

ملخص وتدريبات الدرس الثالث behavior Wave من الوحدة الثالثة منهج انسابير



تم تحميل هذا الملف من موقع المناهج الإماراتية

موقع المناهج ⇨ المناهج الإماراتية ⇨ الصف العاشر المتقدم ⇨ فيزياء ⇨ الفصل الأول ⇨ ملفات متنوعة ⇨ الملف

تاريخ إضافة الملف على موقع المناهج: 11:36:15 2025-10-16

ملفات اكتب للمعلم اكتب للطالب | اختبارات الكترونية | اختبارات | حلول | عروض بوربوينت | أوراق عمل
منهج انجليزي | ملخصات وتقارير | مذكرات وبنوك | الامتحان النهائي | للمدرس

المزيد من مادة
فيزياء:

إعداد: أحمد سعد

التواصل الاجتماعي بحسب الصف العاشر المتقدم



صفحة المناهج
الإماراتية على
فيسبوك

الرياضيات

اللغة الانجليزية

اللغة العربية

التربية الاسلامية

المواد على تلغرام

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

مسودة الهيكل الوزاري الجديد منهج انسابير

1

مذكرة الوحدة الثالثة lens and refraction منهج انسابير

2

أسئلة مراجعة في الاهتزازات والموجات

3

أوراق عمل درس الحركة الدورية قانون هوك

4

أوراق عمل مراجعة وحدة الاهتزازات والموجات

5

أكاديمية أجيال المستقبل

مرخصة من قبل دولة الإمارات العربية المتحدة



2025

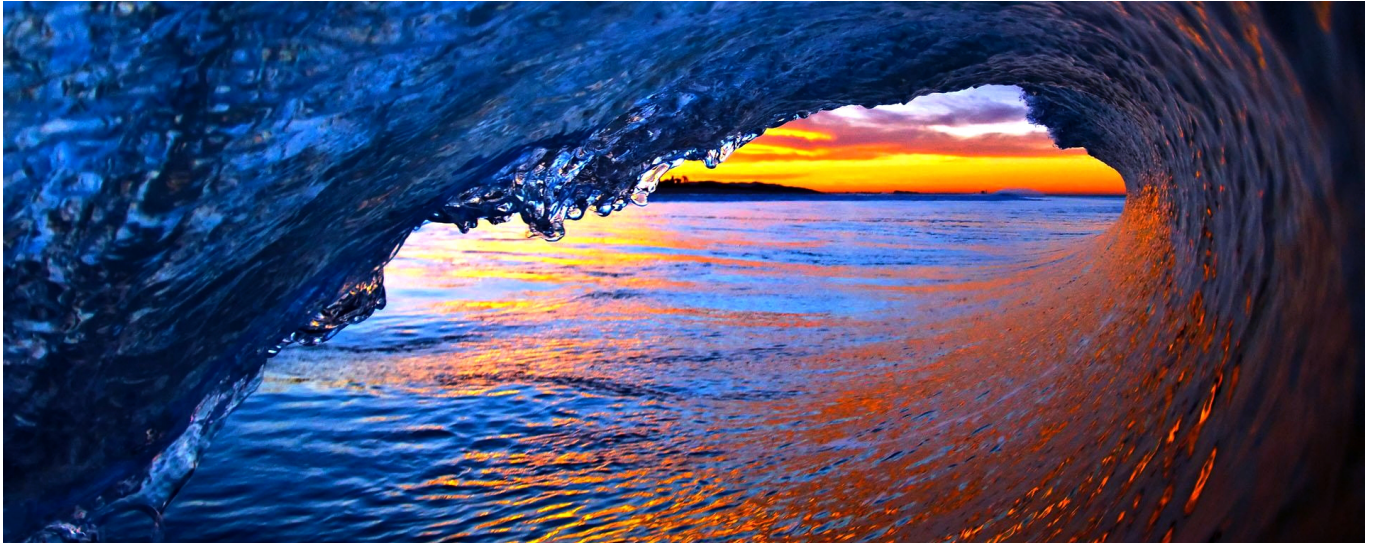
