

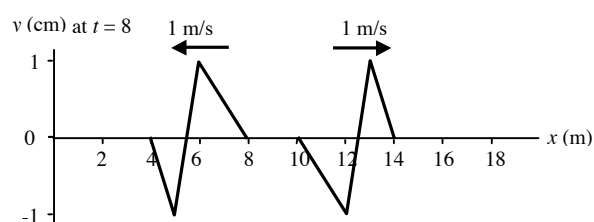
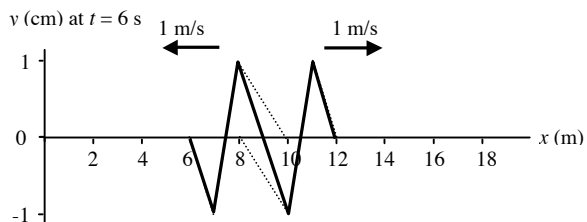
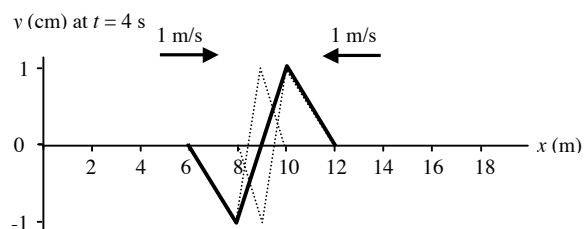
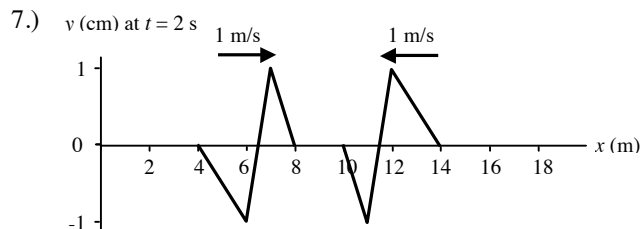
AP Physics 1

Wave Problem Answers

1.) $f_1 = f_2$ and $\lambda_2 = 2\lambda_1$ 2.) a.) $A = 1.28$ m b.) $A = 0.22$ m

3.) $f = 2$ Hz, $T = 0.50$ s, and $v = 0.30 \frac{\text{m}}{\text{s}}$ 4.) $v = 90 \frac{\text{m}}{\text{s}}$ 5.) $v = 0.80 \frac{\text{m}}{\text{s}}$

6.) $T = 1.73$ s and $\lambda = 6.4$ m



8.) a.) $\lambda = 6.0$ cm b.) $T = 8.0$ s c.) $v = 0.75 \frac{\text{cm}}{\text{s}}$

9.) $\lambda_1 = 240$ cm, $\lambda_2 = 120$ cm, and $\lambda_3 = 80$ cm 10.) $v = 129 \frac{\text{m}}{\text{s}}$

11.) a.) $v = 40.0 \frac{\text{m}}{\text{s}}$ b.) $T = 100$ N 12.) a.) $v = 9.17 \frac{\text{m}}{\text{s}}$ b.) $\lambda = 0.0764$ m

13.) $v = 53.4 \frac{\text{m}}{\text{s}}$ 14.) $f_1 = 7.9$ Hz, $f_2 = 15.8$ Hz, and $f_3 = 23.7$ Hz

15.) by a factor of $\sqrt{2}$ 16.) $f_4 = 640$ Hz 17.) a.) $v = 82.0 \frac{\text{m}}{\text{s}}$ b.) $\lambda_1 = 16.8$ m
c.) $f_3 = 14.6$ Hz

18.) a.) $f_1 = 150$ Hz b.) $f_2 = 300$ Hz c.) $L = 1.50$ m

19.) a.) $\lambda_8 = 0.210$ m b.) $f_1 = 50.0$ Hz 20.) a.) $f_1 = 64$ Hz b.) $L = 1.0$ m and $m = 0.0305$ kg

21.) a.) $\lambda_6 = 0.667$ m b.) $f_6 = 60.0$ Hz c.) $f_1 = 10.0$ Hz 22.) $v = 40.0 \frac{\text{m}}{\text{s}}$