PHYSICS 242 BLOCK 8 DRILL SET, SPRING '17 NAME _____

Slide this drill set under Marteena 308's door any time *before* 7:50 AM Friday, March 17, or give it to me in Marteena 312 *by* 8:00 AM that day. For each problem, use one different equation from the Block 8 objectives.

1. A wave has wavelength 1.415 m. Find its wave number to three significant figures.

ONE EQUATION USED		ANSWER
=	Given: ___ = 1.415 m. Wanted: ___ Solution:	= __ . __ __ rad/m

2. The wave function for a traveling wave on a wire is y = 2.22 mm cos([4.44 rad/m]x + [1110 rad/s]t).
To find the needed values for this problem and for Problem 2 below, ***compare this given wave function to*** $y(x,t) = A\cos(kx - \omega t)$ **or to** $y(x,t) = A\cos(kx + \omega t)$. Then *use* ***one other*** *equation* to calculate the wave speed. Also, use the sign in the phase to determine the direction ($+x$, $-x$, $+y$, $-y$, $+z$, or $-z$) that the wave is moving.

ONE OTHER EQUATION USED	SOLUTION	ANSWER
=	By comparison, __ = _____ and __ = _____.	_____ WAVE SPEED ____ DIRECTION

3. Now use another single equation to calculate the frequency of the traveling wave in Problem 2 above.
Hint: Do **not** use the wave speed.

ONE OTHER EQUATION USED	SOLUTION	ANSWER
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4. What tension would you need to have a transverse wave speed of 559 miles per hour = 900 km/h = 250 m/s on a wire of mass 9.42 g, weight 0.0924 N, length 2.83 m, and mass per length 3.33×10^{-3} kg/m ?

ONE EQUATION USED	SOLUTION	ANSWER
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5. On a 2.83 m long wire fixed at both ends, you set up a standing 176.7 Hz wave. Each antinode is 0.354 m away from its neighboring node. Find the wave speed of the two traveling waves that make up this standing wave.

ONE EQUATION USED	SOLUTION	ANSWER
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