PHYSICS

Grade 10
Advance

Dr. Ahmed Saad



MRS. AYA | MRS. YASMIN
050 717 5602 | 050 901 6674



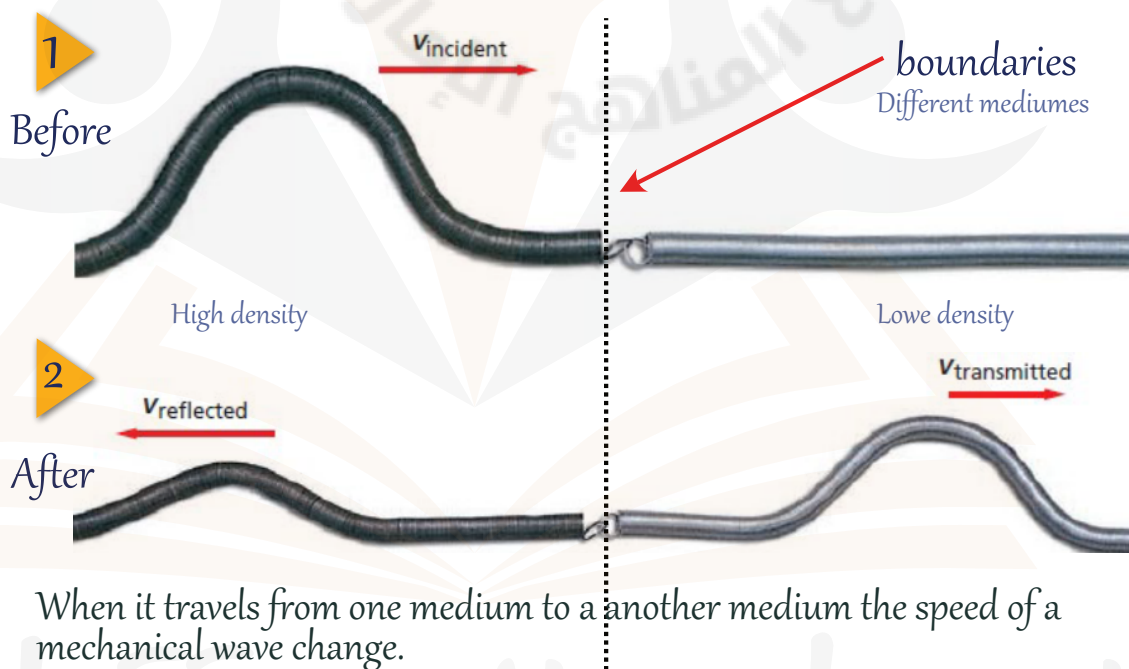
Lesson 3

Wave Behavior

Wave at boundaries

When a wave reaches a boundary between two different media, several things can happen. The wave's behavior at the boundary depends on the properties of both media and the nature of the wave. Here's an overview of the main wave behaviors at boundaries:

What happens when a wave travels across a boundary (from one medium into another medium)?



When it travels from one medium to a another medium the speed of a mechanical wave change.

Mrs Aya 0507175602

1

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The speed of a mechanical wave depends only on the properties of the medium it passes through.

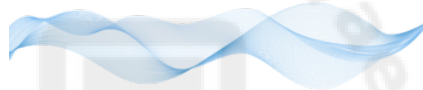
In Water

For water waves, the depth of the water affects wave speed.



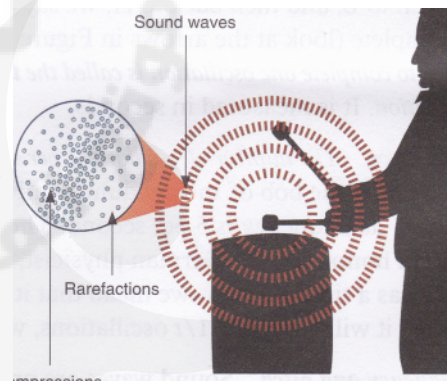
In Air

For sound waves through air, the temperature affects wave speed.



