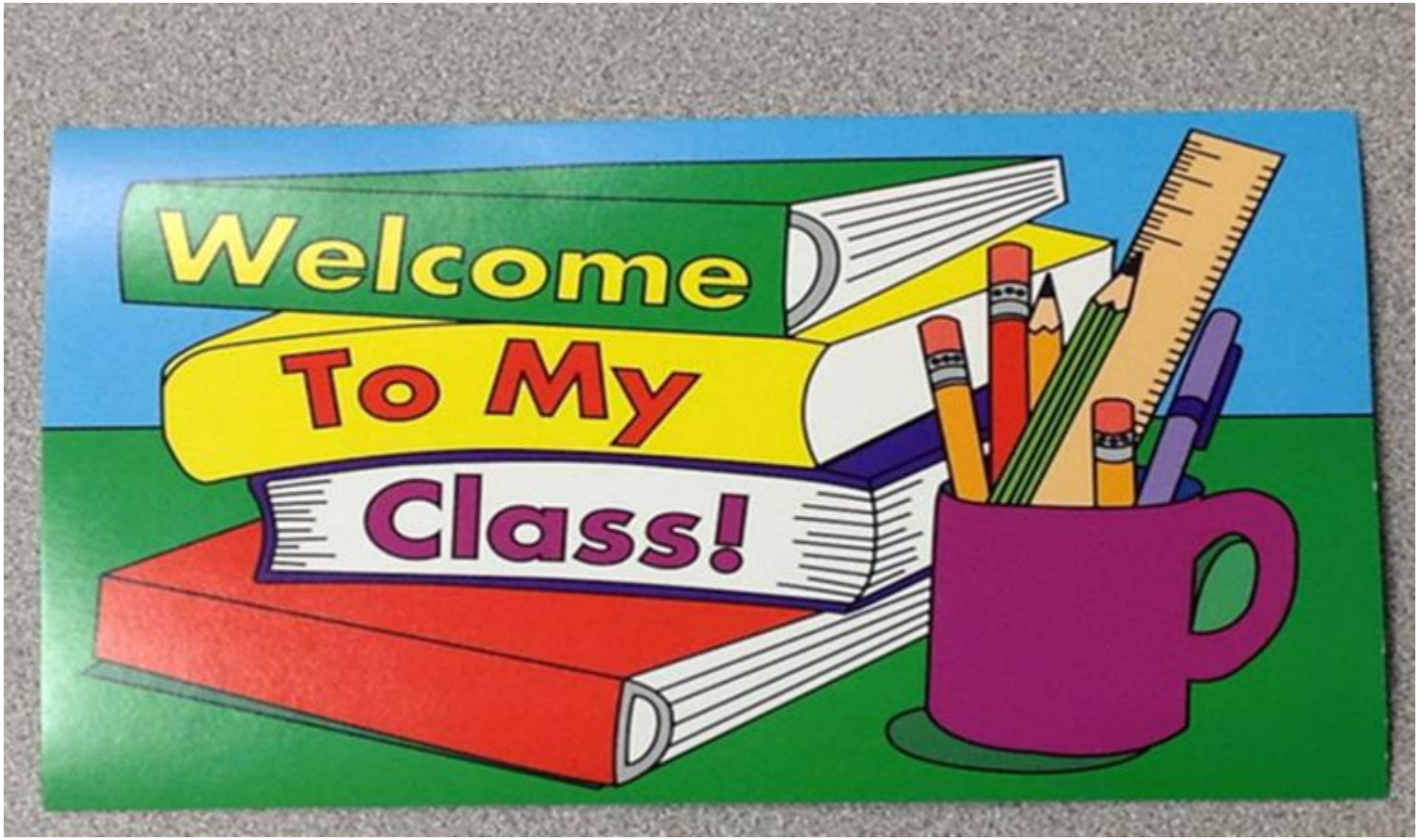
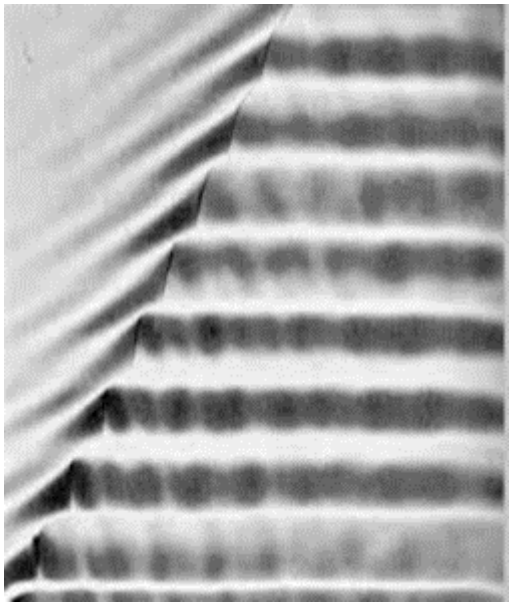
Pakistan School
Kingdom of Bahrain

