

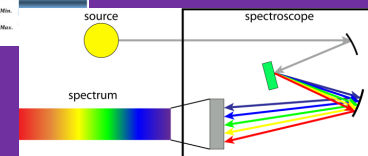
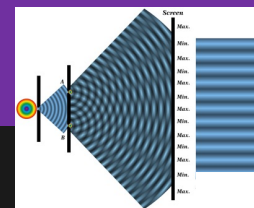
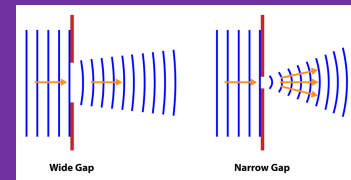
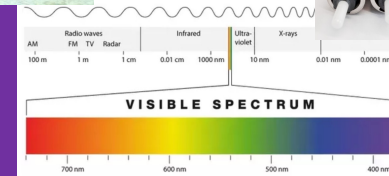
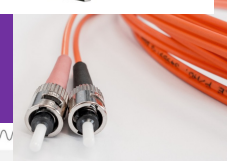
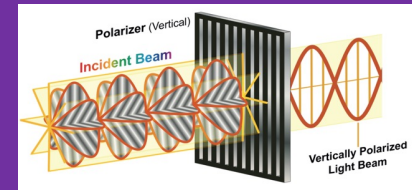
Light and Waves

Senior Physics Unit

- 4-5 weeks of teaching material
- 5 Lessons in Office and Google Format and Daily Teaching Schedule
- 1 Unit Project on 3D Movies
- 5 Activities
- 1 Unit Test with Answer Key
- 1 Quiz with Answer Key

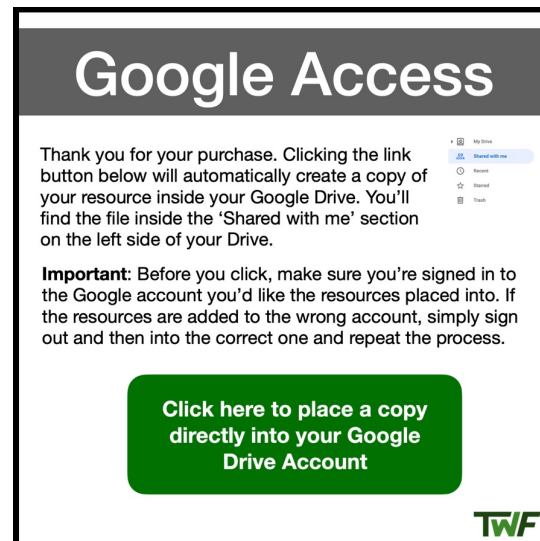
1. Light – Properties and Production
2. The Wave Nature of Light
3. Diffraction and Interference of Waves
4. The Polarization of Light
5. Diffraction Gradients

$$v = f\lambda$$



Office and Google Versions

- The lessons inside this unit come in both PowerPoint and Google Slides format
- Each lesson also contains many opportunities to check for student understanding
- Your resource is perfect for distance learning and integrates seamlessly with Google Classroom as I've included a link that will automatically create a copy of the resources and put them directly into your Google Drive with one click



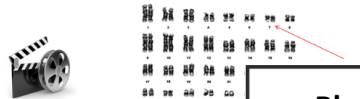
Thank You For Your Interest

Inside the Unit

- 4 - 5 weeks of teaching material
- 5 lessons
- Office and Google versions of EACH lesson
- Teacher and student versions for each lesson
- Many videos and simulations embedded into the slides
- Opportunities for students to check their understanding
- Student notes in Word and Google Doc

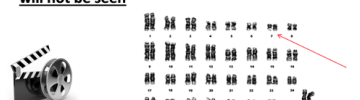
Blue Colour Blindness

- Blue Colour Blindness is equally unlikely for both males and females as the deficient gene is found on chromosome 7. These people can't see blue colour light
- In both these cases the problem isn't as straightforward as not seeing blue, red or green light



Blue Colour Blindness

- Blue Colour Blindness is equally unlikely for both males and females as the deficient gene is found on chromosome 7. These people can't see blue colour light
- In both these cases the problem isn't as straightforward as not seeing blue, red or green light
- If what they are looking at contains these colours, they will not be seen



Prisms and White Light

- The individual colors inside white light are bent at different angles as they pass through the prism
- This is due to the colors within, refracting different amounts as they pass through the prism
- This creates rainbows as white light is bent by water droplets in the air



Check Your Understanding

Example: Calculate the critical angle for the crown glass ($n = 1.52$) – air ($n = 1.00$) boundary

