Name **Answer Key** _____
Date_____
Period_____

Police Waves

Student Name	**Tuning Fork Used** **Recalibrated Speed**	**Tuning Fork Used** **Trail 1 Speed**

1. Why are tuning forks important to use in the police force?

Answer May Vary Depending on how the officer explains it:

Main Idea→Tuning forks recalibrate the radar gun either at 35 or 65mph.

To be certain the radar unit is operating properly, police officers must calibrate the machine before and after each shift. They do this by striking and holding a tuning fork in front of the radar unit's antenna. Each tuning fork is designed to simulate

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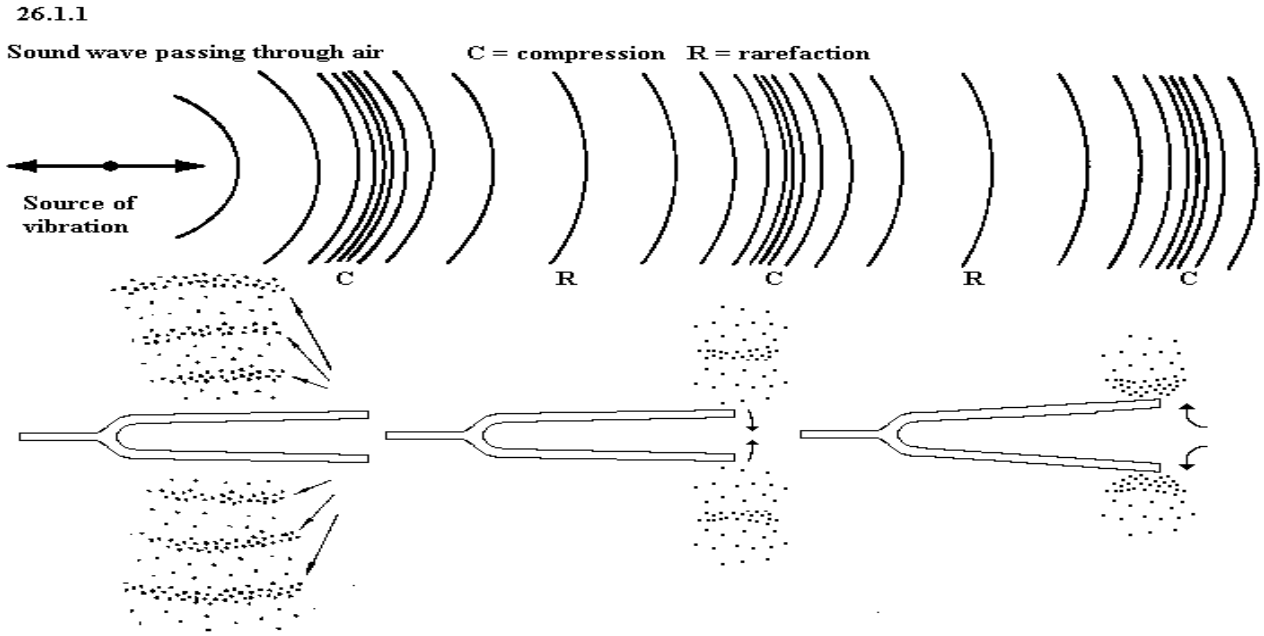
a pre-determined speed in miles per hour. Two tuning forks are used when calibrating a radar unit - one fork is pre-set to 65 mph and the other simulates 35 mph.

The radar unit picks up the forks vibrations as speed and displays its calculation in the *target speed* window. If the calculated speed is the same as the speed generated by the tuning fork, the unit is operating properly.



2. What is the source of vibration in the tuning forks? The motion of the hand strike the tuning fork against something.
3. What is the medium that the sound waves travel through? The tuning fork and the air.
4. The Doppler Effect explains why the pitch of a siren coming from far way sounds different than the pitch of a siren nearby. As sound travels