CLASS : 10
SUBJECT : PHYSICS

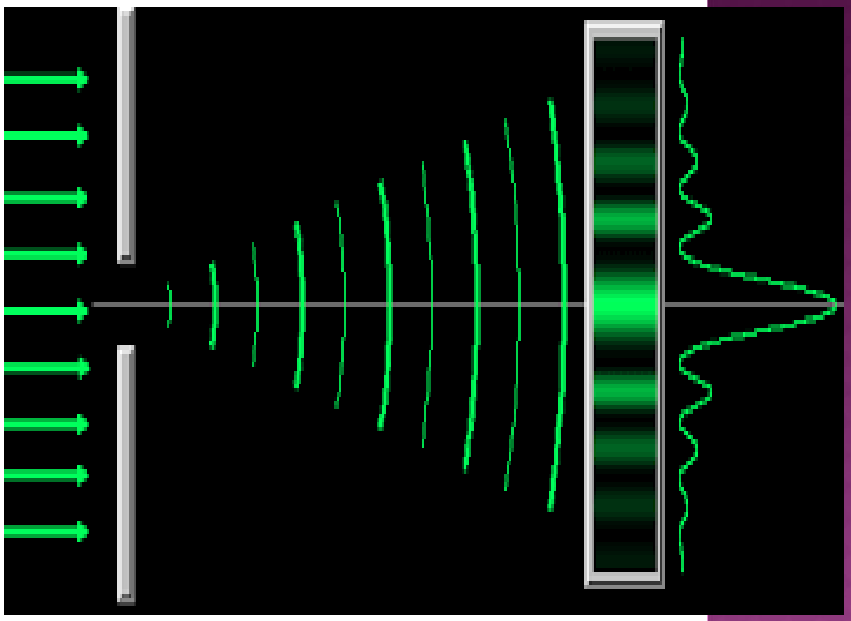


ENGAGING STARTER

- Describe the name of some properties that are studied by using ripple tank:



