WHAT ARE WE GOING TO STUDY THE WEEK OF JANUARY 9  TO JANUARY 13, 2017

SCIENCE:​  STUDENTS WILL DEMONSTRATE HOW SOUND IS PRODUCED BY VIBRATING OBJECTS AND HOW SOUND CAN BE VARIED BY CHANGING THE RATE OF VIBRATION. A.INVESTIGATE HOW SOUND IS PRODUCED. B.RECOGNIZE THE CONDITIONS THAT CAUSE PITCH TO VARY.

SOUND IS ENERGY.  LIGHT IS ENERGY.  SOUND TRAVELS IN WAVES – LIKE LIGHT.  IT TRAVELS AWAY FROM THE SOURCE IN ALL DIRECTIONS – THINK OF RIPPLES IN A POND CAUSED BY A ROCK FALLING INTO THE WATER.  SOUND CAN BE REFLECTED – THINK OF ECHOES, ABSORBED – SOUND PROOFING, AND SEPARATED – THINK OF DIFFERENT MUSICIANS PLAYING DIFFERENT INSTRUMENTS ALL IN ONE SONG.  SOUND AND LIGHT HAVE MANY SIMILAR PROPERTIES.

SOUND TRAVELS THE FARTHEST, FASTER AND AT HIGHER VOLUME THROUGH A SOLID.  IT TRAVELS WELL THROUGH A LIQUID AS WELL – NOT AS WELL AS THROUGH A SOLID BUT BETTER THAN THROUGH A GAS.  SOUND TRAVELS THE SLOWEST AND LEAST DISTANCE THROUGH A GAS.
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**ESSENTIAL QUESTIONS** How do different organisms and objects vibrate in order to produce sound? What is the relationship between the speed at which an object vibrates and the pitch of the sound that is produced?

**SOUND**:  SOUND is a form of energy that travels in waves. It is produced when matter vibrates.
5 SOUND WAVES A sound wave appears as a series of high points and low points. A high point is called a CREST and a low point is called a TROUGH (trawf).
6 The distance between one crest or trough to the next is called a WAVELENGTH. Waves with shorter wavelengths have crests and troughs that are closer together.
7 FREQUENCY The frequency of the wave is the number of crests or troughs that pass by over a certain amount of time. If ten waves were made per second, then the frequency would be 10 per second.
8 AMPLITUDE The distance between the resting point and a crest or trough. You can think of amplitude as the height of the wave.
9 Types of waves LONGITUDINAL wave is where the particles of matter move back and forth in the same direction as the wave travels.
10 TRANSVERSE wave is where the particles move back and forth at a right angle to the wave’s direction. There movement is perpendicular to the movement of the wave.
11 HOW SOUNDS ARE MADE Sound is produced when matter vibrates. A vibrating object transfers energy all around it. The sound waves cause air particles to bunch together then spread apart. This pattern continues as the sound waves spread out in all directions. The air particles do not move across the room, they only vibrate back and forth.
12 Sound waves
13 OSCILLOSCOPE A tool used to picture a sound wave.
14 How you hear sound. Humans detect sound waves with their ears. The sound waves are picked up by the outer ear and sent to the inner ear. In the inner ear, the sound waves are changed into signals that travel to the brain. The brain interprets the signals as sounds.
16 Different Sounds All sounds require matter through which to travel. That matter is called the MEDIUM of the sound. A MEDIUM can be a solid, a liquid, or a gas. Sound CANNOT travel through empty space.
17 Sounds typically travel faster through solids and slower through gases. Sound also travels faster at warmer temperatures than at colder temperatures.
18 PITCH The PITCH of a sound is how high or low it is. Pitch depends on the frequency of the sound wave. The higher the frequency, the higher the pitch of the sound.
19 The piccolo has a high-pitched sound. The tuba has a low-pitched sound.
21 VOLUME Another property of sound is VOLUME. Volume is how loud or soft a sound is. Volume changes with the energy of a sound wave, the more energy the wave carries and the louder the sound.
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[studyjams.scholastic.com/studyjams/jams/science/energy-light-sound/sound.htm](http://studyjams.scholastic.com/studyjams/jams/science/energy-light-sound/sound.htm)

[gpb.pbslearningmedia.org/resource/phy03.sci.phys.mfe.zxylophone/experimenting-with-a-glass-xylophone/](http://gpb.pbslearningmedia.org/resource/phy03.sci.phys.mfe.zxylophone/experimenting-with-a-glass-xylophone/)

[https://quizlet.com/947263/sound-4th-grade-science-flash-cards/​](https://quizlet.com/947263/sound-4th-grade-science-flash-cards/%E2%80%8B)

MATH:

* *I know that multiplication is repeated addition.*
* *I know that adding unit fractions is the same as multiplying a unit fraction by a whole number.*
* *I can explain how a fraction is a multiple of another fraction using models, drawings, or equations.*

​  ESSENTIAL QUESTION: How does repeated addition of fractions relate to multiplication of a fraction by a whole number?

Fractions can be thought of as parts of a whole or as individual units.  Multiplying a fraction by a whole number yields the number of unit fractions or individual units. ​

 1. Use a fraction model to represent and solve the following problems: a) 6 x ½= ? b)12 x ¼ = ? c) 24 x ⅛ = ?
When you multiply a number by a fraction less than 1, is the product less than the number, greater than the number, or equal to the number? Justify your thinking.

2. Use a fraction model to represent and solve the following problems: a) 5 x 1½= ? b) 3 x 2¼ = ? c) 6 x 1⅛ = ?
When you multiply a number by a fraction greater than 1, is the product less than the number, greater than the number, or equal to the number? Justify your thinking.
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