

Select the Measure tab:

2. Press “start” and move the ruler to the center of the speaker.
 - a) Look at the stopwatch. What do you notice that is strange about it? Why is it programmed this way?

 - b) Describe how you would find the frequency of a wave if the frequency slider did not have a number display. Test your idea with at least 5 trials (record them in a data table). Calculate the %error with respect to the frequency display.

T_1	
T_2	
T_3	
T_4	
T_5	
T_{ave}	

$f_{display}$	
$f_{calculated}$	

%Error	
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Work
AreaRound to
nearest
whole #

- c) Hit stop and reset, and measure the distance a wave travels in a certain amount of time. Make a data table and do at least 3 trials. Find the speed of sound using $v = d/t$.
- d) Use the ruler to measure the wavelength of this sound wave. Check the speed calculated above using $v = f\lambda$. Measure λ and use the display on the frequency slider.
- e) Using $v = f\lambda$ as the reference, calculate % error of the calculations from parts d and e from above:

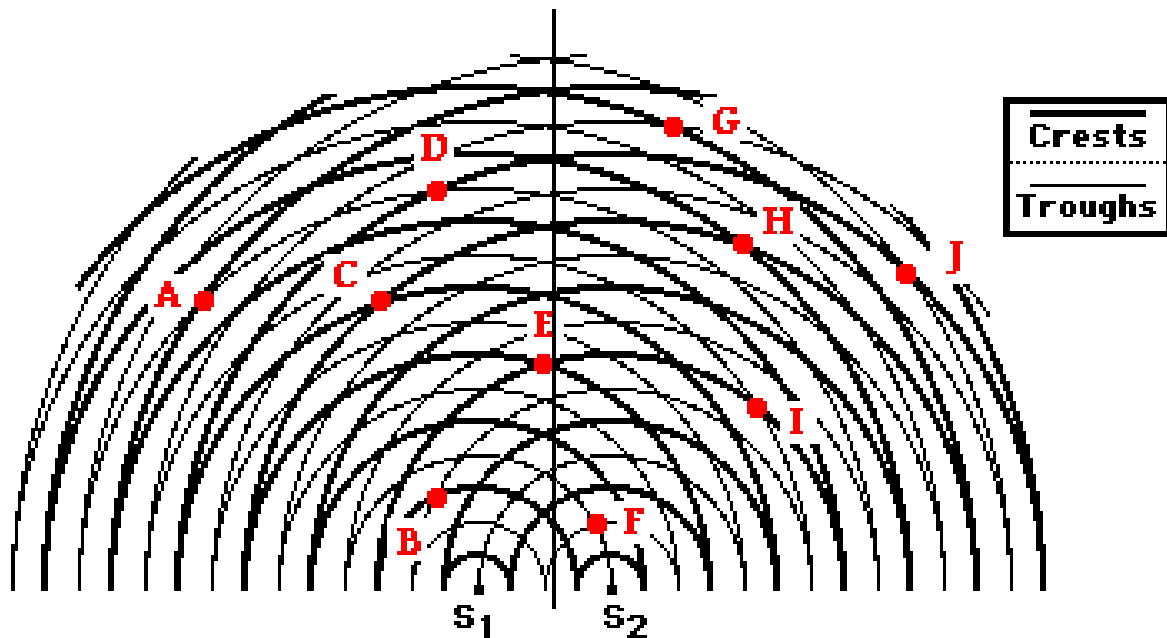
Select Two-Source Interference tab:

3. Observe the interference pattern made by the sound waves coming from two speakers.
- a) Sketch the pattern using shades of gray.

b) Describe what is happening with the waves where you see white spots and dark spots.

c) Read below

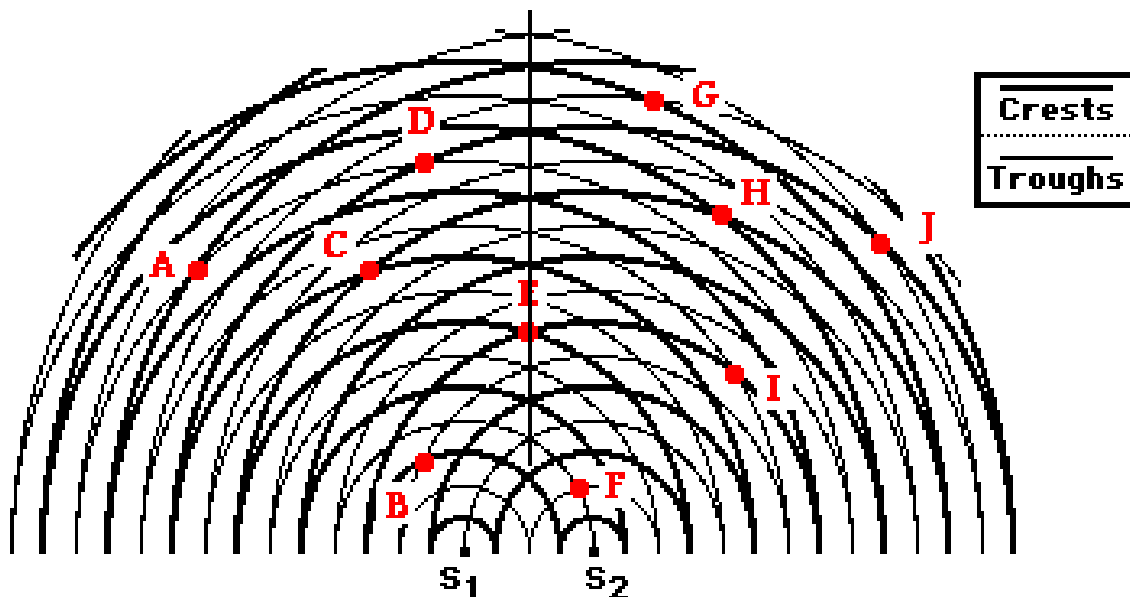
- Observe the two-point source interference pattern shown below. Several points are marked and labeled with a letter.
- An antinodal line extends outward from the sources in the exact center of the pattern. This antinodal line is referred to as the **central antinodal line**.
- More antinodal lines are present to the left and to the right of the central antinodal line. These are referred to as the **first antinodal line**, the **second antinodal line**, the third antinodal line (if present), etc.



Draw the other antinodal lines and label them.

D) Read Below

- Each antinodal line is separated by a nodal line.
- The nodal lines are also named; the first nodal line to the left or to the right of the central antinodal line is referred to as the **first nodal line**. The **second nodal line** and the **third nodal line** are found as one moves further to the left and to the right of the center of the pattern.
- Each line in the pattern is assigned a number, known as the **order number** and represented by the letter **m**.
- The numbering system associated with this pattern is just as creative as the naming system. The central antinodal line is assigned an order number of 0.
- The first antinodal line is assigned an order number of 1; the second antinodal line is assigned an order number of 2; the third antinodal line is assigned an order number of 3; etc. Nodal lines are assigned half-numbers.
- The first nodal line is assigned the order number of 0.5. The second nodal line is assigned the order number of 1.5. Finally, the third nodal line is assigned the order number of 2.5.



Draw the nodal lines and label them