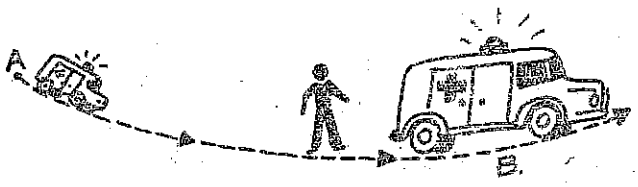
IT WORKS FOR BATS

You may have heard that bats find things, not with their eyes, but with the use of sounds. They make use of something called the Doppler effect to find their prey. You use it, too, although you may not know it!

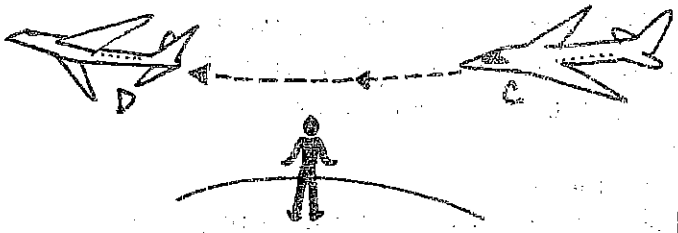
The Doppler effect is a change in wave frequency that is caused when the sound source moves or the person hearing the sound moves. The most frequently occurring instances of this effect in our lives probably are passing sirens and overhead airplanes, but the Doppler effect happens many times a day. Something produces a sound that stays at the same pitch, but to you, because of your motion or the motion of the object, the pitch seems to change (up or down). If you don't already know about the Doppler effect, study it so that you can answer these questions.



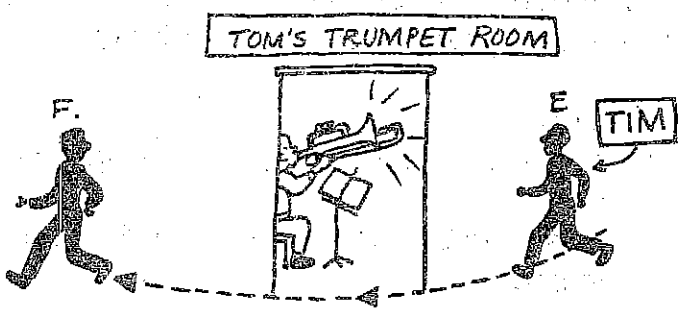
1. At which point does the pitch seem higher?

   _____

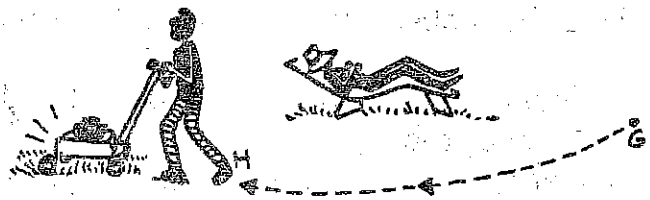
2. At which point are the sound waves more crowded together? _____
3. At which point does the sound have a lower pitch? _____



4. Are the sound waves farther apart at point C or D? _____
5. Does the sound have a higher pitch at point C or D? _____



6. Whose movement is contributing to the Doppler effect? _____
7. Are the sound waves closer together at point E or F? _____
8. At which point is the pitch higher? _____



9. Describe the sound waves at point H. _____

   _____

10. At what point is the frequency of the waves lower? _____
11. What happens to the sound as the mower approaches point H? _____
12. What will happen to the sound as the mower turns around and heads back toward the sunbather? _____

    _____

Name _____