

© Franco Normani
real-world-physics-problems.com
Jan. 7, 2020

This is a 1-D problem involving average velocity.

The speed of sound in air is 330 m/s at 0°C. If the average velocity of a jet plane is 2.3 times the speed of sound, how far does it travel in 0.25 seconds?

Solution:

Use the equation for average velocity:

$$\bar{v} = 330 \times 2.3 \text{ m/s} = 759 \text{ m/s} \quad \bar{v} = \frac{\Delta x}{\Delta t}$$

(average velocity of jet)

$$\Delta t = 0.25 \text{ s (time interval)}$$

$$\Delta x = ? \text{ (displacement)}$$

Substitute:

$$759 = \frac{\Delta x}{0.25}$$

$$\Delta x = 189.8 \text{ m (answer)}$$