Example: Calculate the critical angle for the diamond ($n = 2.42$) – air ($n = 1.00$) boundary

Answer: 41.1°

Answer: 34.4°

Check Your Understanding

A 5.0 Hz water wave, traveling at 31 cm/s in deep water, enters shallow water. The angle between the incident wave front in the deep water and the boundary between the deep and shallow regions is 50° . The speed of the wave in the shallow water is 0.972 km/h. Find

- the angle of refraction in the shallow water
- the wavelength in shallow water

Check Your Understanding

Example: Calculate the critical angle for the crown glass ($n = 1.52$) – air ($n = 1.00$) boundary

Answer: 41.1°

Example: Calculate the critical angle for the diamond ($n = 2.42$) – air ($n = 1.00$) boundary

Answer: 34.4°

Check Your Understanding

A 5.0 Hz water wave, traveling at 31 cm/s in deep water, enters shallow water. The angle between the incident wave front in the deep water and the boundary between the deep and shallow regions is 50° . The speed of the wave in the shallow water is 0.972 km/h. Find

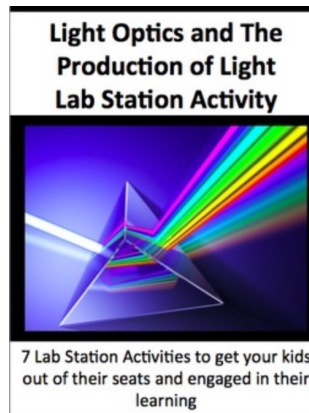
- the angle of refraction in the shallow water
- the wavelength in shallow water

Answer: a) 42° b) 5.4 cm

Thank You For Your Interest

Inside the Unit

- 1 Unit Test with Answer Key
- 1 Quiz with Answer Key
- 2 Lab Station Activities
- 1 Digital Scavenger Hunt Activity
- 1 Unit Project
- 1 Reading



Thank you for your interest

The following lessons are included.

Lesson 1 - [Light – Properties and Production](#)

Lesson 2 - [The Wave Nature of Light](#)

Lesson 3 - [Diffraction and interference of waves](#)

Lesson 4 - [The Polarization of Light](#)

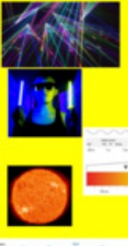
Lesson 5 - [Diffraction Grating](#)

5 Lessons Included

Light - Properties and Production

Lesson Topics Include:

- Where Light Comes From
- Properties of Light
- The Strangeness of Light
- Electromagnetic Waves
- Wavelength and Frequency
- Colors and Rainbows
- Adding Colors
- Seeing Colors
- The Production of Light
- The Speed of Light



SENIOR PHYSICS

The Wave Nature of Light

Lesson Topics Include:

- Waves
- Light
- Describing Waves
- Universal Wave Equation
- Properties of Waves
- Types of Reflection
- Prisms and White Light
- Index of Refraction
- Snell's Law

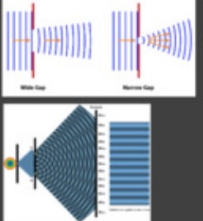


SENIOR PHYSICS

Diffraction and Interference of Waves and the Wave-Particle Duality of Light

Lesson Topics Include:

- Diffraction
- Is light a wave?
- Young's Double Slit Experiment
- Constructive and Destructive Interference
- Maxima and Minima
- Is Light a Wave or Particle?



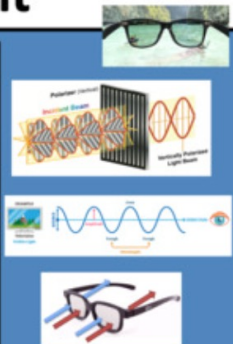
$$\frac{\Delta X}{L} = \frac{\lambda}{d}$$

SENIOR PHYSICS

The Polarization of Light

Lesson Topics Include:

- Transverse Waves
- Plane Polarized
- Application – Polarized Sunglasses
- Stereoscopic Vision and 3D Movies
- Filming in 3D

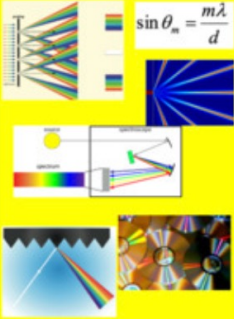


SENIOR PHYSICS

Diffraction Grating

Lesson Topics Include:

- Diffraction Grating vs. Double Slit
- The Grating Equation
- Types of Diffraction Grating
- DVDs and CDs
- Spectroscope and Spectral Analysis



$$\sin \theta_n = \frac{m\lambda}{d}$$

SENIOR PHYSICS