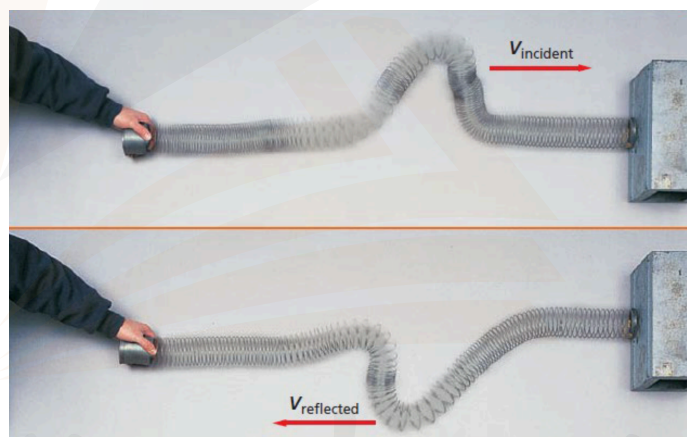
In Solid

For waves on a spring, the speed depends on the spring's tension and mass per unit length.



Rigid boundaries

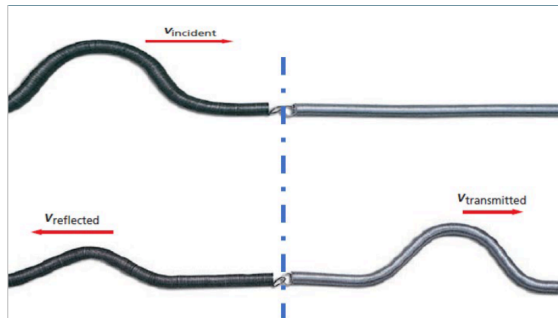
- When a wave pulse hits a rigid boundary, the energy is reflected back, as shown in Figure.
- Very little energy is transmitted into the wall.



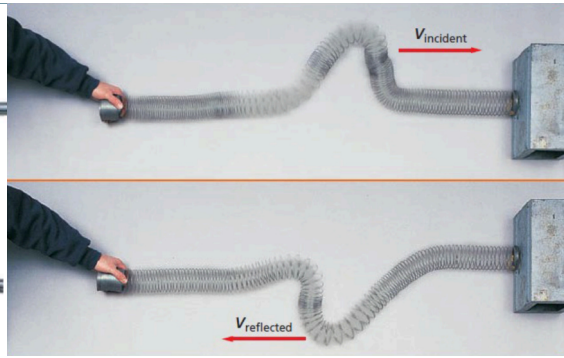
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Mechanical wave remains upright if reflected from a free end.



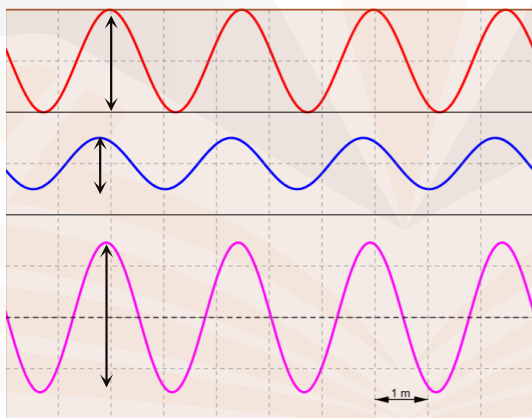
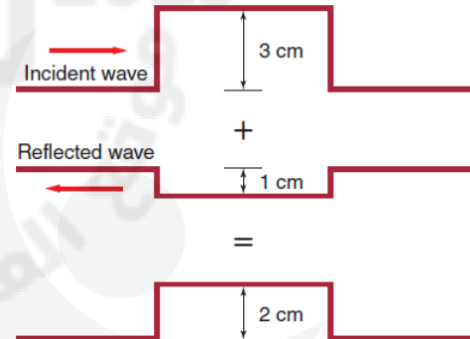
Mechanical wave is inverted if reflected from a fixed end.

