


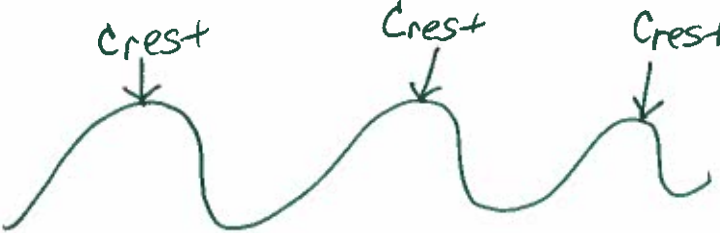
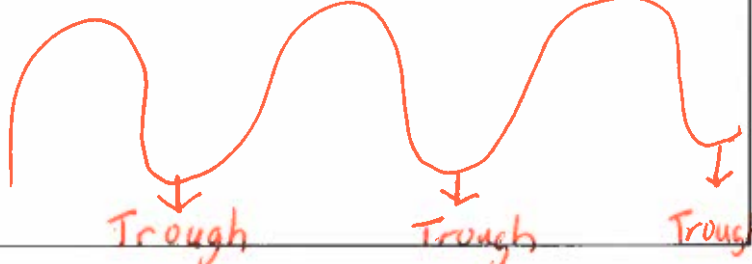


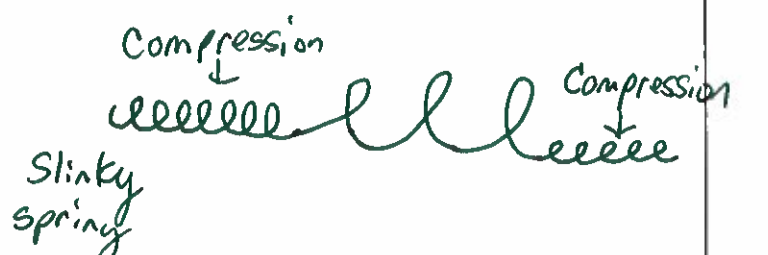
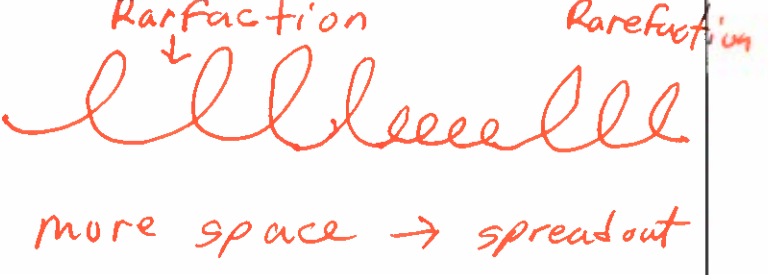
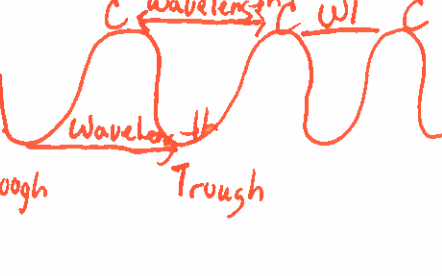
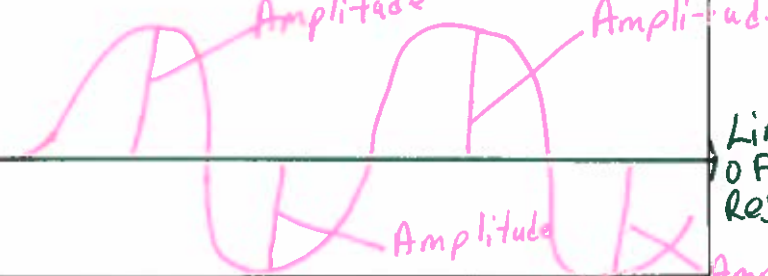
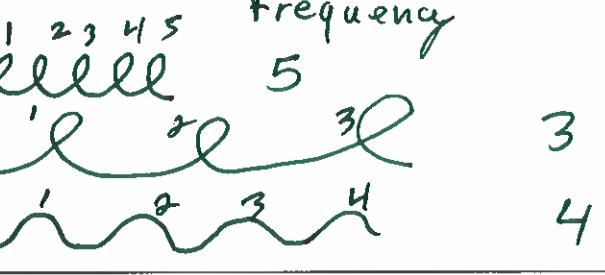

Waves Vocabulary

Day 1 and 2: Monday 5/4/20 and Tuesday 5/5/20

Directions: Use the following links to help you define and draw an illustration for the following terms. Feel free to find and use other resources.

