A Ship floats on water send a sound when it was 900 m away from a mountain & hears a sound after 6 seconds if the velocity of the sound was 340 m/sec find the velocity of the ship .

Ship will hear a sound after time:

$$t = \frac{s}{c_s} + \frac{s - \Delta s}{c_s} = \frac{2s - \Delta s}{c_s} \rightarrow \Delta s = 2s - c_s t$$

A ship will pass distance Δs during the same time t

$$v = \frac{\Delta s}{t}$$

$$v = \frac{2s - c_s t}{t} = \frac{2s}{t} - c_s$$

$$v = \frac{2 * 900m}{6s} - 340m/s = -40m/s$$

Sign "-" means that ship moves away from the mount.

Answer: $v = 40m/s$ away from the mount