

# February 21, 2020

## Sit at anywhere at a table

### Entry: In Your Notebook

In each of the figures below is a colored object. For each figure determine what colors of visible light are being absorbed, reflected, and/or transmitted and describe your reasoning. If all colors are being reflected say “white”



# Housekeeping

- Problem Set #10 out today
- Honors Assignment #5 due Friday
- Honors Meeting at lunch on Friday
- Reminders from Ms. Abdullah
  - Update Naviance
  - Check Portals
  - FAFSA
- Office Hours:
  - Today after school 3:30-4:30

# Today

- Waves and the Carbon Cycle

# What is a wave?

Read the following article from Physics Classroom:

[What is a wave](#)

Then watch the following video about the relationship between circular motion and sine/cosine (this video talks about simple harmonic motion, that is just a special type of periodic or repeating motion (think going around in a circle, a pendulum, etc.)

[Sine & Cosine to Circle Video](#)

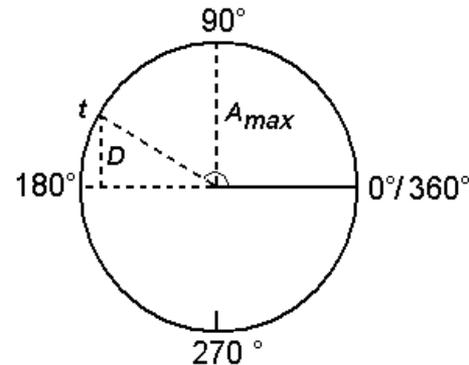
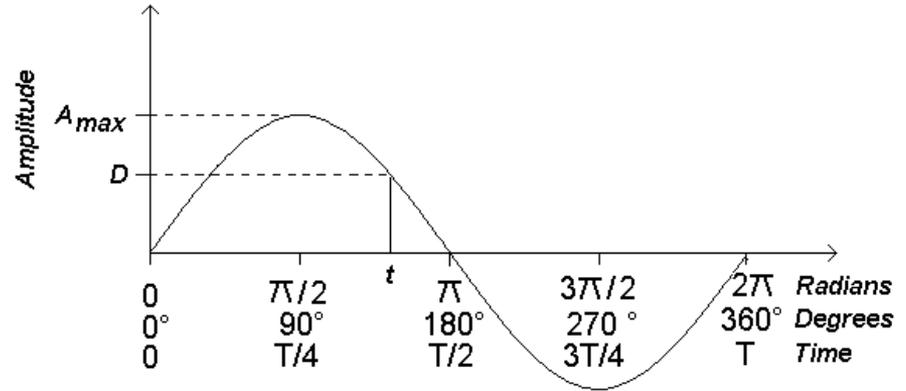
# Periodic Motion - In a Circle

The time an object takes to go around the whole circle is 1 **Period**

The number of times the object goes around per a unit of time (say 1 sec) is **Frequency**