TOPIC



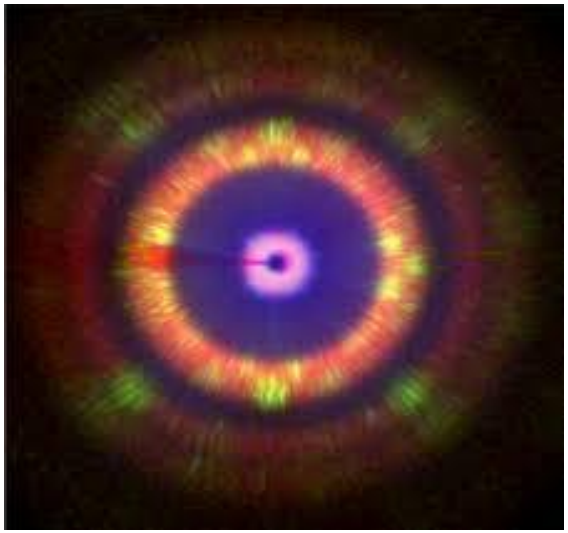
- 1. Diffraction

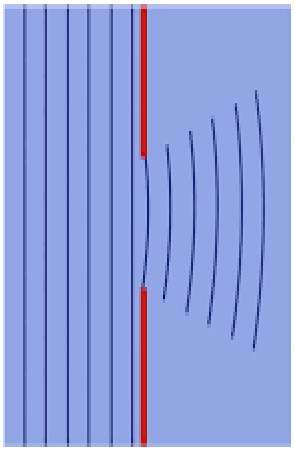
OBJECTIVE

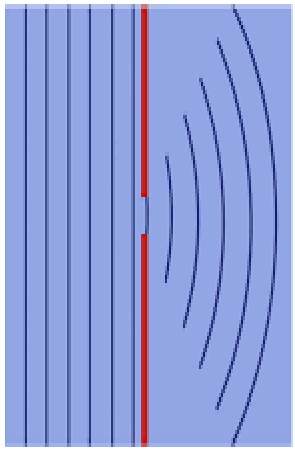
- At the end of this lesson students will be able to :
- Analyze the properties of waves. (Diffraction)

DIFFRACTION

- The bending or spreading of wave around the sharp edges or corners of obstacles is called diffraction.

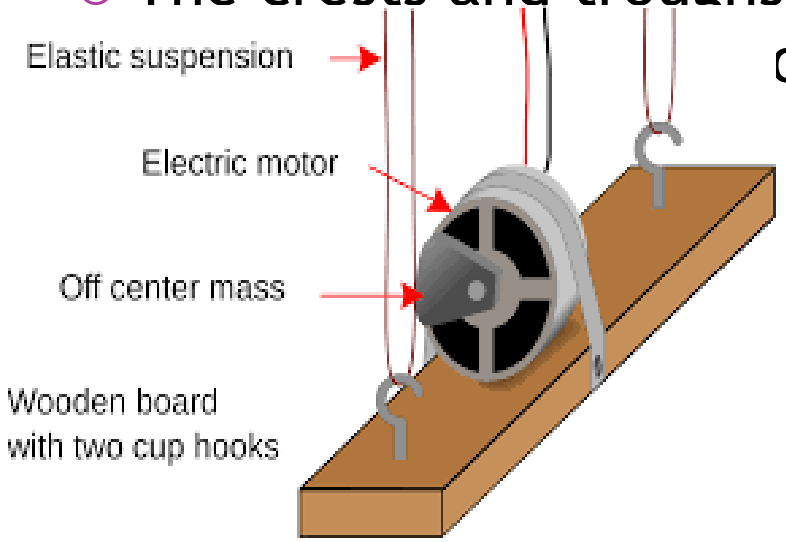


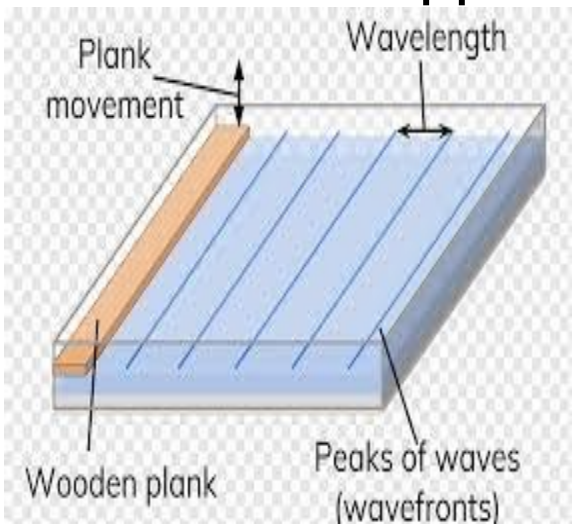


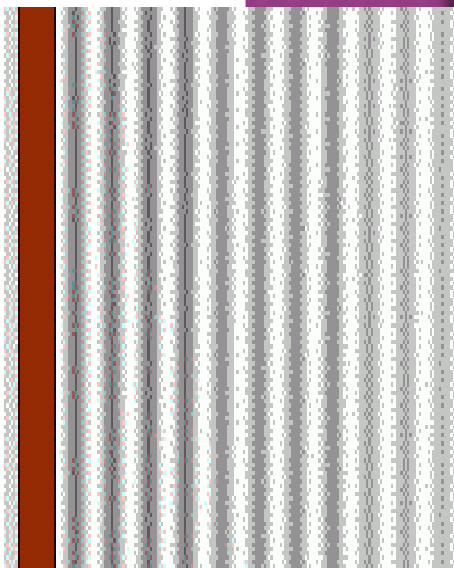


WORKING

- . On setting the vibrator ON, this wooden plate starts vibrating to generate plane water weaves.
- An electric bulb is hung above the tray to observe the image of water waves on the paper or screen.
- The crests and troughs of the waves appear as o

