

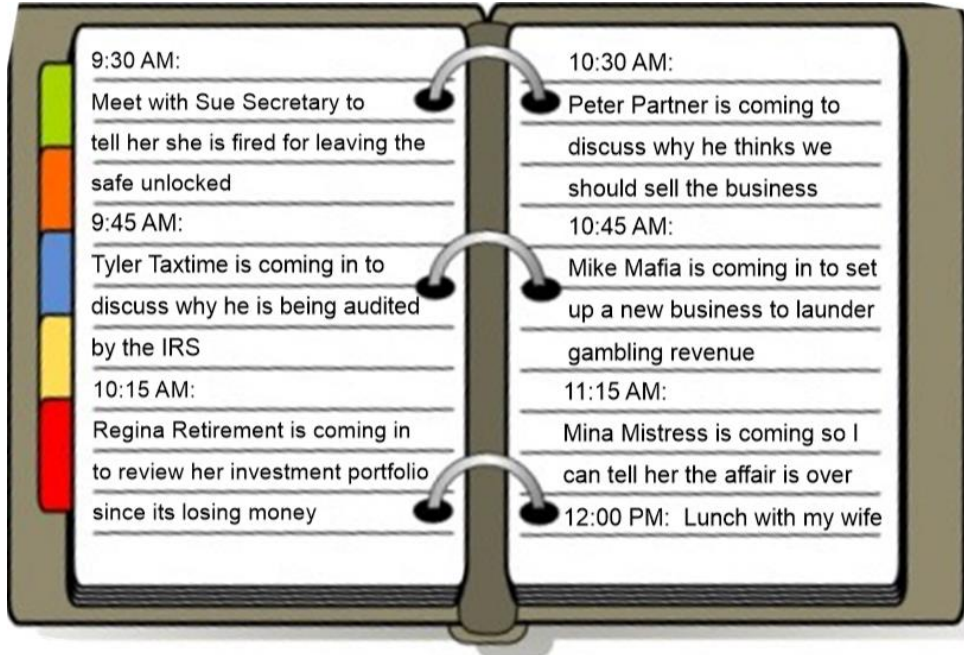
Name:

Period:

First Score:	First attempt due:	Final Score:
	Final corrections due:	

Math Journal:
Death of a Salesman

Samuel Salesman, who sold securities for an investment firm, was found dead in his office by one of his clients coming in for an appointment. The police were called and they secured the crime scene and called the coroner. While the detective waited for the coroner to arrive, he searched the office and found the list of appointments in his day planner shown below. He also snapped a picture of the thermostat in the office since he knew the coroner would need that information to determine the time of death of the victim. At 4:30 p.m. the coroner arrived and measured the body temperature of the victim to be $85.6^{\circ}F$. A second reading measured at 6:30 p.m. found the body temperature to be $82.6^{\circ}F$.



A coroner uses a formula derived from Newton’s Law of Cooling, to calculate the elapsed time since a person has died. The formula is $Dt = -10 \ln \left[\frac{T - Rt}{98.6 - Rt} \right]$ where T is the body’s measured temperature F° , Rt is the constant room temperature, and Dt is the elapsed time in hours since death. A more accurate estimate of the time of death is found by taking two readings, a few hours apart, and averaging the two calculated times of death together.

1] Use the temperature reading of the body at 4:30pm to approximate the elapsed time since Sam was killed. Show work. Round your result to three decimal places of accuracy and include units with your answer. (Never round decimals until the final answer!)

2] According to the temperature reading of the body taken at 4:30pm, what time was it when the murder occurred? Show work.

3] Use the temperature reading of the body at 6:30pm to approximate the elapsed time since Sam was killed. Show work. Round your result to three decimal places of accuracy and include units with your answer. (Never round decimals until the final answer!)

4] According to the temperature reading of the body taken at 6:30pm, what time was it when the murder occurred? Show work.

5] Average your estimates from the 4:30pm and 6:30pm body temperature readings to determine the most accurate time of death. Show work.

6] Who killed Samuel Salesman? Explain your reasoning.