CHALLENGE PROBLEMS – RELATED RATES

This activity is due by Friday, April 24th. You will need to email a picture of your work to me at [jphillips@bartlettschools.org](mailto:jphillips@bartlettschools.org)

NAME \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ PERIOD \_\_\_\_\_\_\_\_\_ 4/20/20

1. An airplane is flying towards a radar station at a constant height of 6 kilometers above the ground. If the distance *s* between the airplane and the radar station is decreasing at a rate of 400 kilometers per hour when *s* = 10 kilometers., what is the horizontal speed of the plane?
2. A boat is being pulled into a dock by rope attached to it and passing through a pulley on the dock, positioned 6 meters higher than the boat. If the rope is being pulled in at a rate of 3 meters/sec, how fast is the boat approaching the dock when it is 8 meters from the dock?
3. The sides of a square are increasing at a rate of 3 centimeters/sec. When the sides are 5 centimeters long, at what rate is the area increasing?
4. Two cars are traveling along perpendicular roads: car A at 40 mph and car B at 60 mph. At noon, when car A reaches the intersection, car B is 90 miles away and moving toward it. Find the rate at which the distance between the cars is changing at 1 P.M.