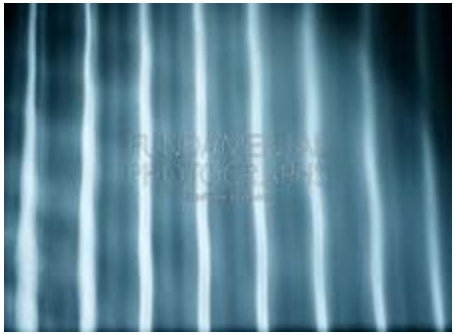


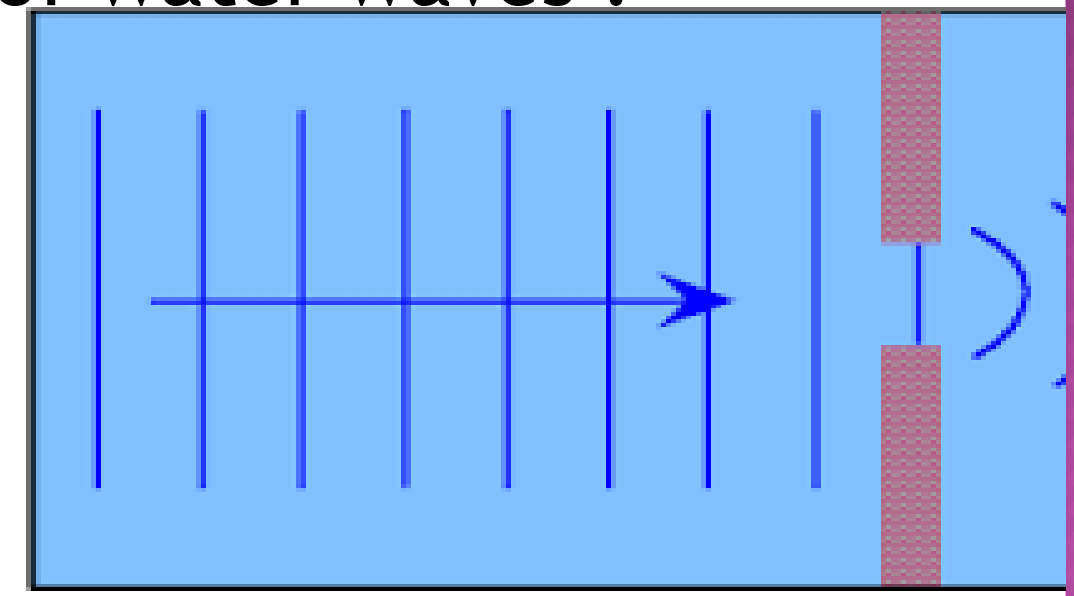




EXPLANATION

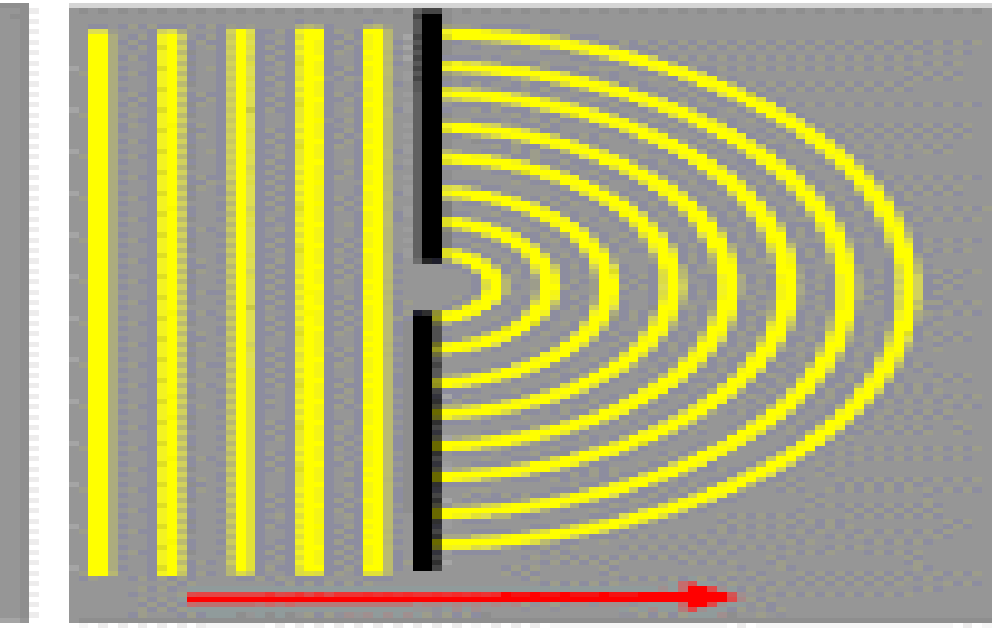
- After generating plane wave in ripple tank , place two obstacles in line in such a way that separation between them is equal to the wavelength of water waves .



