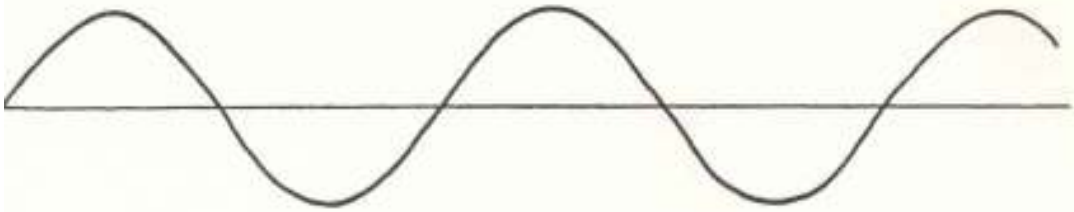
Name Period Date

Concept-Development Practice Page **25-1**

Vibrations and Waves

1. A sine curve that represents a transverse wave is drawn below. With a ruler, measure the wavelength and amplitude of the wave.



a. Wavelength = _____ b. Amplitude = _____

2. A kid on a playground swing makes a complete to-and-fro swing each 2 seconds. The frequency of swing is

(0.5 hertz) (1 hertz) (2 hertz)

and the period is

(0.5 second) (1 second) (2 seconds)

3. *Complete the statements.*

4. The annoying sound from a mosquito is produced when it beats its wings at the average rate of 600 wingbeats per second.

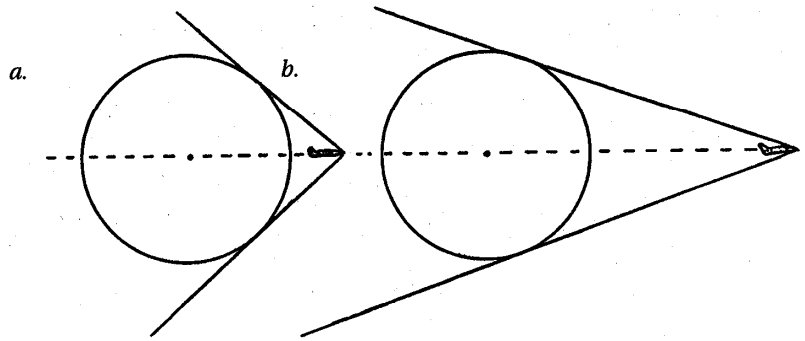
a. What is the frequency of the soundwaves?

_____

b. What is the wavelength? (Assume the speed of sound is 340 m/s.)

_____

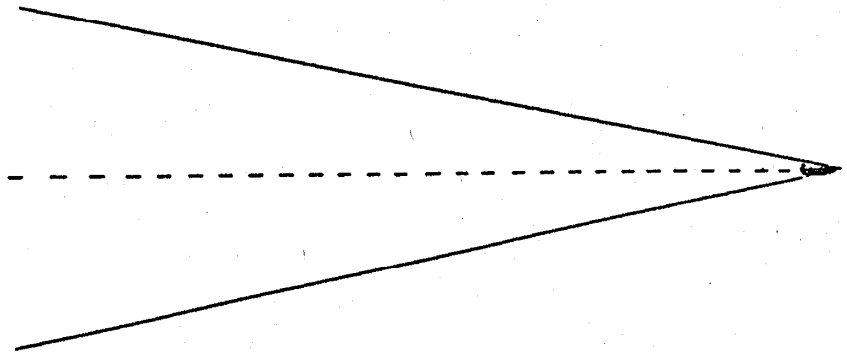
3. Use a ruler to estimate the speeds of the aircraft that produce the shock waves in the two sketches below.



Aircraft *a* is traveling about _____ times the speed of sound.

Aircraft *b* is traveling about _____ times the speed of sound.

4. Draw your own circle (anywhere) and estimate the speed of the aircraft to produce the shock wave shown below.



The speed is about _____ times the speed of sound.

