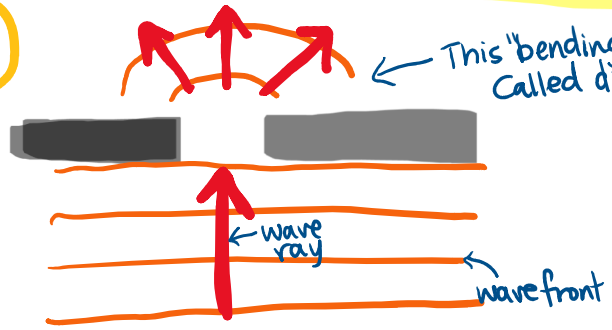
Watch "Diffraction" Video clip before you start

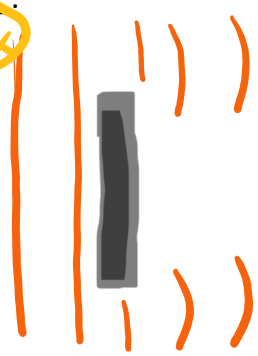
L6 Diffraction

Definition: The bending of a wave disturbance as it passes the edge of an obstacle or through an opening in a barrier.

Ex



Ex

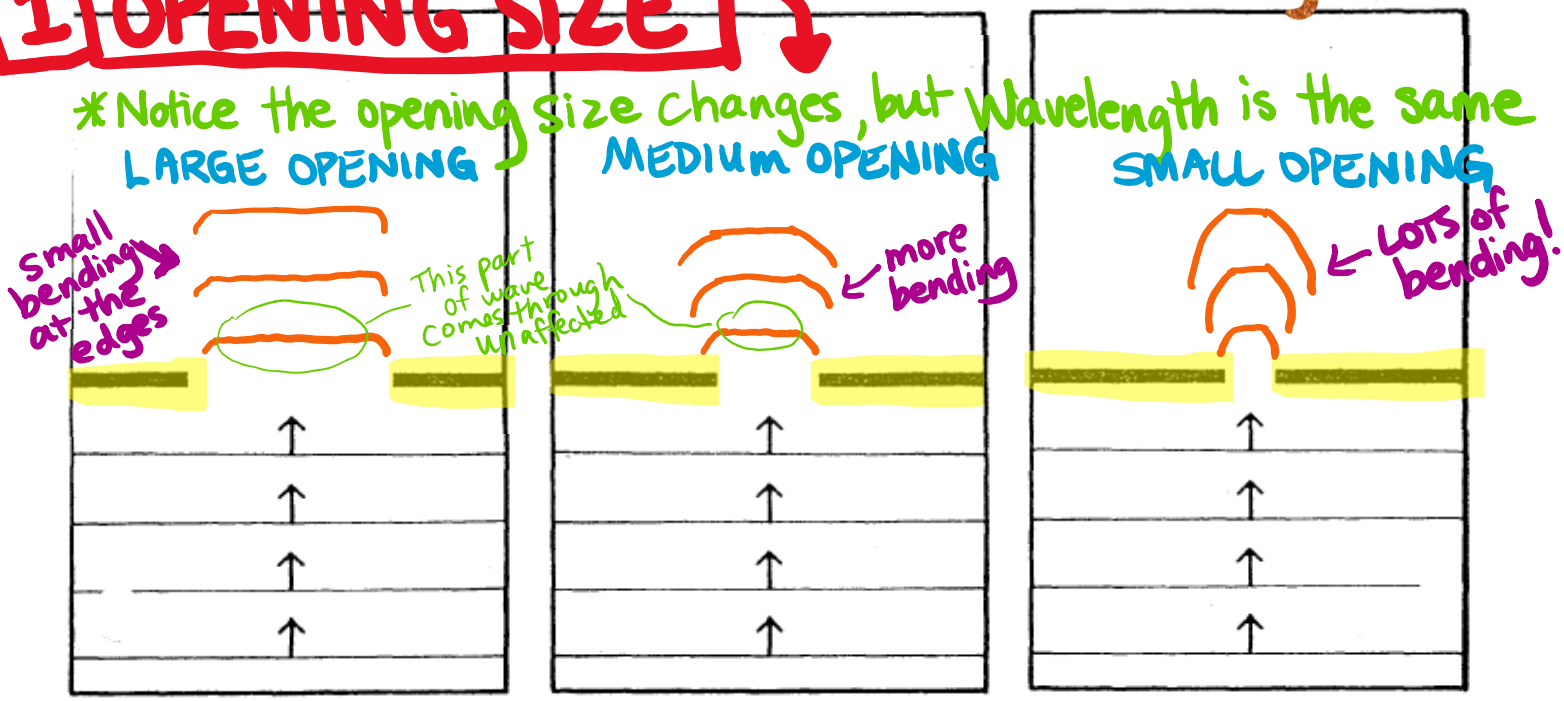


NOTE:
This is different from REFRACTION.