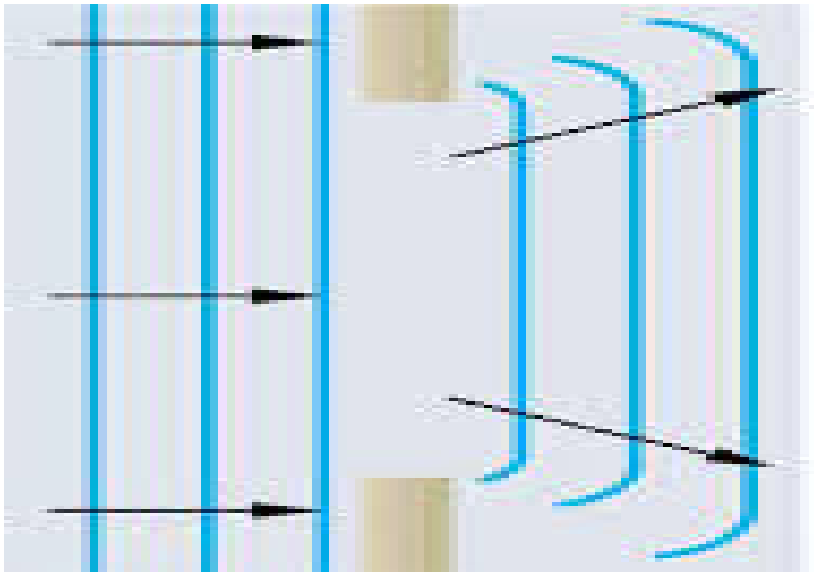


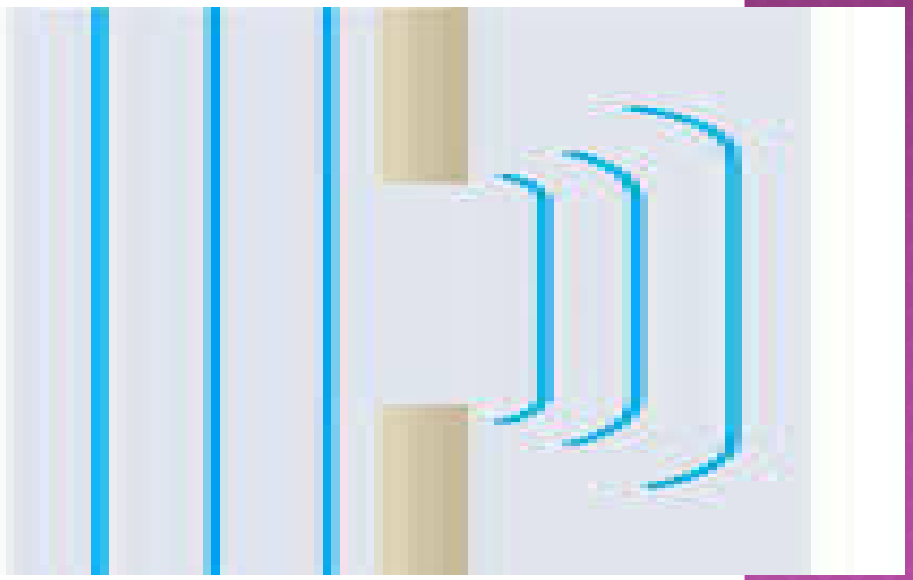
TO STUDY DIFFRACTION

- To this observation of diffraction of water waves, when separation between slit is equal to wavelength . The waves after passing the slit will spread in every direction and change into almost semicircular pattern .