5. In the space below, draw the shock wave made by a supersonic missile that travels at four times the speed of sound.

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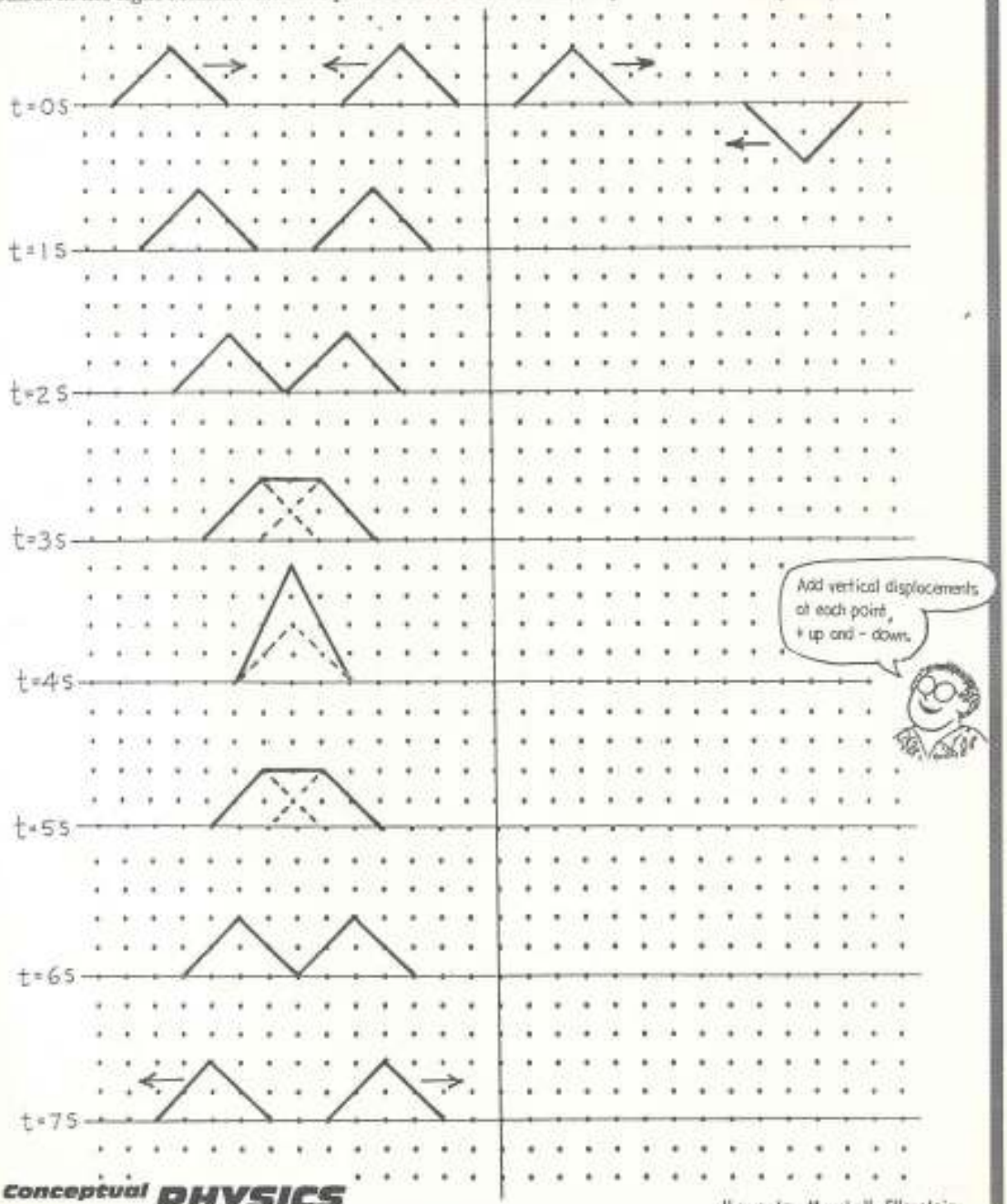
Wave Superposition

A pair of pulses travel toward each at equal speeds. The composite waveforms as they pass through each other and interfere are shown at 1-second intervals. In the left column note how the pulses interfere to produce the composite waveform (solid line). Make a similar construction for the two wave pulses in the right column. Like the pulses in the first column, they each travel at 1 space per second.



