شرح الدرس الثالث سلوك الموجة Behavior Wave من الوحدة الأولى الاهتزازات والموجات

تاريخ إضافة الملف على موقع المناهج: 2024-10-25 17:07:17

المزيد من مادة فيزياء:	ملفات ا كتب للمعلم ا كتب للطالب ا اختبارات الكترونية ا اختبارات ا حلول ا عروض بوربوينت ا أوراق عمل منهج انجليزي ا ملخصات وتقارير ا مذكرات وبنوك ا الامتحان النهائي ا للمدرس

التواصل الاجتماعي بحسب الصف العاشر المتقدم

صفحة المناهج الإماراتية على فيسبوك					

المواد على تلغرام	التربية الاسلامية	اللغة العربية	اللغة الانجليزية	الرياضيات

المزيد من الملفات بحسب الصف العاشر المتقدم والمادة فيزياء في الفصل الأول

1	شرح الدرس الثاني خصائص الموجة Properties Wave من الوحدة الأولى الاهتزازات والموجات
2	شرح الدرس الأول الحركة الدورية Motion Periodic من الوحدة الأولى الاهتزازات والموجات
3	الدروس المطلوبة للامتحان الوزاري منهج انسباير
4	حل أسئلة مراجعة عامة اختيار من متعدد منهج انسباير
5	ملخص الوحدات الأولى والثانية والثالثة نظام المقررات

MAINIDEA

Waves can interfere with other waves.

K *What I Know*	**W** *What I Want to Find Out*	**L** *What I Learned*

Essential Questions

- How are waves reflected and refracted at boundaries between mediums?
- How does the principle of superposition apply to the phenomenon of interference?

Vocabulary

Review

- tension

New

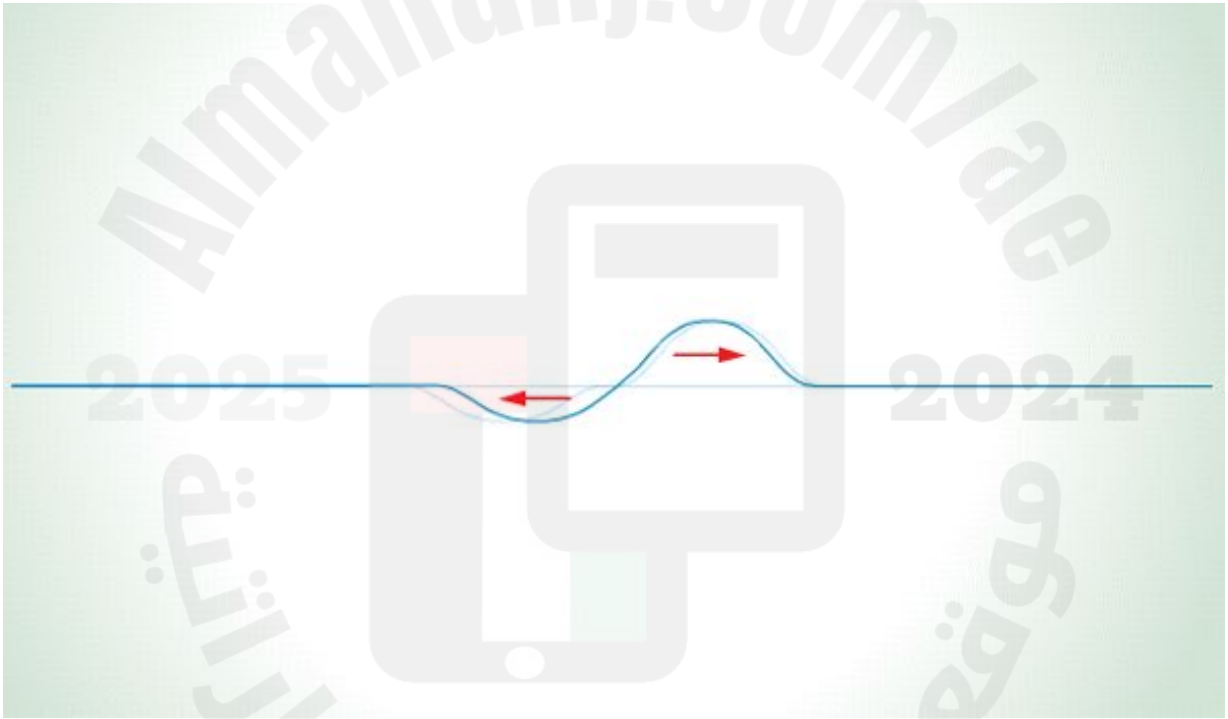
- incident wave
- reflected wave
- principle of superposition
- interference
- node
- antinode
- standing wave
- wavefront
- ray
- normal
- law of reflection
- refraction

Waves at Boundaries

- When a wave encounters the boundary of the medium in which it is traveling, some or all of the wave can
  - reflect back into the medium
  - pass through the boundary into another medium, often changing direction at the boundary
- The wave that strikes the boundary is called the incident wave.
- If some of the energy of the incident wave is reflected backward, the returning wave is called the reflected wave.
- Whether the reflected wave is upright or inverted depends on the characteristics of the two mediums.

