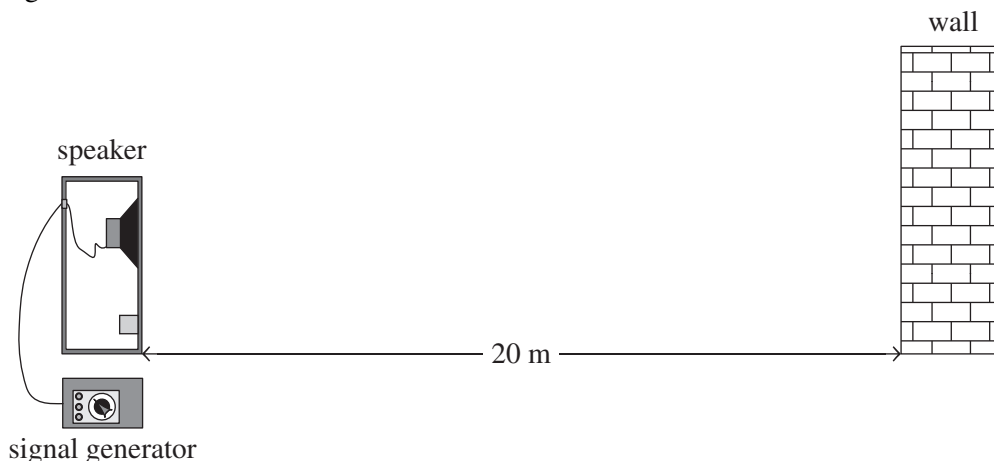


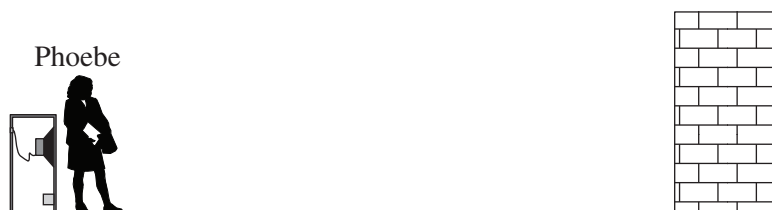
Question 13 (9 marks)

As part of a practical investigation, a group of Physics students are investigating sound as a wave phenomenon.

They set up a speaker that is 20 m from a wall in the school grounds. There are no other walls in the vicinity of the speaker. They use a signal generator to enable the speaker to emit sound in the direction of the wall, as shown in Figure 14.

**Figure 14**

Phoebe, a student in the group, is going to walk from the speaker along the shortest path to the wall, as shown in Figure 15. The students set the signal generator to play a note of wavelength 5.0 m from the speaker.

**Figure 15**

Before Phoebe does so, the student group discusses what Phoebe is expected to hear as she walks from the speaker to the wall.

Samantha predicts that Phoebe will hear a constant intensity throughout her walk.

Harold predicts that Phoebe will hear a gradually increasing sound as she walks to the middle position, and then will hear a gradually decreasing sound as she walks from the middle position to the wall.

Take the speed of sound to be 340 m s^{-1} .

- a. Evaluate Samantha and Harold's predictions.

3 marks