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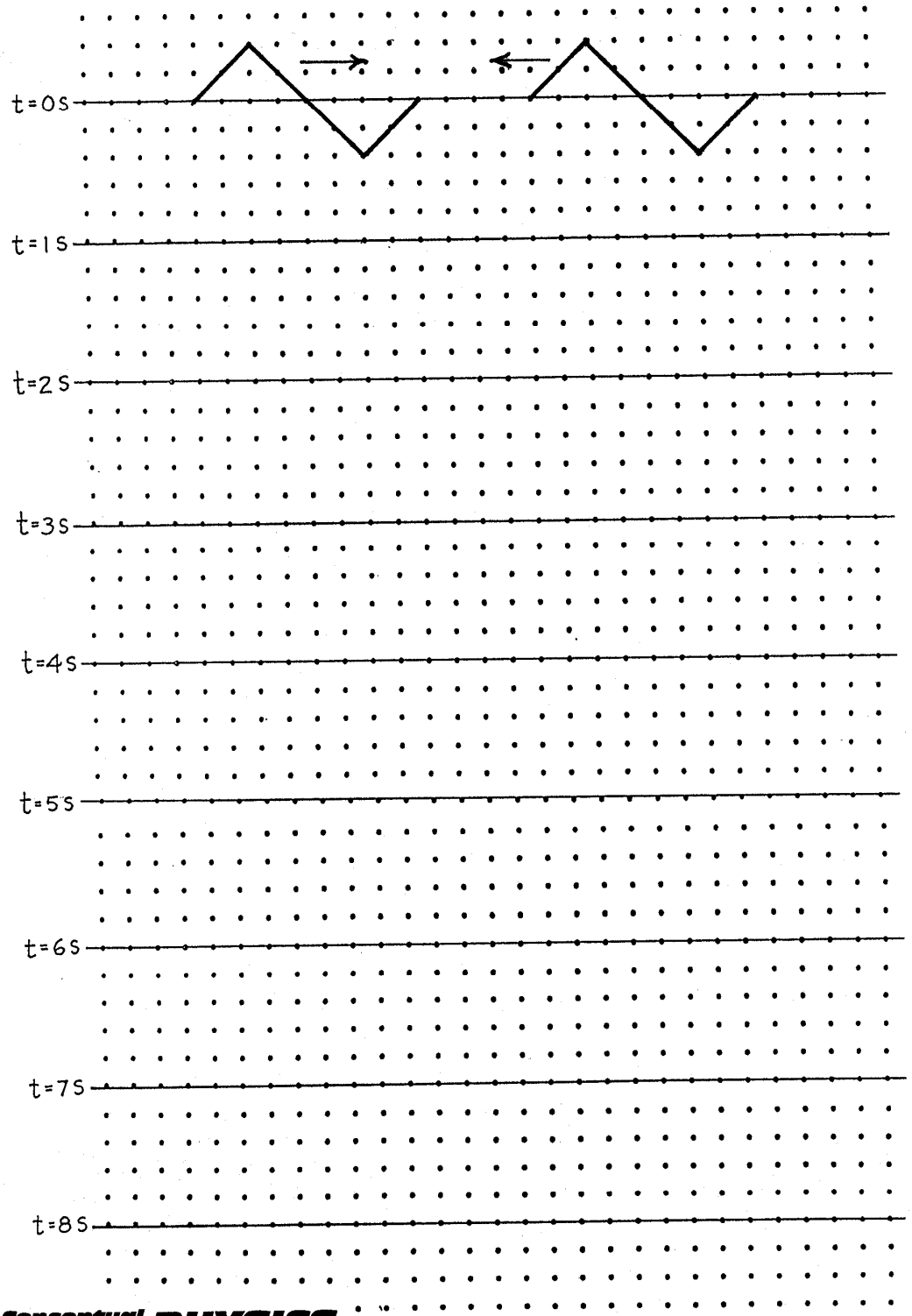
thanx to Marshall Ellenstein

Construct the composite waveforms at 1-second intervals for the two waves traveling toward each other at equal speed.



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