

## Chapter

## 13

## HOLT PHYSICS

## Mixed Review

## Sound

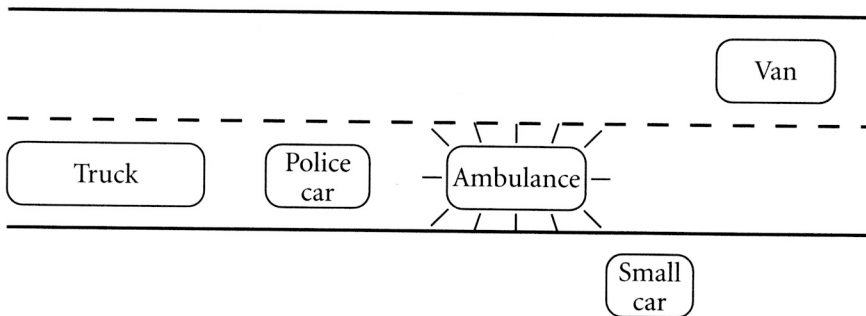
1. The speed of sound increases with temperature. It is 331 m/s in air at  $0^{\circ}\text{C}$  and 343 m/s in air at  $20^{\circ}\text{C}$ . A glass pipe vibrates with a frequency of 151 Hz.

- a. What is the wavelength of the sound produced by the column of air in the pipe on a cold day ( $0^{\circ}\text{C}$ ) and on a warmer day ( $20^{\circ}\text{C}$ )?

- b. How does air temperature affect the wavelength of the sound produced by the pipe?

2. The driver of an ambulance turns on its siren as the ambulance heads east at 30 mph. A police car is following the ambulance at 30 mph. A truck behind the police car is moving at 20 mph. A van is traveling west in the opposite lane at 20 mph. A small car is stopped at the side of the road. The vehicles are positioned as shown.

- a. On the diagram, sketch and label arrows to indicate the velocity of each vehicle.



- b. Rank the sounds perceived by the passengers in each of the vehicles in order of decreasing frequency.