**Amplitude** is how far away the maximum displacement is from the resting or equilibrium position

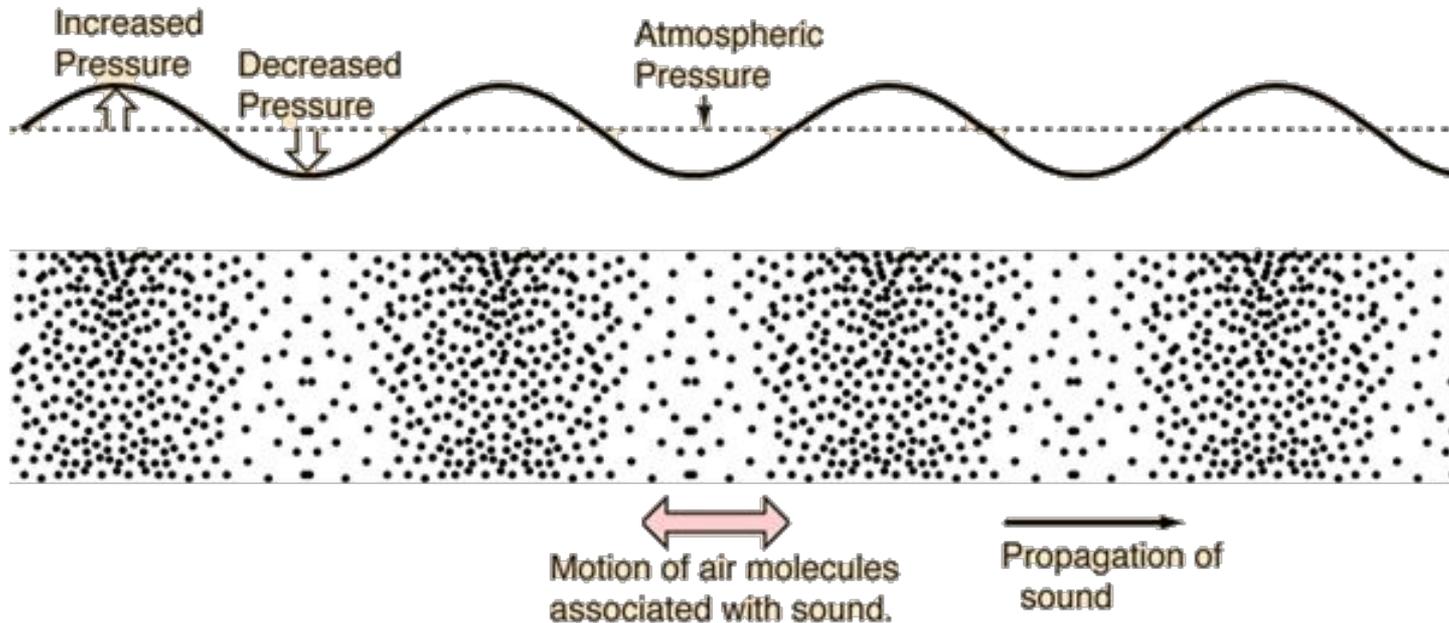
If you want more help with this concept check out this [khan academy](#) video



# Sound Wave Review

Sound is a longitudinal wave: Displacement of the wave is parallel to its propagation

Sound MUST have a medium to travel through... Who can hear you scream in space?



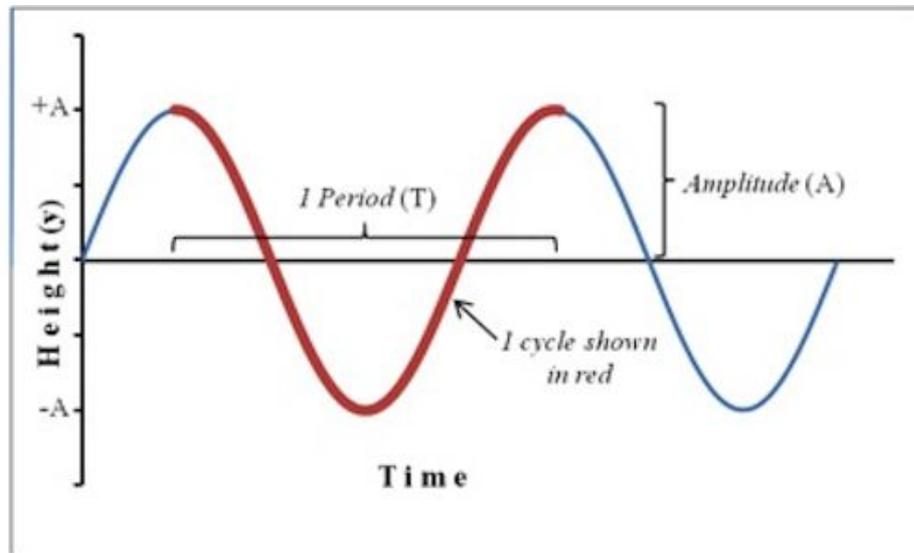
# Simplified Wave Equations

Simplified Wave Equation:

$$x = A \sin(\omega t)$$

Recall from circular motion:

$$\omega = \frac{2\pi}{T} = 2\pi f$$

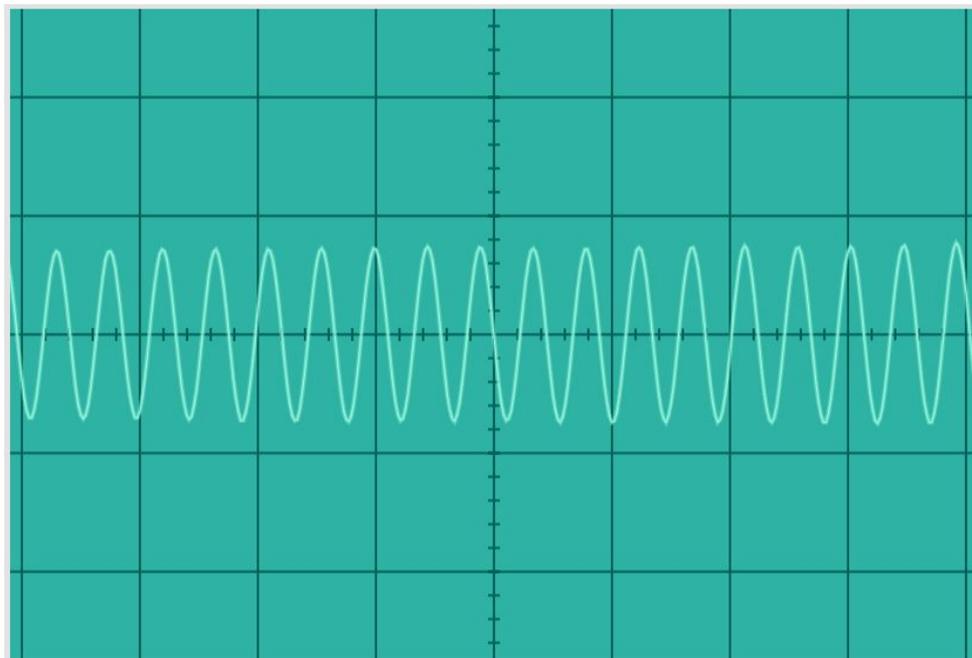


# Visualizing Sound Waves

- Working with your shoulder partner, Go to my dp and go to Experiments and Experiences and scroll to Waves and periodic motion
- open the Oscilloscope site
- Read the instructions and description; write down any questions you have in your notebook.
- Observe what happens with the ambient room noise.
- Observe what happens when you speak, hum, and sing (softly!)
- Record these observations in your notebook

# What Sound Pitch is this?

The frequency of a sound wave is the pitch (or note) we hear. Which pitch is this?



# What Sound Pitch is this?- You Try it

Try to sing a note to get a clean wave, your phone also might be able to play one for you. Groups might need to take turns.

By freezing the screen determine the musical note that was played (or sung).

Write the wave equation for this note

Recall:

$$x = A \sin(\omega t) \quad \omega = \frac{2\pi}{T} = 2\pi f$$

# Determining Wave Properties from Data

Use your assigned Data Set to determine the following:

- Amplitude
- Period
- Frequency
- Musical Note

# What's up with the Permafrost?

Warming Arctic and the Problem of the Permafrost

[Vice News](#)

Bringing back the woolly mammoth to save the earth

[CBS 60 minutes - Woolly Mammoth](#)

Please write a quick reflection (~1 paragraph) on the two videos in your notebooks

# Work Time

Spend the rest of class either finishing up your Light interaction with Materials lab from Tuesday or starting work on Problem Set #10.

I highly recommend starting on the Carbon Cycle Activity (Question #3)