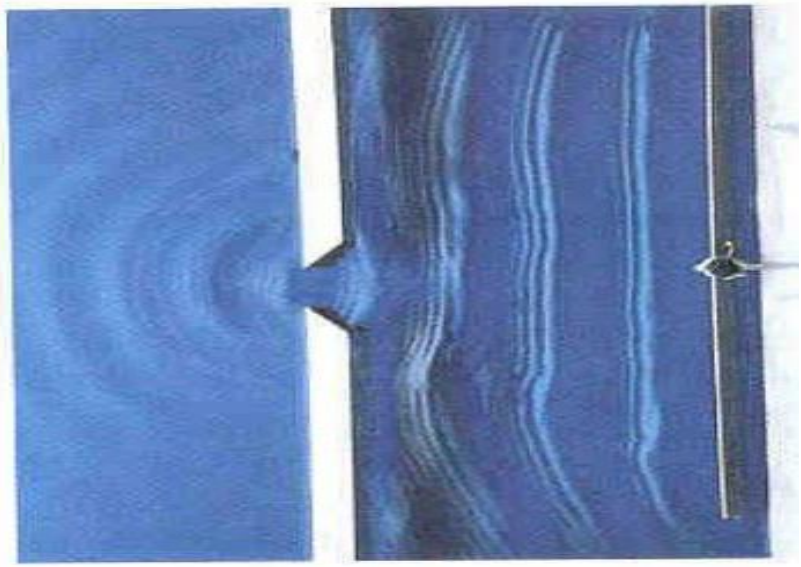


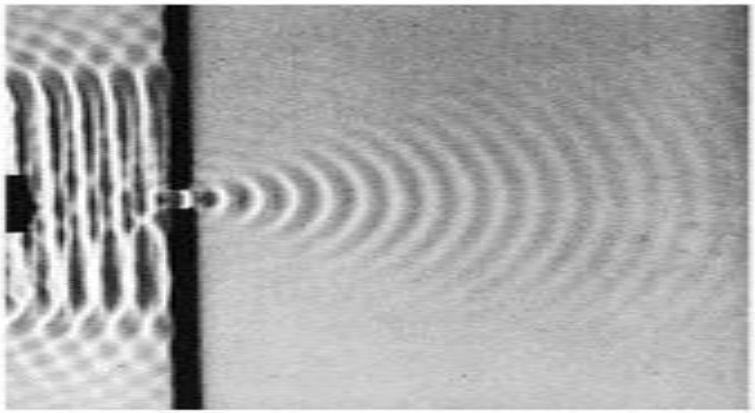
- When separation between the obstacle is larger than wavelength of wave . In this case only a small diffraction occurs near the corners of the obstacle.