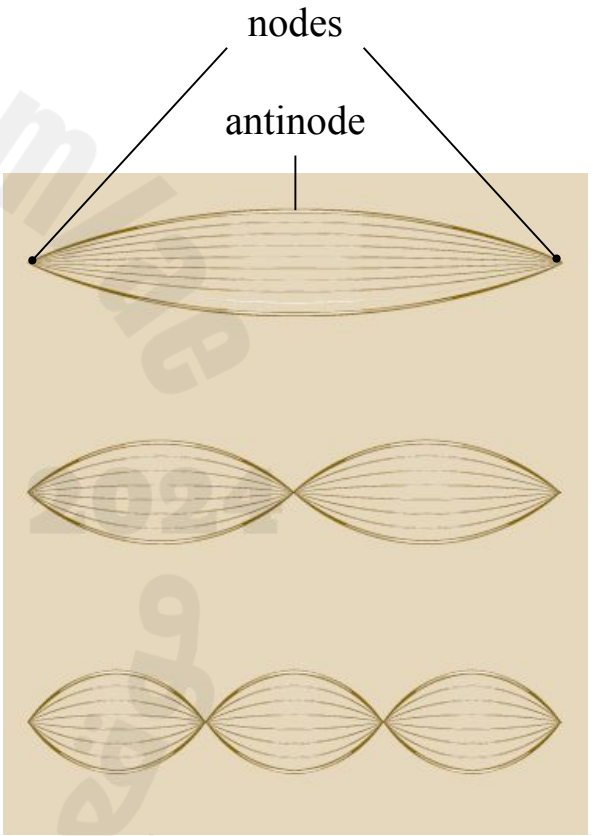
Superposition of Waves

Go to your ConnectED resources to play ***Animation: Wave Interference.***



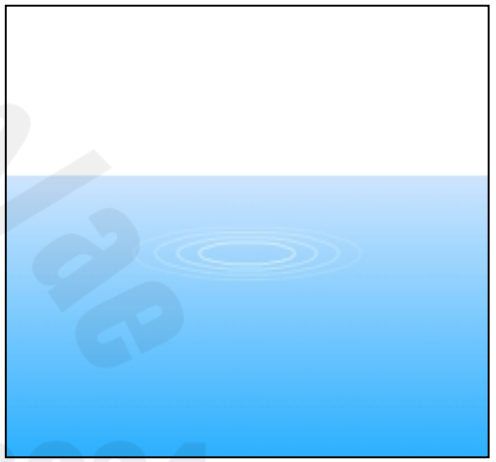
Superposition of Waves

- The principle of superposition states that the displacement of a medium caused by two or more waves is the algebraic sum of the displacements caused by the individual waves.
- When waves combine, they can cancel or form a new wave of lesser or greater amplitude.
- A point that does not move is called a node.
- A point that has the largest displacement is called an antinode.
- The result of the superposition of two or more waves is called interference.
- A standing wave is a wave that appears to be standing still, produced by the inference of two travel waves moving in opposite directions.



