

AQA Physics GCSE

RP08 - Waves

Flashcards

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Part 1: Observing water waves in a ripple tank.



What is a ripple tank?



What is a ripple tank?

A shallow glass tank with an oscillating paddle/needle to create waves. It is illuminated from above so the waves can be seen on the surface below the tank.



Outline the basic steps of the practical.



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1. Set up the ripple tank with a lamp above it and white card/paper below it
 2. Switch on the motor attached to the wooden rod
3. Measure the wavelength of the waves being cast onto the card
4. Count the number of waves passing a point in 10 seconds and calculate the frequency
5. Calculate the wave speed



Approximately how much water should you put into the ripple tank? What would the consequence of too much be?



Approximately how much water should you put into the ripple tank? What would the consequence of too much be?

The water should be poured to a depth of around 5 mm. If there is too much water the rod won't produce clear waves and they will be less clearly projected onto the card below.



How should the wooden rod be set up in the ripple tank?



How should the wooden rod be set up in the ripple tank?

The wooden rod should be placed into the tank so that it just touches the surface of the water.



How should you measure the
wavelengths of the waves on the card?



How should you measure the wavelengths of the waves on the card?

1. Adjust the lamp position so that the waves are clearly projected onto the card
2. Using a metre rule, measure across as many waves as you can
3. Divide the distance by the number of waves measured across



What units should your measured wavelength be in?



What units should your measured wavelength be in?

Metres, m.

(It may be easier to measure in cm, but wavelength must be in m for the wave equation).



Why should you measure across more than one wave?



Why should you measure across more than one wave?

To reduce the uncertainty in the measurement and improve the accuracy of the value.



How do you measure the frequency of the waves on the card?



How do you measure the frequency of the waves on the card?

1. Count the number of waves passing a chosen point in 10 seconds
2. Divide the number by 10, to produce a frequency in Hz



What equation is used to calculate wave speed?



What equation is used to calculate wave speed?

Wave Speed = Frequency x Wavelength



When the frequency is in Hertz and the wavelength is in metres, what is the unit for wave speed?



When the frequency is in Hertz and the wavelength is in metres, what is the unit for wave speed?

m/s

Metres per Second



Part 2: Observing waves in a solid.



Outline the basic steps of the practical.



Outline the basic steps of the practical.

1. Attach a piece of string to a vibration generator at one end and to a mass hanger suspended over a pulley at the other
2. Place the wooden bridge under the string before it reaches the pulley
3. Start the generator and alter the tension and bridge until it looks like the wave isn't moving
4. Measure the wavelength, and record the frequency
5. Calculate wave speed



How do you measure the wavelength?



How do you measure the wavelength?

1. Using a metre ruler, measure across as many loops as you can
2. Each loop is a half wavelength
3. Divide the distance by the number of loops and multiply by two to get the wavelength



What value is used for the frequency?



What value is used for the frequency?

The value should be taken from the frequency generator settings.

