Name:

Math 490, Spring 2013: Homework #3
Due Tuesday, February 12, 2013

1. The following questions are "sequels" to Nathan and David's presentation of Dan Meyer's "Taco Cart," three-act math task. Like Dan and Ben from the Taco Cart problem, Nathan and David are standing in the sand and wanting to get to the Taco Cart, which is on the sidewalk. Nathan and David are standing 300 feet from the sidewalk (that is their perpendicular distance to the sidewalk). If they were to walk the perpendicular line segment 300 feet to the sidewalk, their perpendicular distance to the Taco Cart would be 500 feet.

a. Nathan is planning to walk the perpendicular distance to the sidewalk and then walk along the sidewalk to the Taco Cart. David is planning to walk to the Taco Cart via the shortest distance through the sand. Where would the taco cart have to be so that Nathan and David reach it at the same time? (They both walk 3 feet/second in the sand and 6 feet/second along the sidewalk.) FIRST draw a picture of what is going on and the point where you *think* the taco cart should be, then do the calculations and compare your estimate with the answer.

b. Using the same speeds and data as above, what path to the taco cart would take the least amount of time? First draw the path that you think would take the least amount of time, then do the calculations and compare your estimate with the answer.

2. The following is a "sequel" to Katherine's presentation of Dan Meyer's "Lucky Cow," three-act math task: Create a formula that tells you where to make the horizontal cut given any sector of cheese of any angle and radius.

3. The following is a "sequel" to Kyle's presentation of Dan Meyer's "Incredible Shrinking Dollar," three-act math task: You could turn a US dollar coin (26.5 mm diameter) into the size of a dime (17.91 mm diameter) by copying it four times at 90%. Give two other ways you could do exactly the same thing.

From TEXT:
5.3, 1, 4, 5, 7, 8, 9