

Tuesday, November 13, 2018

Your Learning Goal:

Embarking on a light mini unit. Students will model compression and transverse waves to observe how electromagnetic waves travel. They will be able to calculate frequency and velocity of a wave.

Table of Contents: Spring into Waves– 19L + R

Catalyst (19L):

What characteristics of a wave can you measure?



Homework:

Word Wall # 2
DUE THURSDAY



Agenda:

1. Catalyst
2. Measuring Wave Length
3. Reflection

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11/13/18

Catalyst:

What characteristics of a wave can you measure?

Spring Into Waves

COMPRESSION
WAVES

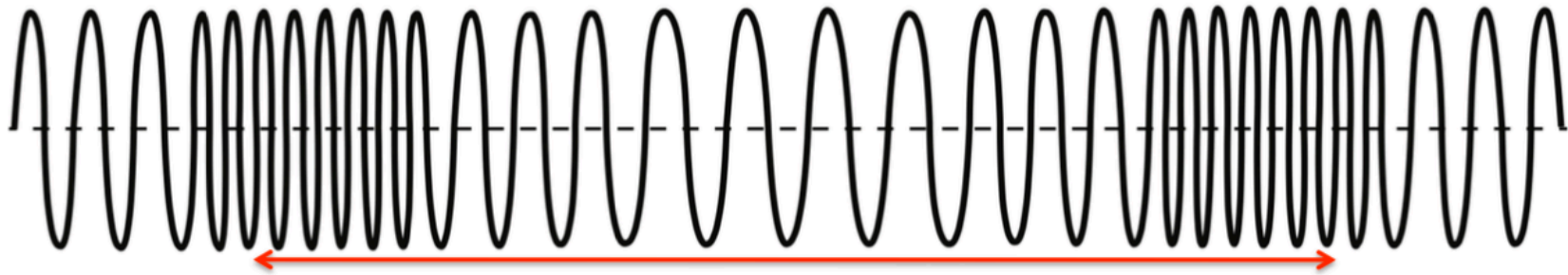
TRANSVERSE
WAVES

19L

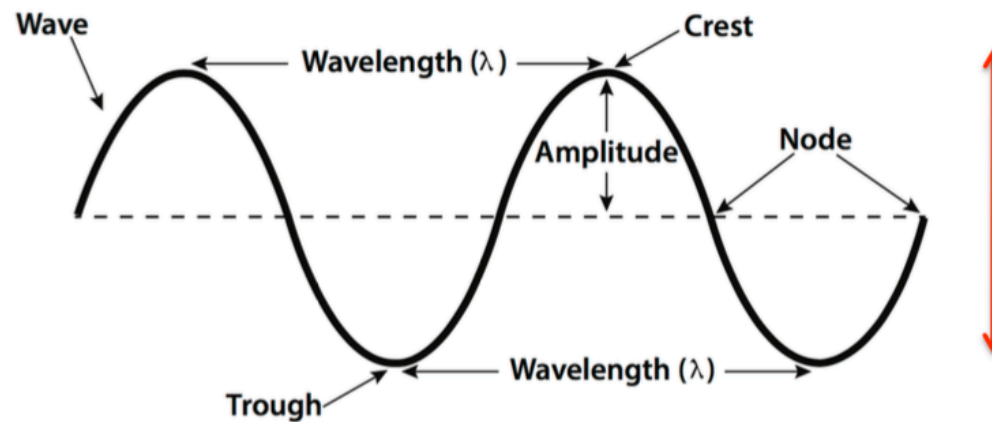
19R

Two Types of Waves

1. Compression Waves:



2. Transverse Waves:



1. Compression Waves:

1. The anchor holds one end of the spring in one spot on the table.
2. The wave-maker holds the other end of the spring and stretches it out about 1.5 meters long, flat on the table.
3. One flagger attaches a piece of tape to the spring about halfway down the spring. Flaggers stand on either side of the spring to observe.
4. Using a push-pull motion in the exact direction of the spring, the wave-maker sends a strong pulse down the length of the spring.



11/13/18

Catalyst:

What characteristics of a wave can you measure?

Spring Into Waves

COMPRESSION
WAVES

TRANSVERSE
WAVES

19L

19R

2. Transverse Waves:

1. Anchor, wave-maker, and flaggers get into position and set up the spring.
2. The wave-maker creates one wave using a side-to-side motion that is exactly perpendicular to the spring direction.
3. Observe how the wave travels to the anchor and returns.



11/13/18

Catalyst:

What characteristics of a wave can you measure?