What happen when a wave pulse traveling along a spring meets a reflected pulse that is coming back from a boundary?

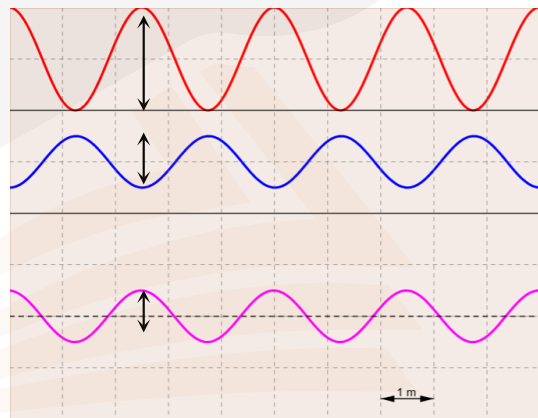
principle of superposition

When two or more waves overlap in a medium, the resulting wave at any given point is the sum of the individual waves's amplitudes at that point.

The result of the superposition of two or more waves is called **interference**.



Addition



Subtraction

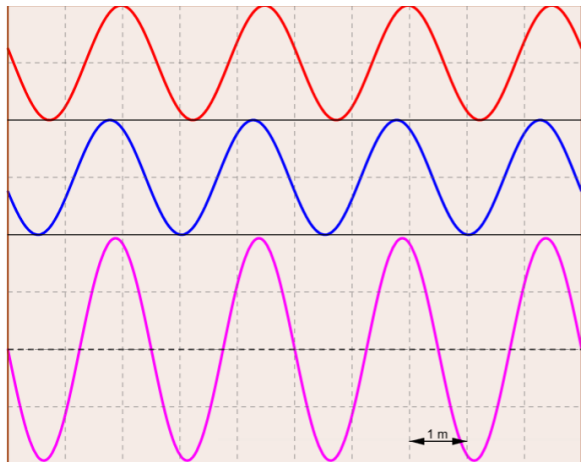
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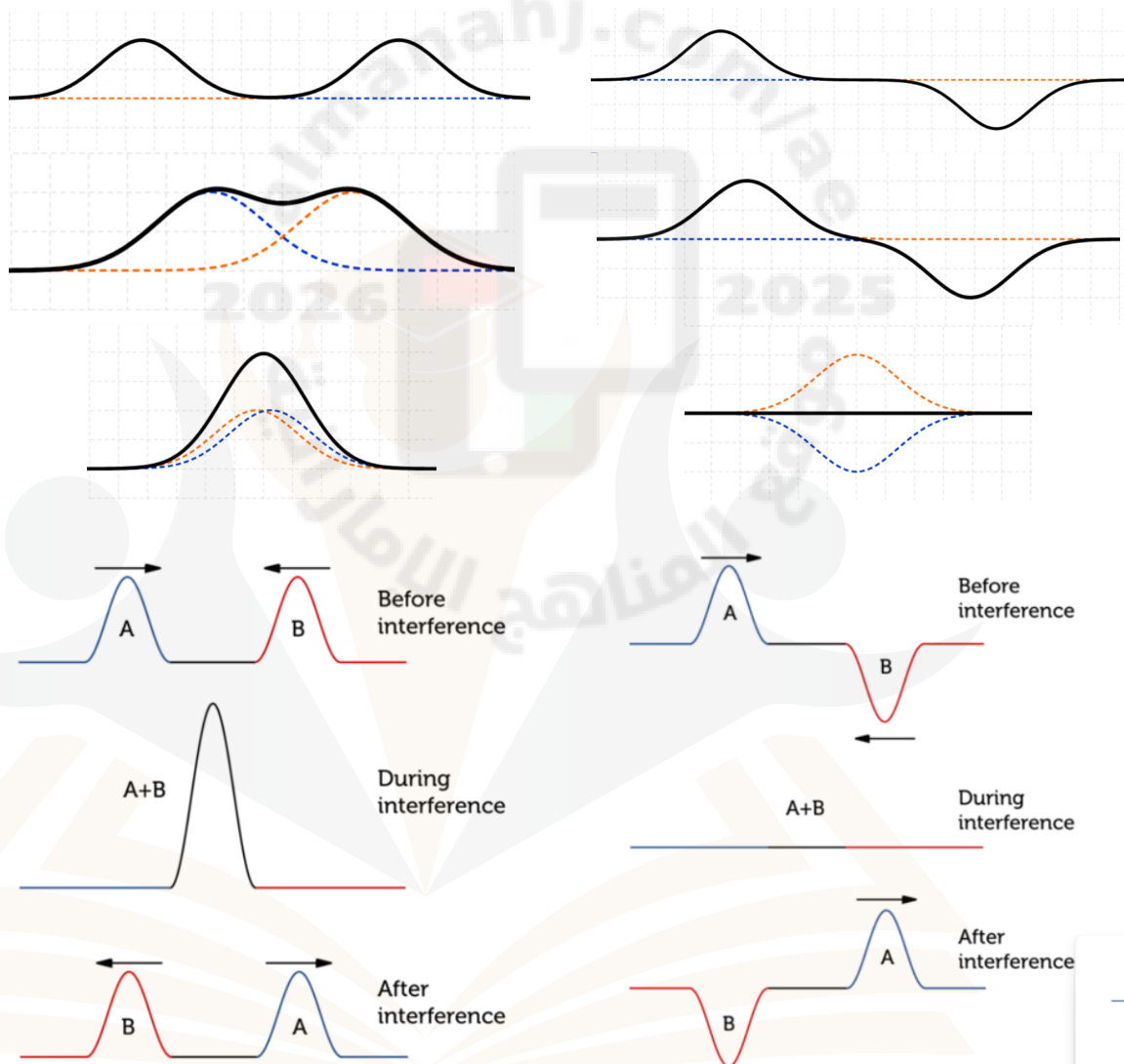
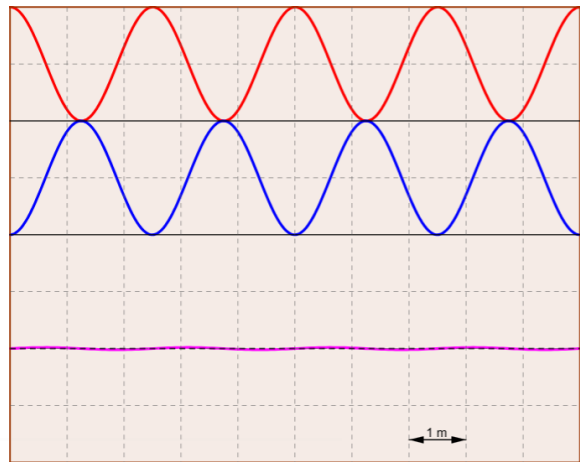
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Constructive Interference



