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1. A loud speaker is placed between two observers who are 120m apart, along the line connecting them. If one observer records a sound level of 60.0dB and the other records a sound level of 90dB, how far is the speaker from each observer?

a: 3.7, 116.3

b: 4.3, 115.7

c: 6.2, 113.8

d: 8.6, 111.4

2. A room measures 3.0m by 4.5m by 6.0m. The heating and air conditioning ducts to and from the room are circular with diameter of 0.30m, and the air in the room is to be exchanged every 12 minutes. What is the necessary flow speed in the duct (assume that the density of the air is constant).

a: 0.6m/s

b: 1.6m/s

c: 3.2m/s

d: 4.1m/s

3. An archer shoots an arrow with a velocity of 45 m/s at an angle of 50 degrees with the horizontal. What is the height of the arrow at a point 150 meters downrange?

a: 4.7m

b: 47.0m

c: 5.6m

d: 56.0m