The contributions of context. In S. K. Wilcox & P. E. Lanier (Eds.), *Using assessment to reshape mathematics teaching* (pp. 173-222). Mahwah, NJ: Lawrence Erlbaum Associates.