

LESSON
1.7**Interdisciplinary Application***For use with the lesson "Represent Functions as Rules and Tables"***Paul Revere**

History Paul Revere, made famous by Henry Wadsworth Longfellow's poem, "The Midnight Ride of Paul Revere," was a major contributor to the Revolutionary War. The famous ride took place on April, 18, 1775. England's best troops were waiting at the foot of Boston Common to take a boat trip across Back Bay. British Governor General Gage was hoping to seize the gunpowder that the patriots were storing in Concord and keep the patriots from getting support from the other New England colonies. Dr. Joseph Warren sent both Revere and William Dawes from Boston to Lexington to spread the message and warn the assumed targets, John Hancock and Samuel Adams, who were preparing to depart for the meeting of the Second Continental Congress.

On the way to Lexington, Dawes had been able to talk his way past the guards along Boston Neck, while Revere stayed downstream from the sailors guarding the Ferryway. Because of some miscommunication by the British after their boat trip, the troops were not reassembled and ready to march through Lexington to Concord until around 1:30 A.M., by which time the Lexington militia had already been assembled.

When Revere and Dawes resumed their ride to Concord, they (along with Dr. Samuel Prescott) were stopped by a patrol of British soldiers. Dawes and Prescott were able to get away to continue their warning, while Revere was held at gunpoint and his horse taken. Revere was able to deceive the officers with tales of great patriot resistance, so fearing their own lives they allowed him to leave. Revere returned to Hancock and Adams with a new message that the British would be attempting to get the gunpowder at Concord. General Gage's plan to squash the planned rebellion backfired and the American Revolutionary War had begun.

Imagine that Revere had to travel 1.5 miles to Charleston. From Charlestown to Lexington he was able to ride a horse that traveled at a rate of 1214 feet per minute for 35 minutes. Represent his total distance traveled D as a function of the time t (in minutes) that Revere traveled by horse. (*Hint*: Be sure to include the initial 1.5 miles in the equation and to convert to feet (1 mile = 5280 feet).)

1. Write an equation for the function, applying the problem-solving strategies you learned in previous lesson. (Write a verbal model and assign labels first.)
2. Use your equation to make an input-output table for the function. For inputs, use the time increment of 5 minutes until you reach 35 minutes.
3. About how many total miles did Revere travel to reach Lexington that night? Write your answer to the nearest tenth of a mile.
4. Imagine that Revere had to walk the entire distance that night. If he could walk at a rate of 440 feet per minute, how long would it take him to reach Lexington? The distance Revere traveled D is modeled by $D = 440t$ where t represents the time in minutes. Make an input-output table for the function. For inputs, use time increment of 10 minutes. (*Hint*: Use your answer from Exercise 3 converted to feet to find Revere's total distance traveled.)