This print-out should have 9 questions. Multiple-choice questions may continue on the next column or page – find all choices before answering.

Stone in a Mine Shaft 02 001 10.0 points

Carol drops a stone into a mine shaft 121 m deep.

How soon after she drops the stone does she hear it hit the bottom of the shaft? The acceleration of gravity is 9.8 m/s^2 and the speed of sound as 343 m/s.

Serway CP 14 16 002 (part 1 of 3) 10.0 points

An outside loudspeaker (considered a small source) emits sound waves with a power output of 126 W.

Find the intensity 21.7 m from the source.

003 (part 2 of 3) 10.0 points

Find the intensity level at this distance.

Answer in decibels.

004 (part 3 of 3) 10.0 points

At what distance would you experience the sound at the threshold of pain, 120 dB?

Tipler PSE5 15 65 005 (part 1 of 2) 10.0 points

A spherical source radiates sound uniformly in all directions. At a distance of 49 m, the sound intensity level is 33 dB.

At what distance from the source is the intensity level 30 dB?

006 (part 2 of 2) 10.0 points What power is radiated by this source?

Ambulance Siren and Car 01 007 (part 1 of 2) 10.0 points

An ambulance is traveling south at 59.8 m/s, away from a car that is traveling north at 32.6 m/s. The ambulance driver hears his siren at a frequency of 1000 Hz.



What wavelength does a person who is standing between the car and the ambulance detect from the sound of the ambulance's siren? The velocity of sound in air is 343 m/s.

008 (part 2 of 2) 10.0 points

At what frequency does the driver of the car hear the ambulance's siren?

Correct answer: 770.606 Hz.

Serway CP 14 24 009 10.0 points

A bat flying towards a wall at 5.8 m/s emits a chirp at 52 kHz.

If this sound pulse is reflected by a wall, what is the frequency of the echo received by the bat? The speed of sound is 341 m/s.

Correct answer: 53.7995 kHz.