Destructive Interference

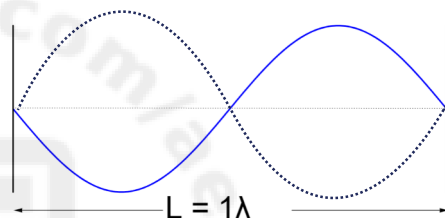
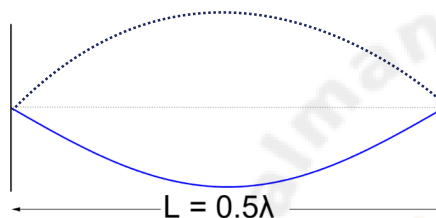
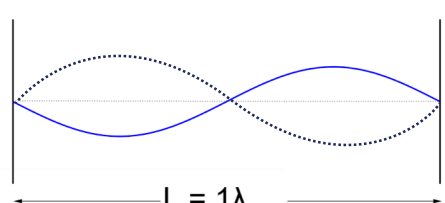
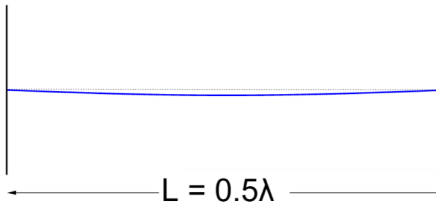
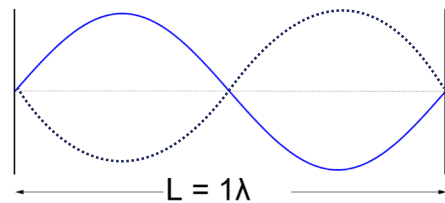
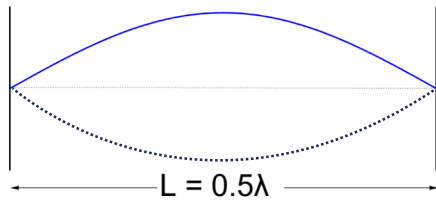