Video	Links
1	https://www.youtube.com/watch?v=kC8d5BHcemk
2	https://youtu.be/KWzyQKcJBYg
PPT	https://drive.google.com/file/d/1UqVxuDVj9tYG5qdGn5xif_McoqfgWySQ/view?usp=sharing

Definition	Illustration
<p>1. Wave</p> 	<p>A disturbance that transfers energy from one point to another. Mechanical Energy (KE) Created by a vibration through a medium</p>
<p>2. Longitudinal (Sound) / Compression Wave moves particles of the medium in the same direction as the wave == (parallel)</p>	
<p>3. Transverse Wave (Light)</p> 	<p>A wave that moves the medium in a direction \perp perpendicular to the direction in which the wave travels $\perp \perp$ (right angles)</p>
<p>4. Crest The highest point on the wave</p>	
<p>5. Trough The lowest point on the wave</p>	

<p>6. Compression (compressed) The region of a longitudinal wave where particles/medium are closer together</p>	
<p>7. Rarefaction The area of the longitudinal wave where particles/medium are more spread out</p>	
<p>8. Wavelength Crest → Crest Trough → Trough Compression → Compression Rarefaction → Rarefaction</p>	
<p>9. Amplitude The maximum distance from the line of rest</p>	
<p>10. Frequency How many waves? The number of waves in a given period of time</p>	<p>Frequency</p> 
<p>11. Pitch How low or high the sound is</p>	

10. In the second video, which direction is the actual wave moving? (Up and Down or Right to Left)

Wave moves left + to right
boat moves up + down



11. What happens to the wavelength when the frequency increases? *Wave length ↓ (it gets shorter)*

12. How do you describe the relationship between frequency and wavelength? *They are the inverse of each other*
WL ↑ Frequency ↓ WL ↓ Frequency ↑

Day 3 and 4: Wednesday 5/6/20 and Thursday 5/7/20

Directions: I am attaching links to resources to help you define and draw an illustration for the following terms. Feel free to find and use other resources.

Video	Links
1	https://www.youtube.com/watch?v=I8eUgxc3x04
2	https://www.youtube.com/watch?v=irqfGYD2UKw
PPT 1	https://drive.google.com/file/d/1UqVxuDVj9tYG5qdGn5xif_McoqfgWySQ/view?usp=sharing

13. Define Medium- Material through which a wave travels

4.

Medium	Speed
Gas	<i>slow</i>
Liquid	<i>faster</i>
Solid	<i>faster +</i>

15.

*** SOUND can not travel through a vacuum (space).

Why? It must have a medium for the vibrations to work on it.

16. Identify two things that affect the speed of a wave

Medium
Temperature

17. The speed of light is 300,000 km/h

18. The speed of sound is 1,236 km/h

19. Which do you normally observe first, lightning or thunder? Explain your answer.

Light travels faster than sound. You will see lightning before you hear thunder

20. Explain how pitch is related to sound. Pitch deals with how high or low the sound is

21. Explain how amplitude is related to sound. Amplitude deals with the loudness of sound (volume)

TABLE 17.1
Speeds of Sound in Various Media

Medium	v (m/s)
Gases	
Hydrogen (0°C)	1 286
Helium (0°C)	972
Air (20°C)	343
Air (0°C)	331
Oxygen (0°C)	317
Liquids at 25°C	
Glycerol	1 904
Sea water	1 533
Water	1 493
Mercury	1 450
Kerosene	1 324
Methyl alcohol	1 143
Carbon tetrachloride	926
Solids	
Diamond	12 000
Pyrex glass	5 640
Iron	5 130
Aluminum	5 100
Brass	4 700
Copper	3 560
Gold	3 240
Lucite	2 680
Lead	1 322
Rubber	1 600

Speed of Sound in Different Mediums

1. In which medium does sound travel the fastest in?
Solid

2. In which medium does sound travel the slowest in?
Gas

3. Rank the states of matter from the state that sound travels the fastest in to the state that sound travels the slowest in.