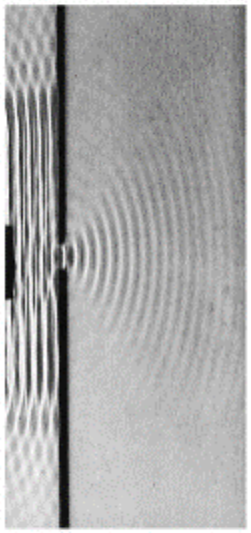
CONCLUSION



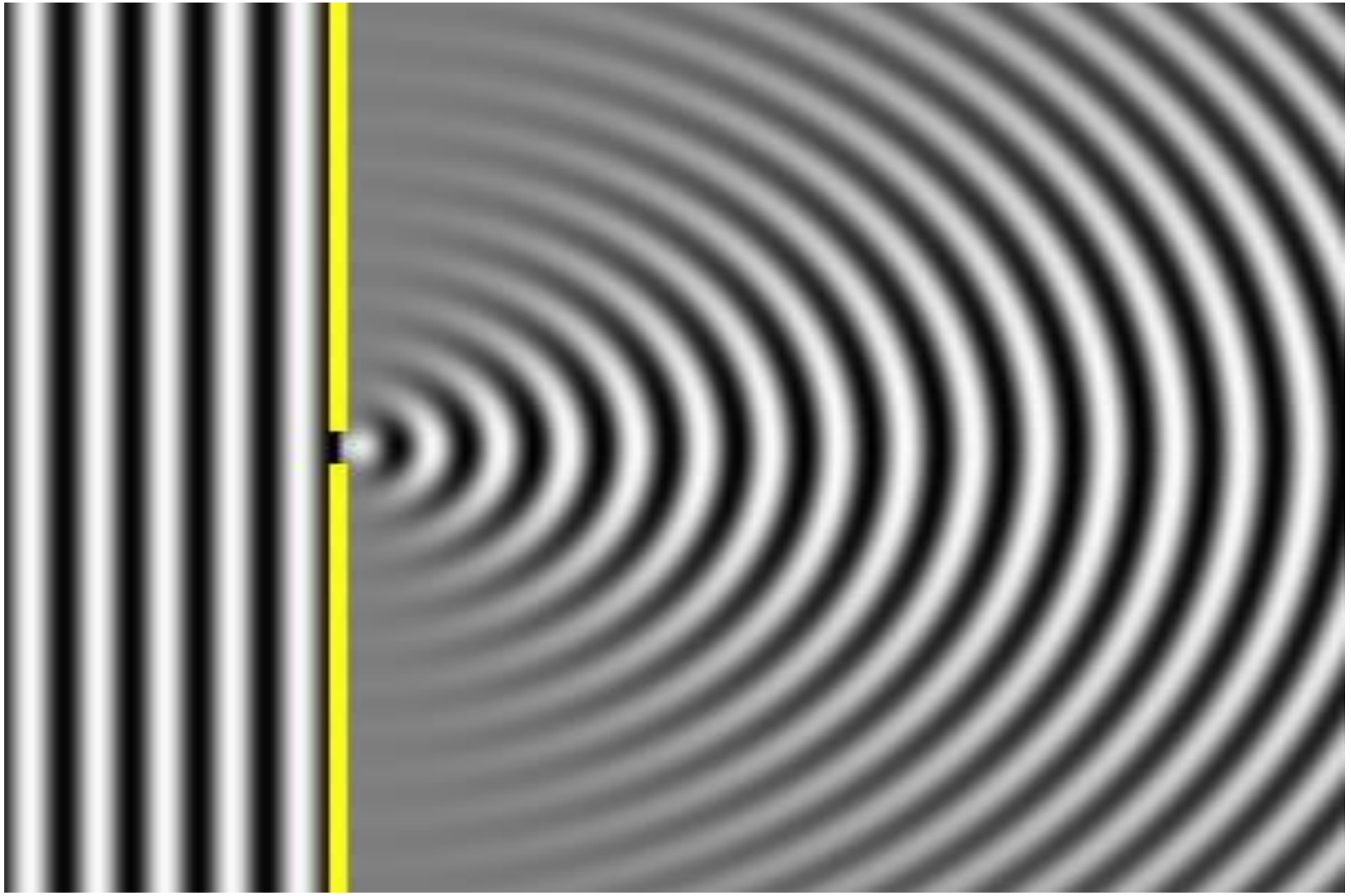


Reminder: What is Diffraction?

