

Sound and Sound Waves  
Honors Physics: Class Examples

Example 6

A siren from a police car has a frequency of 500.0 Hz and is moving with a velocity of 45.0 m/s. You are driving on the other side of the road towards the police car with a velocity of 36.0 m/s. What is the observed frequency from the police car? Assume the velocity of sound as 343 m/s.

$$f_o = f_s \left( \frac{v + v_o}{v + v_s} \right)$$

$$f_o = (500) \left( \frac{343 + 36}{343 - 45} \right)$$

$$f_o = 500 (1.27)$$

$$f_o = 635 \text{ Hz}$$

$$f_s = 500 \text{ Hz}$$

$$v_s = 45.0 \text{ m/s}$$

$$v_o = 36.0 \text{ m/s}$$

