

**➤ Main Ideas, Key Points, Questions:**

*After watching the video segment, write down key points, main ideas, and big questions.*

**➤ Objective(s):**

- *Understand that the relative motion between the source of a wave and the observer of a wave causes a difference between the emitted and observed frequencies of the wave.*
- *Recognize that when the source of a wave and the observer of a wave move toward each other that the frequency observed is greater than the frequency emitted.*

**➤ Notes:**

*During the video segment, use words, phrases, or drawings to take notes.*

**➤ Summary:**

*After watching the video segment, write at least three sentences explaining what you learned. You may ask yourself: "If I was going to explain this to someone else, what would I say?"*

**Answer the following.**

1. When an emergency vehicle siren approaches you, how does its observed pitch compare to what you hear after the vehicle passes you?

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2. Define the Doppler effect in your own words.

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3. When an emergency vehicle siren approaches you, how does the wavelength of the sound that reaches you compare to the actual wavelength of the sound that the siren emits?

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4. What kinds of waves experience the Doppler effect?

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5. Why are you able to observe the Doppler effect on earth with sound waves but not with light waves?

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6. When stars move away from a telescope, what color do they appear to be compared to the actual light they emit?

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**Answer the following.**

7. What is it called when a galaxy is moving toward a telescope at a very high speed?

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8. What are two everyday applications of the Doppler effect?

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9. What variables must be known to determine the observed frequency of a wave?

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10. If the observer moves toward the source, will the observed frequency be greater than or less than the emitted frequency? Will the numerator of the Doppler effect equation need to increase or decrease for this to happen?

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11. If the source is moving toward the observer, will the observed frequency be greater than or less than the emitted frequency? Will the denominator of the Doppler effect equation need to increase or decrease for this to happen?

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12. What is created when an object travels faster than the speed of sound?

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