REQUIRED PRACTICAL · 3.25P · EDEXCEL IGCSE PHYSICS · WAVES

# Speed of Sound in Air *(Triple only)*

**Aim:** investigate the speed of sound in air. Student A makes a sound; it reflects off a wall and Student B times how long the **echo** takes to come back.

## Apparatus — which instruments do you need?

*draw your set-up here: Student A, Student B and the wall*

| Instrument | What it measures |
|---|---|
| | |
| | |

*Also needed: two wooden blocks to bang together (a sharp sound).*

## Method — fill in the gaps

**1.** Stand about 50 m from a large, flat _____. Measure the distance to the wall with a _____.

**2.** Student A bangs two wooden blocks together once to make a short, loud sound.

**3.** Student B starts the _____ when they see the blocks hit, and stops it when they hear the _____.

**4.** Repeat _____ times and calculate the _____ time.

**5.** The sound travels to the wall **and back**, so the distance travelled = _____ × distance to the wall.

## Results

| Attempt | 1 | 2 | 3 | Mean |
|---|---|---|---|---|
| **Time for the echo to return / s** | | | | |

## Analysis — calculate the speed of sound in air

**speed = distance ÷ time (v = s ÷ t)**

distance travelled = _____ m  mean time = _____ s  speed = _____ m/s

## Conclusion

SENTENCE STARTER

The speed of sound in air is _____ m/s.

## Evaluation

The speed of sound in air is between about **330 m/s and 350 m/s**, depending on the temperature. Is your answer in this range?

_____

How could you make this experiment more accurate?