Today's Plan:

Learning Target (standard): I will solve real-world related rate application problems.

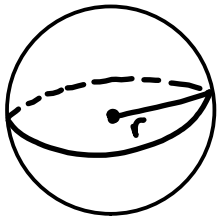
Students will: Complete practice problems over previous concepts at the boards, put up homework problems on the board and make necessary corrections to their own work, and take a test on related rates.

Teacher will: Provide practice problems over previous concepts, check homework problems for accuracy and provide students feedback, describe and provide test problems on related rates.

Assessment: Board work, homework check and test

Differentiation: Students will work at the board, go over and correct homework at their seats, and actively engage in related rate test problems.

A balloon is submerged in liquid nitrogen. The balloon's diameter contracts when it is cooled. The diameter of the sphere is decreasing at a rate of 4 cm/sec. How fast is the surface area changing when the radius is 10 cm?



$\frac{dd}{dt} = -4\,cm/sec \Rightarrow \frac{dr}{dt} = -2\,cm/sec$

$\frac{dSA}{dt} = ?$ when $r = 10cm$

$SA = 4\pi r^2$

$\frac{dSA}{dt} = 8\pi r \frac{dr}{dt}$

$\frac{dSA}{dt} = 8\pi(10)(-2)$

$\frac{dSA}{dt} = -160\pi\ cm^2/sec$