44 When a child presses a button on a toy car, the car produces a long "beep" sound with a frequency of 500 Hz.

a. Calculate the period, T, of the beep. Show your calculations and include units in your answer.

The sound of the beep travels through air at 340 m/s.

b. Calculate the wavelength of the beep. Show your calculations and include units in your answer.

The child presses the button and pushes the toy car away. The car moves 5 m before it stops. It continues to beep, even after it stops moving.

c. Describe what happens to the amplitude of the beep observed by the child as the car moves away from the child.

d. When does the child hear a beep with a frequency lower than 500 Hz? Explain your answer.