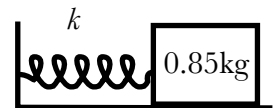# Physics 102 Homework #2
first draft due Wednesday, February 1st
final draft due Sunday, February 5th

1. What is the period of a pendulum with a 5kg bob and a 0.7m-long string?

2. A 0.85kg block on a spring is oscillating with an amplitude of
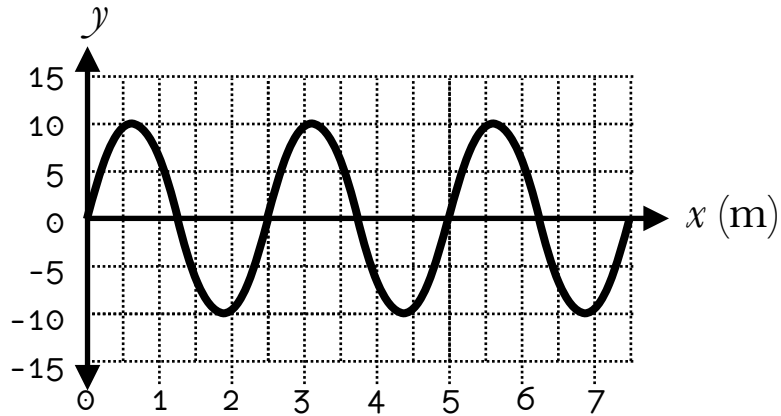$A = 0.42$m and a frequency of $f = 3.5$Hz.

a. What is the spring constant of the spring?

b. What is the fastest speed the block attains, and when does it attain it?

c. What is the total energy of the block during its oscillation?

3. This is a graph of a wave moving with 7.2m/s at time $t = 0$.

a. What is the amplitude of the wave?
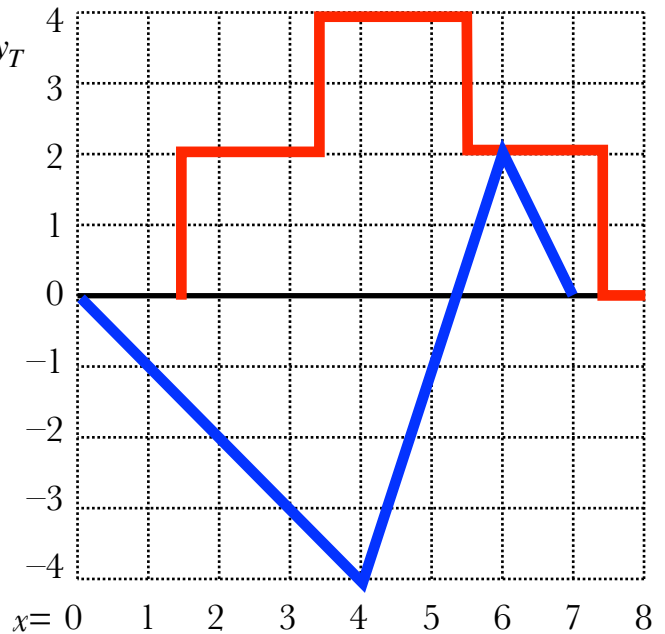
b. What is the wavelength of the wave?

c. What is the period of the wave?

d. What is the frequency of the wave?

4. Suppose these two pulses overlap in a medium.
Note that this is a snapshot graph with x on the horizontal axis.

a. Fill in the table with the total displacement y_T at $x=0,1,\ldots,8$. (I've filled in a few.)

b. In the next column, write a **C** if there is constructive interference going on, **D** if destructive, and **N** if neither.

c. Use the numbers from the table to draw the superposition of the two pulses in the blank graph below.

x	(a) y_T	(b) C/D Interference?
0	0	N
1	1	D
2	0	D
3	1	D
4	0	D
5	1	D
6	4	C
7	2	N
8	0	N

(c)