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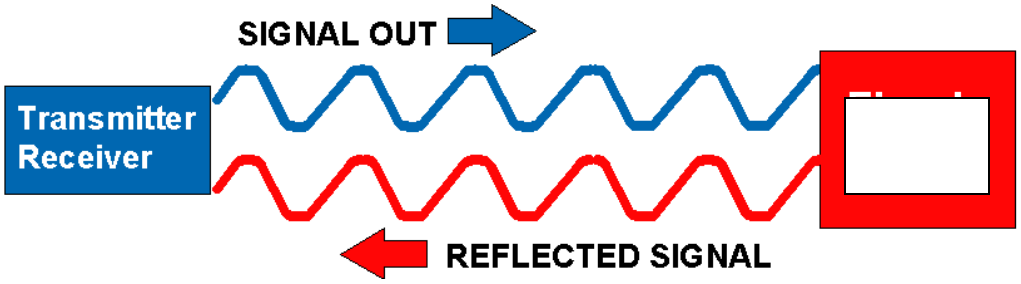
through the air, the sound is distorted. The further the distance between your ear and the sound, the more the sound is distorted.

5. The faster the vehicle, the greater the distortion. The distorted radar beam is reflected back to the radar gun and the radar gun "reads" the distortion and calculates the speed of the target.
6. Describe the process that energy is being transferred when sound waves from the transmitter travel through air.

The energy starts with the officer pulling the trigger of the radar gun with her/ his finger. Then the energy travels through the radar gun and out towards the target. When the wave hits the target it gets reflected back to the radar gun.



7. The transmitter/ receiver represents radar gun?
8. In the above figure is the object moving toward, away or is it stationary from the transmitter/ receiver? stationary

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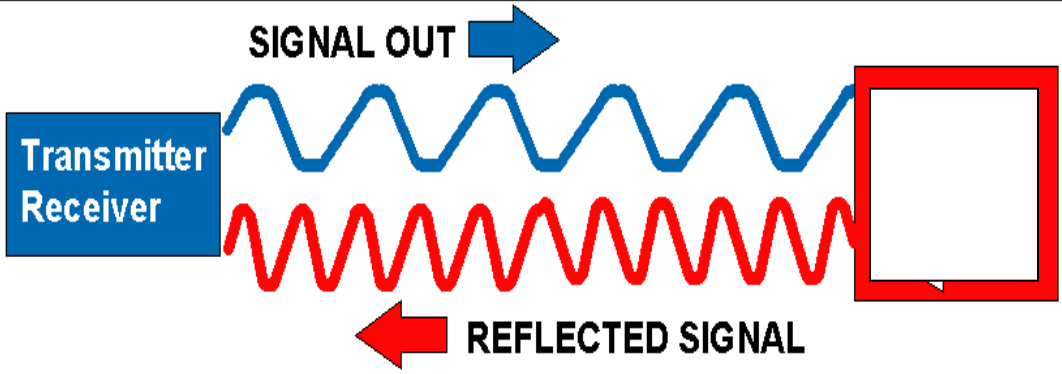
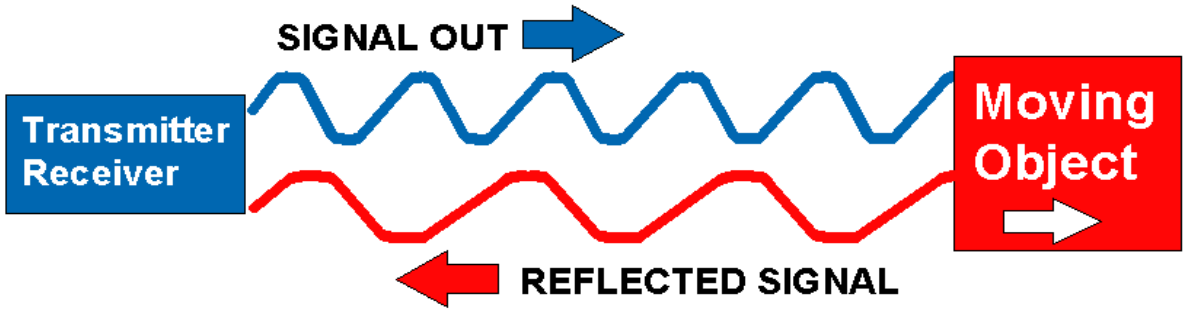


9. In the above figure is the object moving toward, away or is it stationary from the transmitter/ receiver? towards
10. What type of wave is being represented in the above figure? Transverse wave for the above and tuning fork longitudinal wave
11. Why does the reflected signal wave look different than the signal out wave? The wave is compressed as it comes toward the receiver



12. Draw what the reflected wave would look like when the target is moving in the same direction as the outward signal.