Spring Into Waves

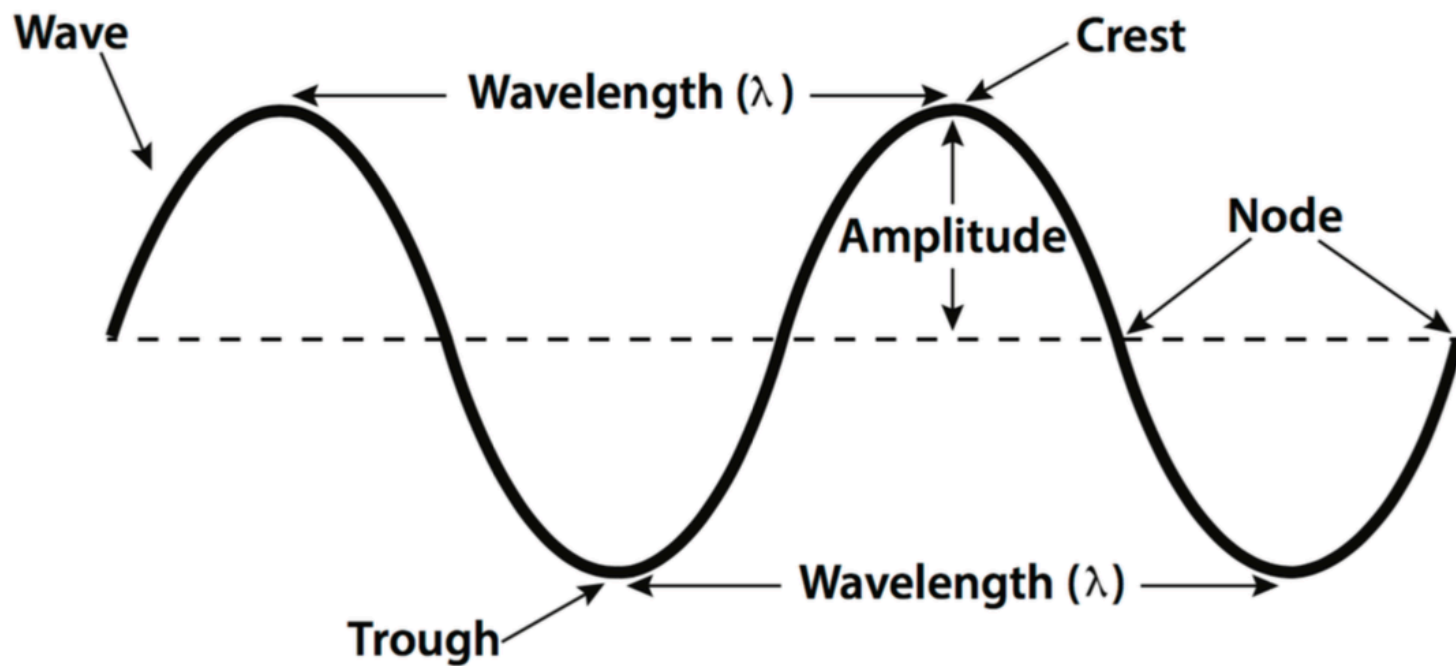
COMPRESSION
WAVES

TRANSVERSE
WAVES

19L

19R

Complete Transverse Waves Worksheet



Transverse Calculations

1. Wave-maker makes a standing wave. Flaggers look for the locations of crests, troughs, and nodes (where the spring crosses the resting line).
2. With masking tape, the flaggers mark two spots on the table where the spring reaches its crests (labeled “C”), as well as two nodes that are adjacent to each other (labeled “N”).
3. Flaggers measure the wave’s frequency (f) using a timer. Count the number of times the flag crests in 10 seconds.
4. Stop the wave, and flaggers put a piece of tape under the spring in the resting position.
5. Complete Part B of the notebook sheet. Work in your group to see if you can figure out the calculations.

Wave Machine

- <https://www.stem.org.uk/resources/elibrary/resource/27031/wave-machine>

11/13/18

Catalyst:

What characteristics of a wave can you measure?

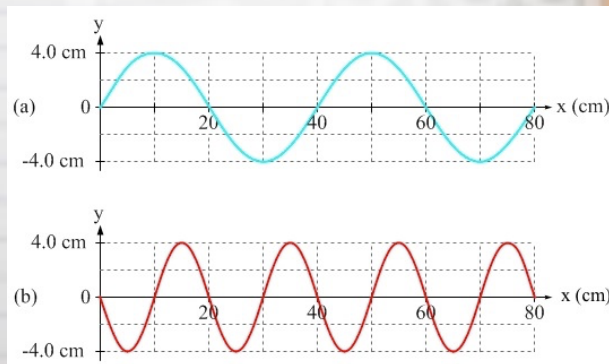
Reflection Paragraph:

Which wave is transmitting the greatest amount of energy? Provide evidence explaining how you know.

Spring Into Waves

COMPRESSION WAVES

TRANSVERSE WAVES



19L

19R

Reflection **19L**

Which wave is transmitting the greatest amount of energy? Provide evidence explaining how you know.

