Gummy Bear Wave Machine

Goal: It is time to construct your own transverse wave machine! You will use your knowledge of waves to help create and experiment with different variables.

Materials:

Duct tape	Two ring stands
30 Kabob Skewers	Meter sticks available.
Gummy Bears	Stop watch??

Warm up: Watch https://www.youtube.com/watch?v=astISOttCQ0

To do

1. Brainstorm on just how you are going to accomplish this. Use your previous labs to help you (I am guessing details are really important here!) You will use the color paper provided by the teacher and only one drawing/observation notes are necessary from the group-it is up to your group who does what.
2. Sketch your design in the area provided on your group page before you get started.
3. Time to build..this may take some trial and error, so make sure to note the changes you are making and why
   (note: Please remember that you are a team and that all voices matter and need to be heard. I have the expectation that everyone participates!)
4. Call me over when you are ready to show me that you have a functioning wave machine.
5. Now it is time to explore a little. Below are some ideas to get your started or you can come up with some on your own. You must choose one from below or your own question and detail your observations.

Think about the order in terms of materials and keeping the other variables constant...ie. don't eat the gummy's first!!!

Gummy Bear Wave Machine Write Up

Lab partners:

_____ _____

_____ _____

Wave Machine Construction:

What are things you need to be thinking about as you build this structure?

_____

_____

_____

_____

Wave construction diagram--try to be as detailed as you can (spacing, construction etc)

As you are building, note changes or new observations about the construction as needed

_____

_____

_____

_____

_____**Teacher initials for functioning wave machine**- do this by sending a pulse down your wave machine by gently lifting a gummy bear up and pushing it down.

Observations--detail any all observations you can come up with related to wave motion (you may use your phone as a stopwatch if needed (calculate frequency, period wavelength). Visual observations of the apparatus. Be detailed in this section

Time to think...

1. At one end of the wave machine, lift one jelly baby up and let go. From your observation, finish the following sentence: Waves transmit _____not _____

a. Time how long it takes for the wave to move from one end of the machine to the other. Three students should be timing. Repeat for 3 trials. Find the average time. Measure the length of the machine (in m, to the nearest cm) and determine the velocity of the wave. ($v = d/t$)

b. Repeat step one with a different amplitude (lift the jelly baby higher or not as high). How is the wave different? Does the wave move down to the other end faster? (Time it!)

2. What kind of wave have you been making in your machine? Explain.

3.What happens to the wave when it reaches the other end of the machine?

4. What happens to your wave pattern if you increase the frequency of the wave? How many waves do you see now?

5. Make a statement about the relationship between how changing the frequency changes the wavelength of a wave.

LET'S TRY… (pick one Q from the choices below
Q1: The distance between the sticks was changed
Q2: The tension was changed
Q3: The Gummy Bears were moved closer to the center
Q4: Half of each Gummy Bears was eaten/cut off

Question: We are testing (variable you are going to alter): _____
_____

Notes/ observations _____
_____
_____

Final response. What changes **(compared to what you observed in the original design) did you find?**

Using the same method from number 1 above, record the speed for this wave.

a. Changing the _____ caused the speed to _____ because_____
_____