Solid → Liquid → Gas

4. Does air affect the speed of sound?

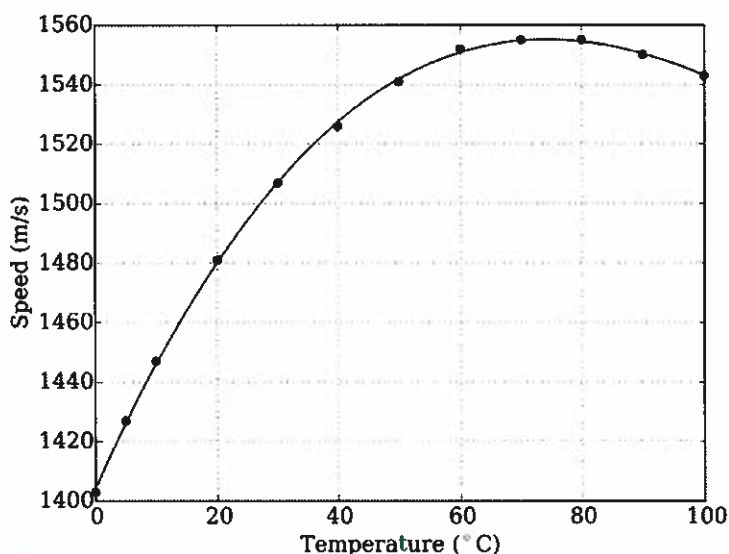
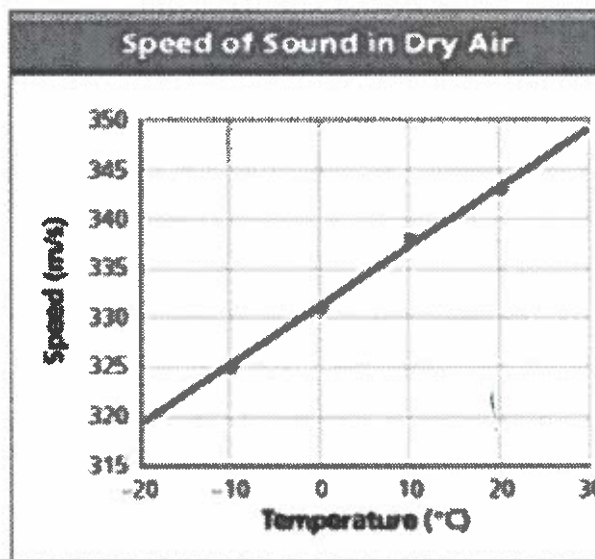
Yes

5. Why do you think sound travels faster in diamond than in Pyrex glass?

The diamond is more dense

Speed of Sound in Air Graph

- Which temperature does sound travel the fastest in?
20°C
- Which temperature does sound travel the slowest in?
-20°C
- What type of relationship is there between temperature and speed of sound? Direct Relationship
T ↑ S ↑ T ↓ S ↓
- What is the approximate speed of sound at -10°C?
325 m/s
- What is the temperature when the speed of sound is approximately 337.5 m/sec? 10°C



Speed

of Sound vs. Temperature in Water

- Describe the relationship between temperature and the speed of sound in water for the first 70°. Speed increases with the temp
- What is the approximate speed of sound at 20°C in water? 1480 m/s
- What is the temperature when the speed of sound in water is approximately 1550 m/s? 60°C

Why do you think the line on the graph begins to curve downward starting at 80°C?

Day 5 + Day 6 Friday 5/8/20 and Monday 5/11/20

Electromagnetic Spectrum Songs/Videos

Answer the following questions as you watch the video.

What makes up the EM Spectrum

1. Radio
2. Microwave
3. Infrared
4. Visible Light
5. Ultra Violet
6. X-Ray
7. Gamma

ROYGBV
red orange yellow green blue violet
daniel
green
e
w
e
t

8. Which waves are most the most dangerous? Gamma
9. Which type of wave is given off through heat by animals? Infrared
10. What are the harmful waves that come from the sun? Ultra Violet
↑ wavelength
11. Which waves are the longest? Radio ↓ frequency ↓ energy
12. Which waves have the most energy? Gamma ↑ frequency ↑ energy
14. Which waves have the least amount of energy? Radio

Researching Sound Technology

Day 8 Wednesday 5/13/20

Directions: Today you will identify and describe 5 technologies that use longitudinal/Compression (sound waves).

Name of Sound Technology	Description
1 Ultra Sound	Used to look at a developing baby Produces images of organs Cleaning jewelry
2 Sonar Echo location	Used to forecast weather tracking aircrafts, locating ships
3 Air pod	Allow you to hear your music. wireless connection
4 Echo location	used by animals to locate food and to communicate
5 Car Safety System	Back up cameras to help you detect when you get close to an object

Answers will vary

Researching Light Technology

Day 9 Thursday 5/14/20

Directions: Today you will identify and describe 5 technologies that use transverse (light) waves.

Name of Light Technology	Description
1 X-ray	Allow doctors to look at bones
2 Laser	Use EM spectrum wavelengths to transmit light (different colors)
3 Fiberoptics	used to transmit data at high speeds Telephone, cable TV, Computer Networking,
4 Medical Fiberoptics	used on scopes and imaging tools to help medical workers get a better view
5 Tanning	Used in tanning booths

Answers will vary

Key

Wave Comparison Chart

Characteristics	Transverse Waves	Compressional Waves
1. Needs a medium		✓
2. Carries Energy	✓	✓
3. Particles move parallel to the wave		✓
4. Particles move at right angles (perpendicular) to the wave.	✓	
5. Can travel through empty space <i>VACUUM</i>	✓	
6. Have a wavelength, frequency, amplitude, and velocity (speed)		
7. Light and electromagnetic waves	✓	
8. Sound waves		✓

✓ = True