

Name \_\_\_\_\_

Exam ID: \_\_\_\_\_

MAT21A Written Assignment  
Due Monday, 11/7

### **Read, Reflect, and React (or Respond) Prompt #9**

Many problems in science and engineering often relate quantities to each other, which brings to life equations within these fields. Often times scientists are concerned with the relationship between the rates of change (derivatives) of such quantities, where the rate of change is usually with respect to time. This concern has given birth to many related rates problems. Today, I created my own related rate example using acid filling a tank in a Resident Evil game. I would like you to create your own related rate problem by completing the following:

1. Find an equation that relates two (or more) variables. Derive a related rates equation using implicit differentiation with respect to time. Create a scenario that will use this related rates equation. Make sure to include a picture to depict the scene along with clearly stating the values, with units, associated with the variables and the derivatives. Also, make sure one rate is unknown and needs to be solved. Solving this problem is optional.