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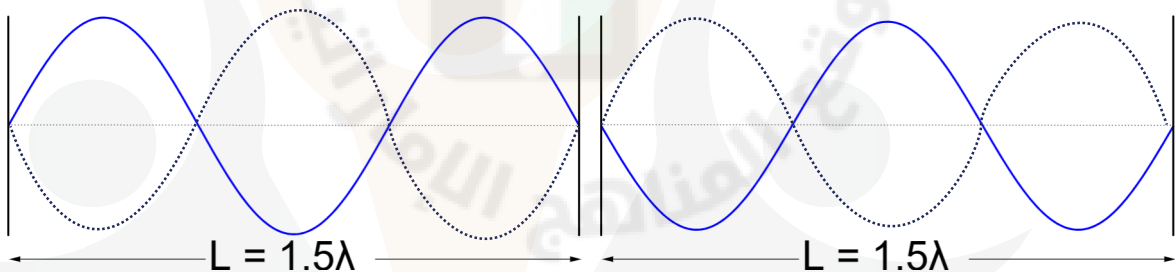
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Standing Waves in string



First harmonic with
two nodes

Second harmonic with
two nodes

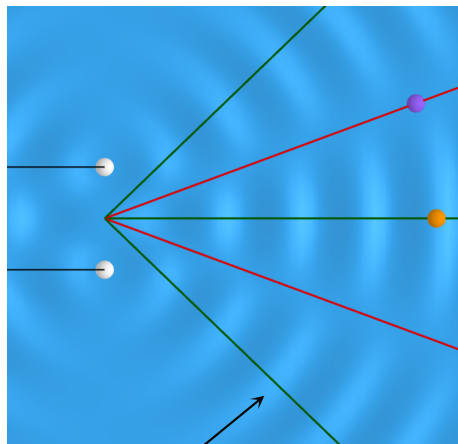


Third harmonic with
two nodes

$$\therefore \lambda = \frac{2L}{n}$$

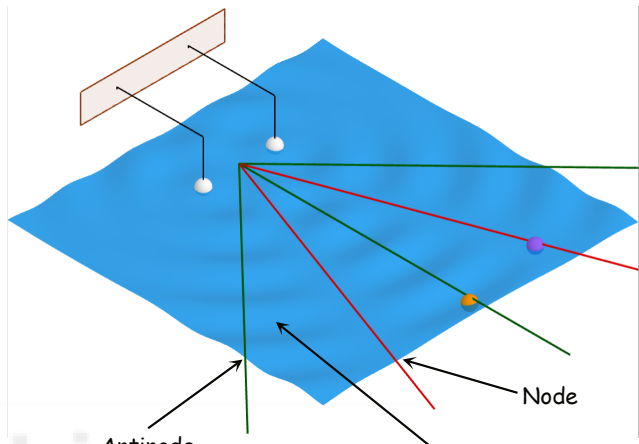
$$n = 1, 2, 3, 4, \dots$$

Wave in Two dimensions



2D

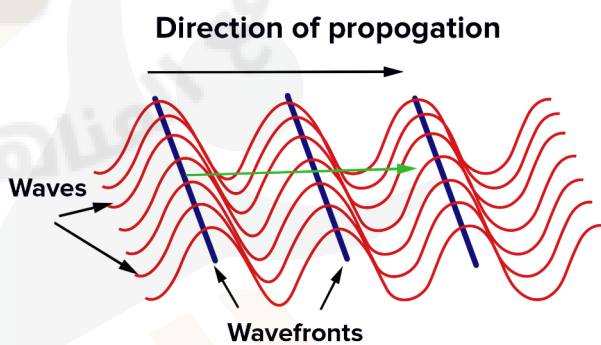
Wavefront



3D

Wavefront

Wavefront



Mrs Aya 0507175602

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Mr Ahmed Saad

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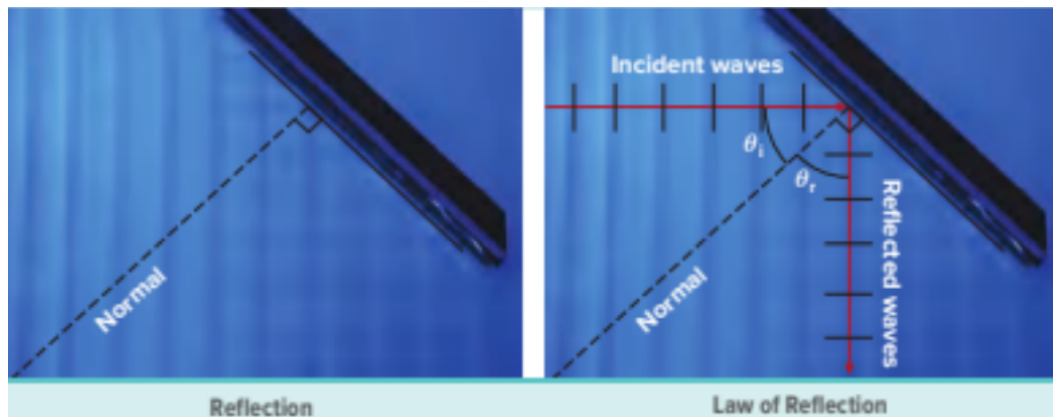
MRS. AYA