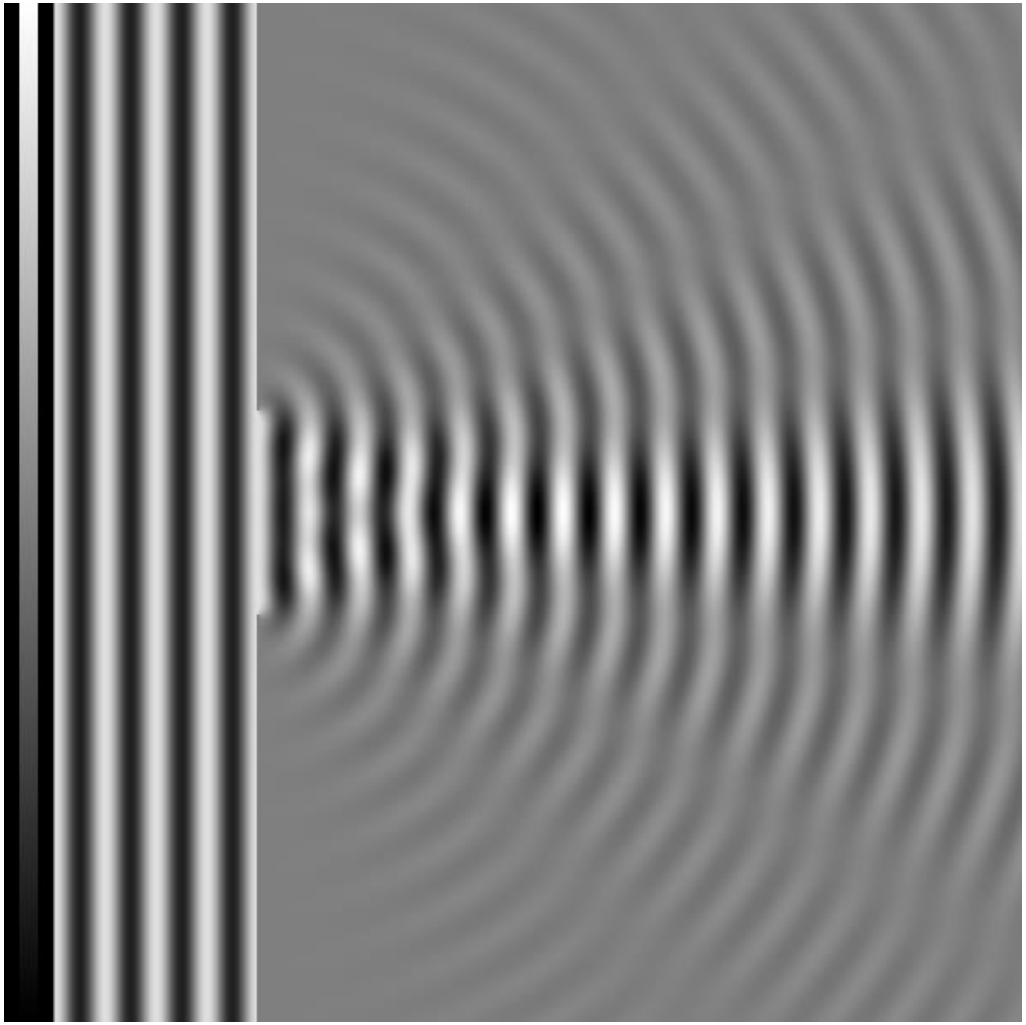
- Bending and spreading of a wave into a region behind an obstruction
- Examples: waves passing through openings or around corners
- Effects depend on how wide the opening is relative to wave length
  - Wide opening: little wave spreading
  - Narrow opening: wave fans out, changes shape
    - (Wide: opening > wave length;
    - Narrow: opening ~ wavelength



DIFFRACTION (WITH SMALL SEPARATION BETWEEN OBSTACLES)



DIFFRACTION (WITH LARGE SEPARATION BETWEEN OBSTACLES)



- What is the wavelength of the radio waves transmitted by an FM station at 90M Hz and speed of radio waves is 300000000 m/s.

Given

Frequency = f = ……..

Speed = v = ……

To find

Wavelength = λ = ?

Solution

Using wave equation

V = …. λ

λ = ……./……..

λ = …….m

PLENARY

- To study diffraction we have to put two …….in the path of water waves.
- The bending of waves around the corners of obstacles is known as …(reflection / diffraction)
- If the separation between the obstacles is equal to the wave length of water waves then ….. Pattern is formed.
- Diffraction is done only in water waves. T/ F

HOME WORK

- Search and write some daily life applications of diffraction .
- Light waves or
- water waves .

STAY HOME!
STAY SAFE!

- Allah Hafiz