

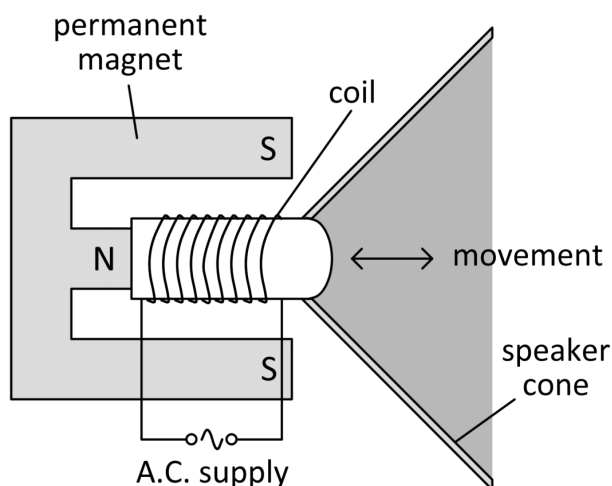
Name: .....

Class: .....



Musicians often use loudspeakers to produce sounds.

The figure below shows how a loudspeaker is constructed.



i. What type of wave is generated by the moving cone?

**A longitudinal wave.**

ii. What is the medium of the wave?

**The air.**

iii. What is the speed of sound in a vacuum?

**0 m/s.**

iv. The loudspeaker cone vibrates when an alternating current flows through the coil. Explain why.

**An explanation to include the following:**

- The current flowing through the coil creates a magnetic field around the coil.
- This magnetic field interacts with the permanent magnetic field or current carrying conductor is in a (permanent) magnetic field
- This produces a resultant force and the coil/cone moves.
- When the direction of the current changes, the direction of the force changes to the opposite direction.

A 2.0 kg object moves at a velocity of 40 m/s. What is the momentum of the object?

**Momentum = mass × velocity**

**Momentum = 2.0 × 40**

**Momentum = 80 kg m/s**

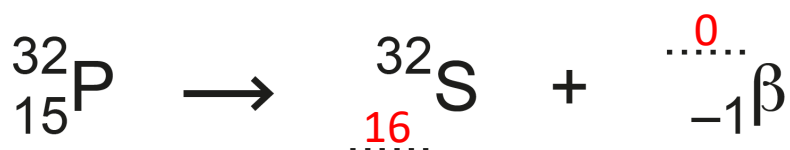
A liquid has a volume of 0.01 m<sup>3</sup> and a mass of 12 kg. What is the density of the liquid?

**Density = mass ÷ volume**

**Density = 12 ÷ 0.01**

**Density = 1200 kg/m<sup>3</sup>**

Phosphorus – 32 gives out beta particles. Complete the equation for the beta decay.



What is the half-life of a material?

**The time it takes for the count rate (activity) from a sample to halve, OR the time for half of the unstable nuclei in a sample to decay.**