

## ACT Activities

Examples directly align to Health Science course standards

### Career Cluster: Health Science

#### *Science in Anatomy & Physiology – Addresses Standards 27 & 28*

The *human threshold of hearing* is the minimum intensity at each sound frequency required for a sound to be heard by humans. The *human threshold of pain* is the maximum intensity at each sound frequency that humans can tolerate without pain.

The figure below displays, for sounds in water and in air, the human thresholds of hearing and pain. The figure also shows  $S$ , the percent increase in air density and water density that accompanies the compression of air and water by sound waves of given intensities. Sound intensities are given in decibels (db) and frequencies are given in hertz [(Hz); 1 HZ=1 cycle/sec].

#### **Question:**

According to the figure, which of the following is closest to the lowest frequency that can be heard by a human being?

- 8 Hz
- 20 Hz
- 1,000 Hz
- 20,000 Hz

Answer explanation: Look at the bottom end of the line drawing. This lines up with  $2 \times 10^1$  Hz, which equals 20.

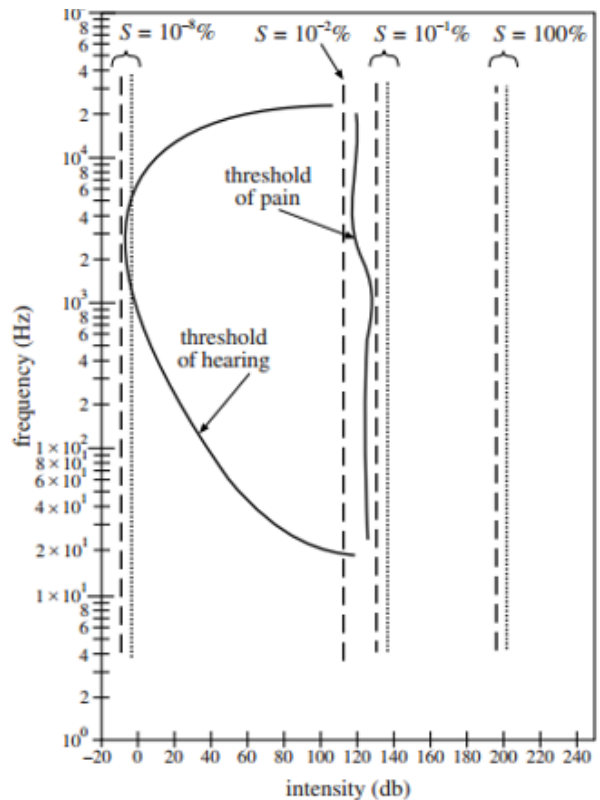


Figure adapted from Rita G. Lerner and George L. Trigg, eds., *Encyclopedia of Physics*, 2nd ed. ©1991 by VCH Publishers, Inc.

## **Career Cluster: Health Science**

### ***Science in Exercise Science – Addresses Standard 14***

A typical high school student consumes 67.5 pounds of sugar per year. As part of a new nutrition plan, each member of a track team plans to lower the sugar he or she consumes by at least 20 percent for the coming year. Assuming each track member had consumed sugar at the level of a typical high school student and will adhere to this plan for the coming year, what is the maximum number of pounds of sugar to be consumed by each track team member in the coming year?

- a. 14
- b. 44
- c. 48
- d. 54
- e. 66