

Name\_\_\_\_\_

**Phys 2010 (NSCC), Spring 2007**  
**Problem Set #12**

**1.** Transverse waves with a speed of  $80.0 \frac{\text{m}}{\text{s}}$  are to be produced on a stretched string. A 5.00-m length of string with a total mass of 0.060 kg is used. What is the required tension in the string?

**2.** An outside speaker (which you can consider to be an isotropic source) emits sound waves with a power output of 150 W. Find the intensity 20.0 m from the source.

**3.** For the situation given in problem 2 (same sound source and distance) what is the intensity level in decibels at that distance?

**4.** A commuter train passes a passenger platform at a constant speed of  $45.0 \frac{\text{m}}{\text{s}}$ . The train horn is sounded at its characteristic frequency of 420 Hz. What frequency is heard by a person on the platform as the train approaches?

**5.** A car's horn emits sound of frequency 600 Hz. If the car is moving and a stationary observer hears a frequency of 572 Hz, what is the speed (and direction of motion) of the car?

**6.** If a listener runs *toward* the car in problem 5 at a speed of  $15.0 \frac{\text{m}}{\text{s}}$ , what frequency does he hear?