Refraction-bends as it changes mediums
Diffraction-bends as it encounters a barrier or obstacle.

KEYS TO DIFFRACTION → Opening size, Wavelength size

1 OPENING SIZE

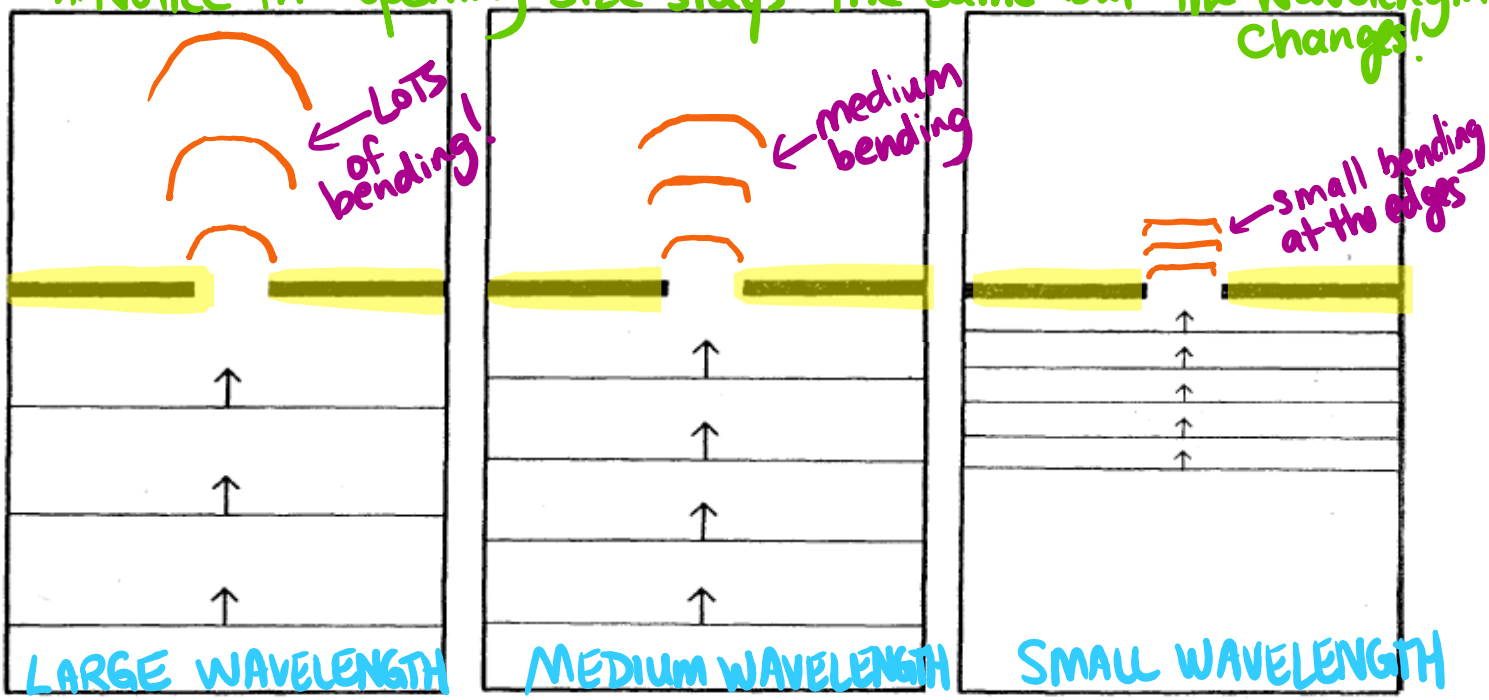
*Notice the opening size changes, but Wavelength is the same



The Smaller the opening relative to wavelength, the greater the diffraction.