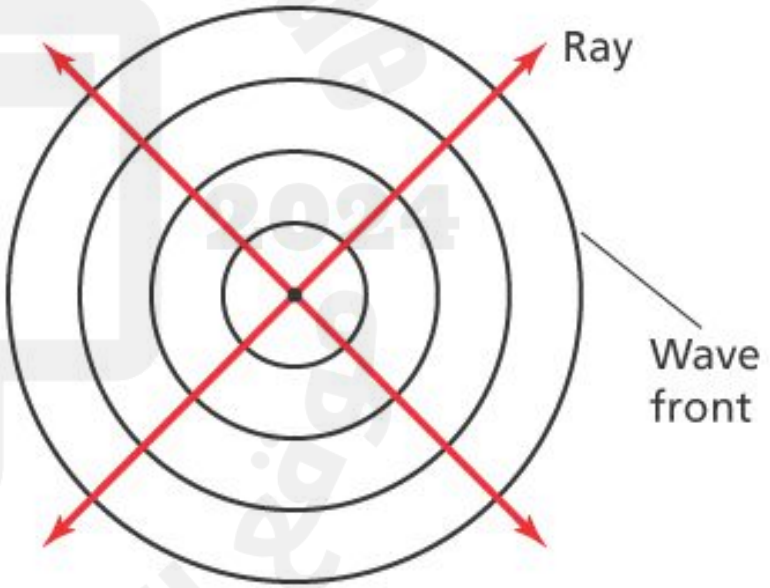
Waves in Two Dimensions

- When you throw a small stone into a calm pool of water, you see the circular crests and troughs of the resulting waves spreading out in all directions.
- You can sketch those waves by drawing circles to represent the wave crests.
- If you dip your finger into water with a constant frequency, the resulting sketch would be a series of concentric circles, called wavefronts, centered on your finger.
- A wavefront is a line that represents the crest of a wave in two dimensions, and it can be used to show waves of any shape, including circular waves and straight waves.



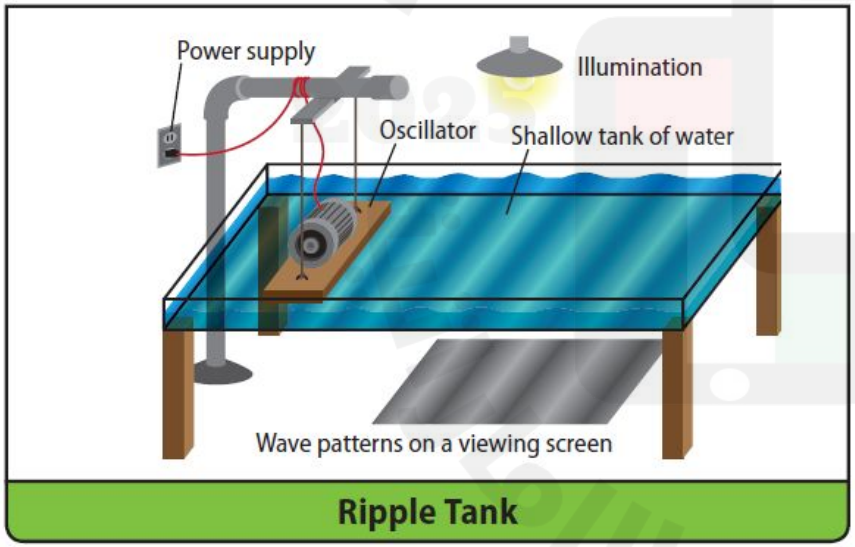
Waves in Two Dimensions

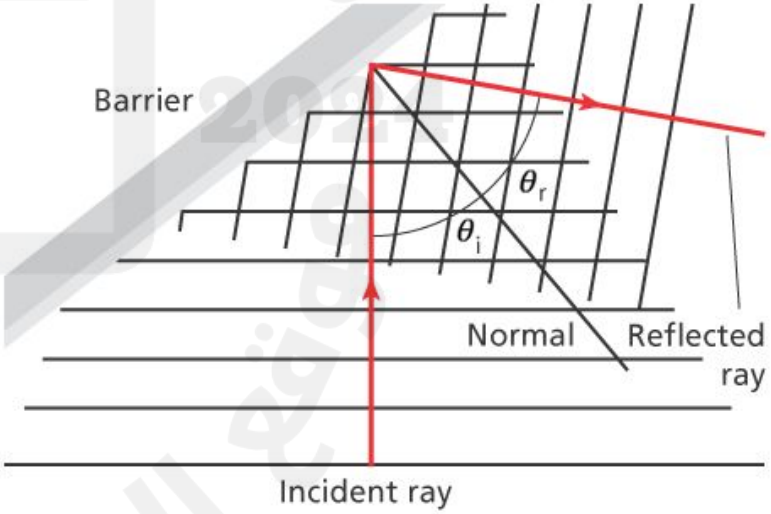
- Wavefronts drawn to scale show the wavelengths of the waves, but not their amplitudes.
- Two-dimensional waves always travel in a direction that is perpendicular to their wavefronts. That direction can be represented by a ray, which is a line drawn at a right angle to the crest of the wave.



