Resonance and Standing Waves:

1. Sketch and find the wavelengths of the first four waves that will stand in a 2.40m long string, fixed at both ends.

2. Sketch and find the wavelengths of the first four waves that will stand in a 2.40m long bar, fixed at one end.

3. A string carries waves at 40.0m/s. The string is 1.60m long and is fixed at both ends. What frequency of vibration will allow third resonance to develop?

4. A string carries waves at 60.0m/s. The string is 4.40m long and is fixed at both ends. What frequency of vibration will allow fifth resonance to develop?

5. A rod carries waves at 220.0m/s. The rod is 0.84m long and is fixed at one end. What frequency of vibration will allow second resonance to develop?

6. A rod carries waves at 100.0m/s. The rod is 0.84m long and is fixed at one end. What frequency of vibration will develop when the rod is struck with a hammer?

7. A type of string carries waves at 66.6m/s. What length of this string will have a fundamental frequency (first resonance) at 40.0Hz?

8. A 44cm metal rod is fixed at one end. The rod develops third resonance at 1250Hz. What is the speed of the waves within the rod?

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