

Wave problem practice key:

1. Frequency does not effect amplitude because when you increase the amplitude the parts of the wave have to move further but they do it in the same amount of time so they move up and down or back and forth faster
2. 20 Hz. See explanation for #1
3. 1.2m. See explanation for #1
4. 0.25m. $v = \lambda \cdot f$ velocity has to stay the same so if you double the frequency the wavelength has to compensate by decreasing by a half
5. 10 Hz. If the wavelength is doubles the frequency has to compensate by decreasing by a half in order to keep the velocity constant.
6. 10 m/s. $v = \lambda \cdot f = (20\text{Hz}) (0.5\text{m})$
7. 2 Hz. $v = \lambda \cdot f \rightarrow f = v / \lambda = (0.8 \text{ m/s}) / (0.4\text{m}) = 2 \text{ Hz}$