

## Section

**13-2**

## HOLT PHYSICS

**Concept Review***Sound Intensity and Resonance*

Refer to the following table to answer the following questions.

Intensity ( $\text{W/m}^2$ )	Decibel level (dB)	Intensity ( $\text{W/m}^2$ )	Decibel level (dB)
$1.0 \times 10^{-9}$	30	$1.0 \times 10^{-5}$	70
$1.0 \times 10^{-8}$	40	$1.0 \times 10^{-4}$	80
$1.0 \times 10^{-7}$	50	$1.0 \times 10^{-3}$	90
$1.0 \times 10^{-6}$	60	$1.0 \times 10^{-2}$	100

1. While practicing his instrument at home, a young drummer produces sounds with 0.5 W of power. Assume the sound waves spread spherically, with no absorption in the medium.

- a. What is the intensity of the sound waves that reach the walls of his room 2.00 to 4.00 m from the drum?

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- b. What is the intensity of the sound waves that reach the family room, 8.00 to 12.0 m from the drum?

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- c. What is the intensity and approximate decibel level of the sound waves that reach the neighbors' home 50.0 m away?

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2. The sound level 5.00 meters away from a jackhammer is exactly 100 dB.

- a. What is the intensity of the sound at that point?

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- b. What is the power of the sound from the jackhammer?

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- c. At what distance from the jackhammer will the noise intensity decrease to  $1.00 \times 10^{-8} \text{ W/m}^2$ ?

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