MOTION PRACTICE #1

***INSTRUCTIONS**: Complete the following problems in your journal. Show your process clearly and include proper units throughout calculations for every problem! Graphs must be done on graph paper and include appropriate quantitative values.*

For the following problems, let's designate the Skyline Flagpole of Physics as the "origin." Let's also designate **north** to be the positive direction and **south** as the negative direction.

1. If Luke starts 3.0 m north of the flagpole and rides his bike at a constant velocity of 4.0 $^{m}/_{s}$ for 12 seconds:
    a. Use the equation $d = v \cdot t + d_1$ to calculate Luke's final displacement
    b. Create a quantitative *d*-*t* graph of Luke's motion
    c. Create a quantitative *v*-*t* graph of Luke's motion

2. If Han starts 7.0 m south of the flagpole and rides his bike at a constant velocity of 5.75 $^{m}/_{s}$ for 15 seconds:
    a. Calculate Han's final displacement
    b. Create a quantitative *d*-*t* graph of Han's motion
    c. Create a quantitative *v*-*t* graph of Han's motion

3. If Leia starts 12 m north of the flagpole and rides her bike at a constant velocity of -8.5 $^{m}/_{s}$ for 4.5 seconds:
    a. Calculate Leia's final displacement
    b. Create a quantitative *d*-*t* graph of Leia's motion
    c. Create a quantitative *v*-*t* graph of Leia's motion

4. Create a quantitative *d*-*t* graph for the following motion:

    Starting at 8.0 m north of the flagpole, Ben rides towards the pole (eventually passing it) covering 4.0 meters every second for a total of 6.0 seconds.

    Write a linear equation describing his motion in the form $y = mx + b$ (but replace *y* and *x* with the appropriate variables for our graph).

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    a. Calculate Han's final displacement
    b. Create a quantitative *d*-*t* graph of Han's motion
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