



Doppler Effect

Name _____

Period _____

www.pbs.org/wgbh/nova/universe/moving.html#

Write down the purpose of this activity by reading the first page.

Click on Moving Targets – Click Begin

What “bunches up” and “spreads out”?

Click Replay

Where on the car does the “bunch up” occur? _____

Where on the car does the “spread-out” occur? _____

Click Next

Read about frequency and click next

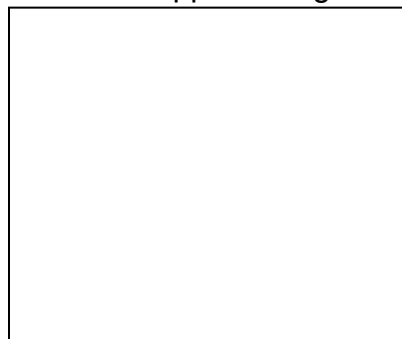
Where are the sound waves shorter, when the car is moving forward or when it's moving away? _____

Determining Speed

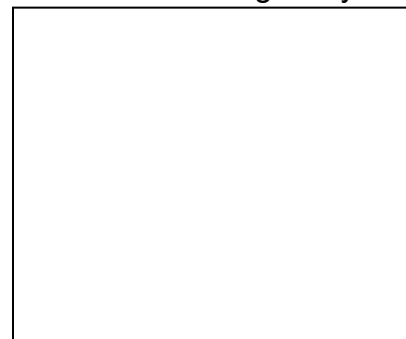
The microphone in the lower left of the screen measures the frequency of the horn as the car is moving away. The microphone in the top right measures the frequency as the car is approaching. What is the difference between the waves recorded? You may have to replay the scene a few times.

Sketch the waves

Car approaching



Car moving away



Click Next. How does the Doppler effect for light differ from sound?

Click Next. What color would we see as the light bulb is moving towards the telescope _____ and away from the telescope _____?

Click Next.

Read and Click Next.

Read and Click Next.

Absorption Lines and the Doppler Effect

How do astronomers see the colors that make up starlight?

What would they see if certain elements in the atmosphere of the stars blocked certain colors of light?

Move your mouse over a. stationary source

Why aren't there any breaks or gaps in the spectrum?

Move your mouse over b. hydrogen gas

How does the hydrogen create gaps in the spectrum?

Would the hydrogen absorption lines be exactly like another elements lines?

Explain

Move your mouse over c.

How can astronomers determine how fast a star is moving?

How can we tell if a star is moving towards us? Away from us?

Click Next

A star moving away from us: _____

A star moving towards us: _____

Go to:

http://earthsci.terc.edu/content/visualizations/es2802/es2802page01.cfm?chapter_no=visualization

Read the 3 paragraphs

When a star is moving, how are the light waves similar to the frequency waves when the car with the horn player was moving?

Change the stars speed to move at Max speed away from earth. Use your ruler to measure the shift _____mm

Do the absorption lines shift towards the blue or the red when the star is moving away from the earth?

Return the speed to zero and change the direction of the star to move towards the earth. Change the stars speed to move at Max speed towards earth. Use your ruler to measure the shift _____mm

Do the absorption lines shift towards the blue or the red when the star is moving towards the earth?

