

# MiSP Light and Sound Worksheet #3, L1

Name \_\_\_\_\_

Date \_\_\_\_\_

## COMPARING THE SPEED OF SOUND AND THE SPEED OF LIGHT IN AIR AND WATER

You have learned that there are a number of differences between electromagnetic waves (such as light waves and radio frequency waves) and sound waves. One of these differences involves the ability to travel in a vacuum.

1. Can light travel in a vacuum? \_\_\_\_\_ Explain why or why not.

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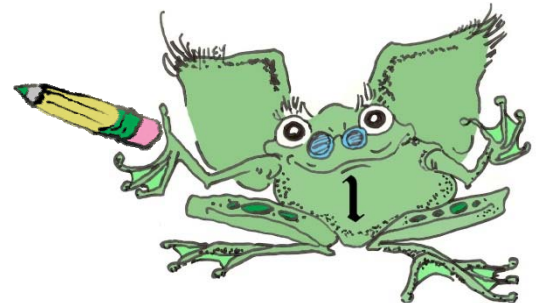
2. Can sound travel in a vacuum? \_\_\_\_\_ Explain why or why not.

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There is also a difference in what happens to light and sound waves when they travel through different media. Complete the table below and then graph the data to see the difference.

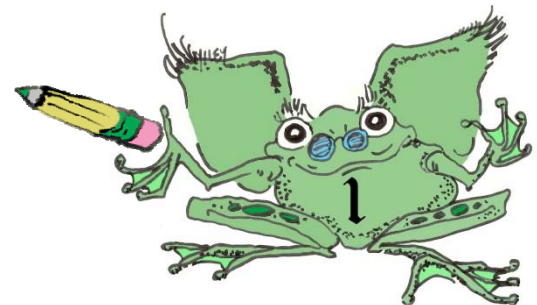
Time traveled	Distance (m) traveled			
	Sound in air	Sound in water	Light in air	Light in water
0 seconds	0	0	0	0
1 second	343	1482	300,000,000	225,500,000
2 seconds				
3 seconds				



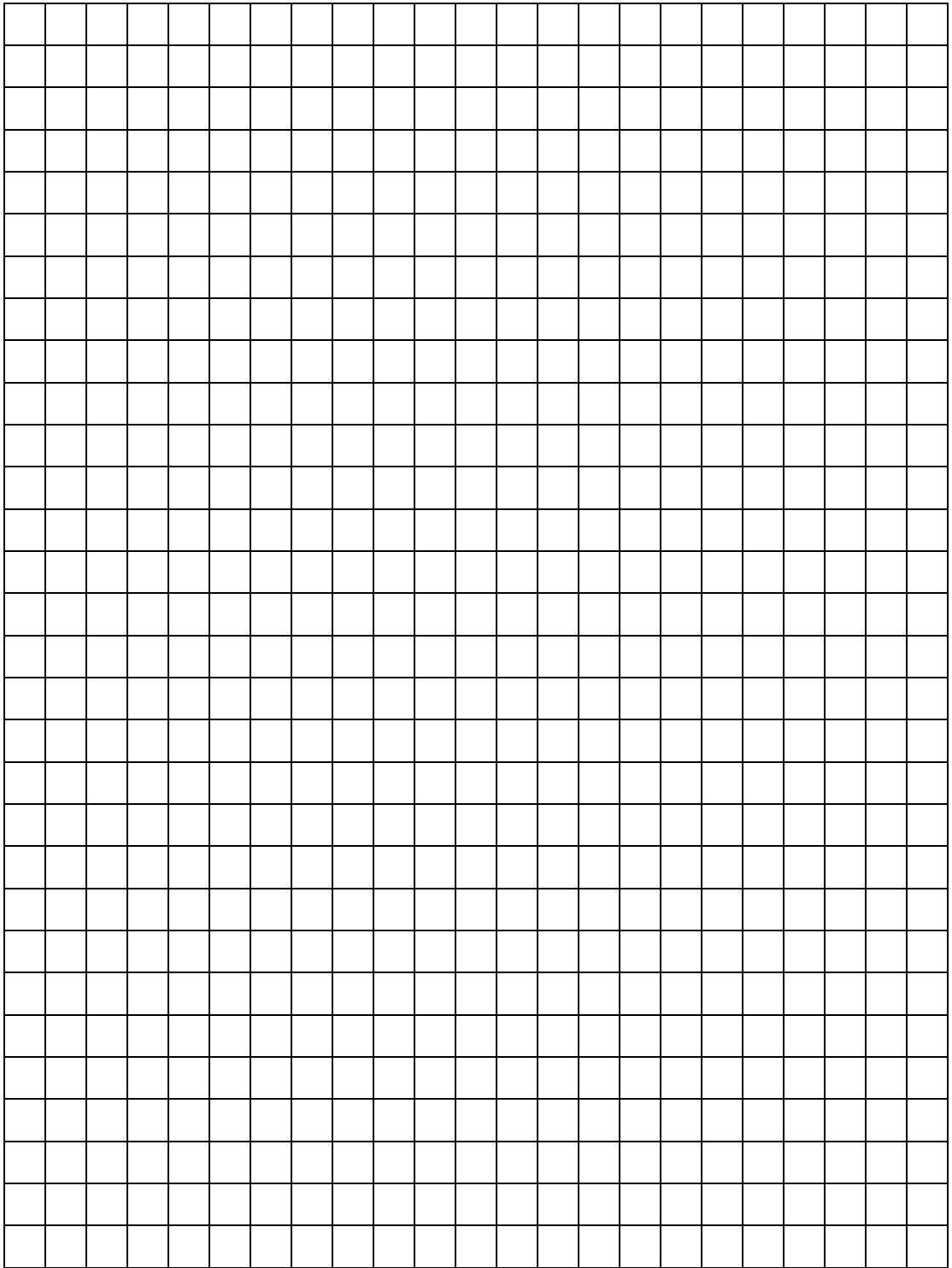
- Convert the distance data for the distance traveled by light into millions of meters rather than meters. Place the new data in the table below.

Time traveled	Distance (m) traveled		Distance (million m) traveled	
	Sound in air	Sound in water	Light in air	Light in water
0 seconds	0	0	0	0
1 second	343	1482		
2 seconds				
3 seconds				

- Graph the data. Make one graph for sound and one for light. Plot distance on the  $y$ -axis and time on the  $x$ -axis. You will have two lines on each graph. Use different symbols or colors to show the data points for distance traveled in air and the data points for distance traveled in water.
- Draw separate lines connecting the data points for air and for water on both of your graphs. Make a legend for your graphs.

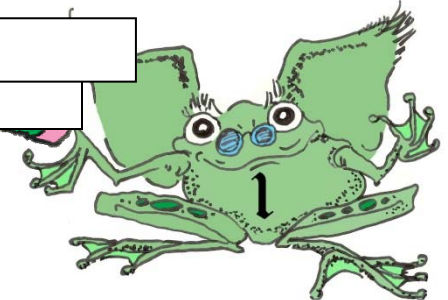


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Blank horizontal rectangular box for writing.