Waves in Two Dimensions

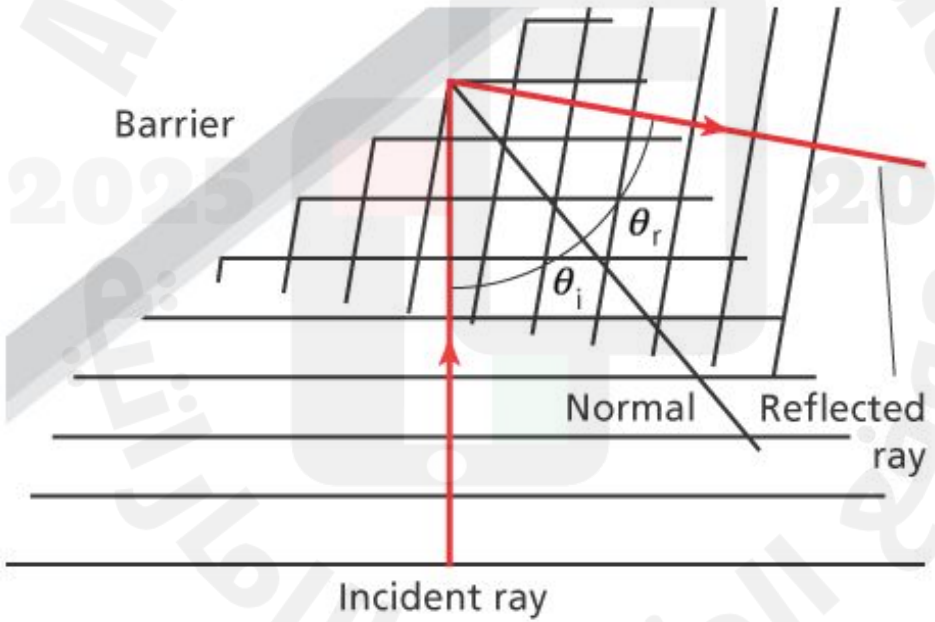
- A ripple tank can be used to show the properties of two-dimensional waves. Vibrating boards produce waves with long straight wavefronts.
- A rigid barrier placed in the ripple tank will reflect waves. This can be modeled by a ray diagram.
- The orientation of the barrier is shown by a line, called the normal, which is drawn perpendicular to the barrier.





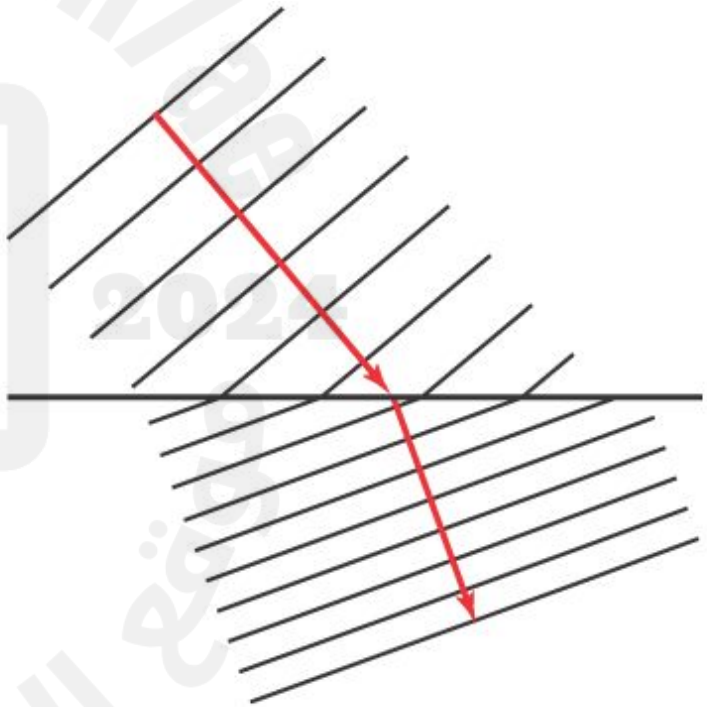
Waves in Two Dimensions

- The angle between the incident ray and the normal is called the angle of incidence.
- The angle between the normal and the reflected ray is called the angle of reflection.
- The law of reflection states that the angle of incidence is equal to the angle of reflection.



Waves in Two Dimensions

- A ripple tank can also model the behavior of waves as they travel from one medium into another.
- For example, the water in one part of the tank might be shallower than the water in the rest of the tank. This shallow water acts like a different medium.
- As the waves move from deep to shallow water, their speed decreases, and the direction of the waves changes.
- The change in the direction of waves at the boundary between two different media is known as refraction.
- Because the waves in the shallow water are generated by the waves in the deep water, their frequency is not changed.
- Based on the equation $\lambda = v/f$, the decrease in the speed of the waves means that the wavelength is shorter in the shallower water.



Review

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