050 717 5602

MRS. YASMIN

050 901 6674

Reflection

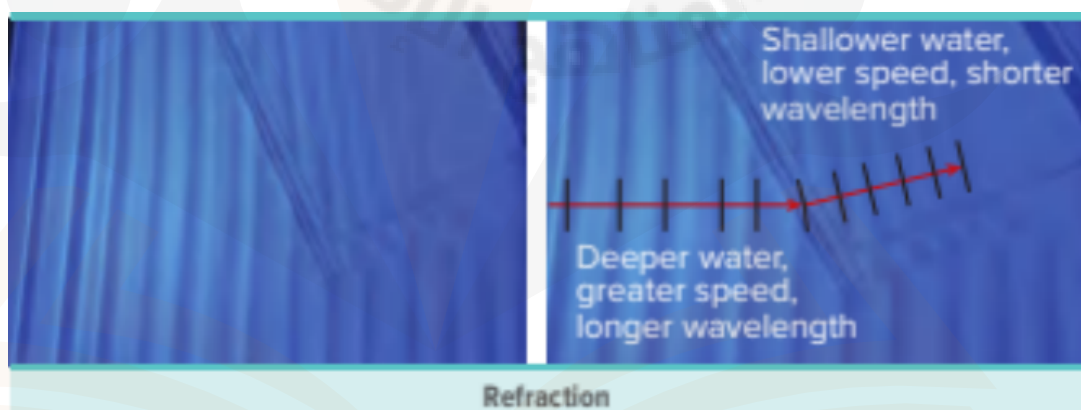


Is the change in the direction of a wave, such as light, when it bounces off a surface. This occurs when the wave encounters a boundary that doesn't absorb the energy of the wave.

First Law of Reflection:

The angle of incidence (the angle between the incident ray and the normal) is equal to the angle of reflection (the angle between the reflected ray and the normal).

Refraction



Refraction is the bending of light (or other waves) as it passes from one medium into another medium with a different refractive index (e.g., from air to water). This bending occurs because the speed of light changes when it moves from one