2 WAVELENGTH SIZE

*Notice the opening size stays the same but the wavelength changes!



The larger the wavelength of the approaching wave, the greater the diffraction.

Assignment Below

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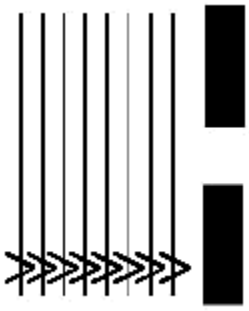
We will only be drawing diagrams to describe what happens, no formula or math.

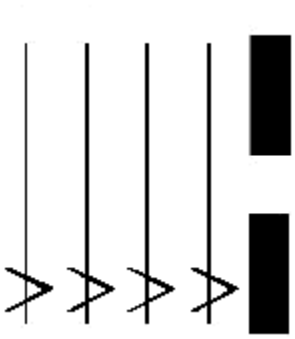
A6 Diffraction

*For each question Sketch what will happen

In each of the following diagrams, a series of plane wavefronts approach an object from the left.

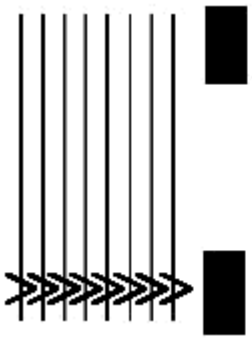
1. Draw the waves as they pass through the slits.

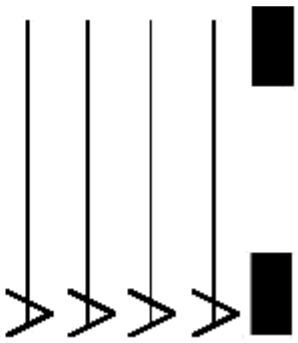




2. Compare how the wavelength affects the amount of diffraction that occurs.

3. Draw the waves as they pass through the slits.



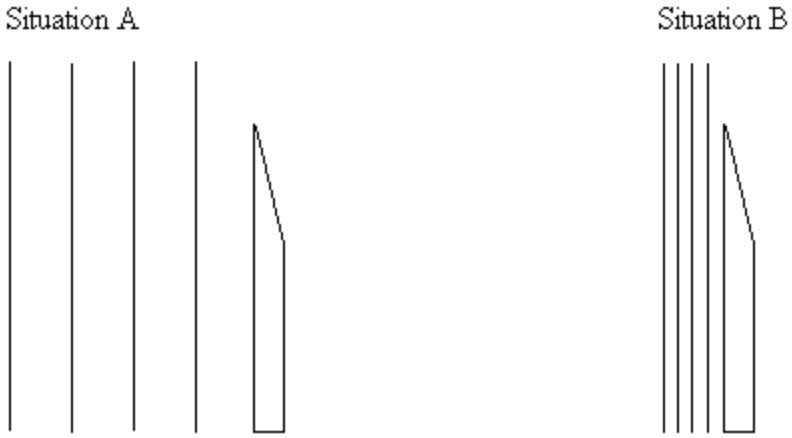


4. Compare how the wavelength affects the amount of diffraction that occurs.

5. Examining situations 1 and 3, compare how the opening size affects the amount of diffraction.

6. Ocean waves are approaching an opening into a harbour. The opening is 100 m wide. For which wavelength of ocean waves would there be the greater diffraction, those with a wavelength of 50 m or those with a wavelength of 200 m? Why?

7. The diagram below shows two different types of water waves approaching a sharp edge. Which type of wave will show the greatest diffraction, the waves in situation A or the waves in situation B? Why?



Try This One….We will talk about what happens in the next lesson.
Draw the waves as they pass through the slits.

Describe your prediction of what you would see with two openings in the barrier.

Send in a Pic of your diagrams when Completed.