**Time of Death Notes**

**& Practice Problems**  Name:

**Warm-Up:**

You have probably heard of the phrase: ***“Saved by the bell.”*** Where do you think that phrase came from? What is the origin of the phrase? Why did people start saying that phrase? Explain your theory below. If you don’t know, be creative. Do not write IDK.

**Time of Death Notes**

**4 common methods to establish time of death:**

1. **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**
2. **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**
3. **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**
4. **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (including entomology)**

**Rigor Mortis:** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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* **Caused by:** Calcium build up in muscles. Heart can’t pump it out anymore.
* **When does it start:** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* **When does it end:** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* **Why does it end**: The body starts to decay, breakdown, liquify?

**Livor Mortis:** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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* **Caused by:** Heart can’t pump blood. Blood drains due to gravity.

**Algor Mortis:** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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| Table 1 | **Fahrenheit** | **Celsius** |
| **Average Body Temp** | 98.6 **o**F | 37 OC |

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| **Table 2: Temperature loss After Death Per Hour** |
| The first 12 hours | 1.4 OF per hour | 0.78 OC |
| After 12 hours | 0.7 OF per hour | 0.39 OC |

**Calculating Time of Death Using Algor Mortis**

**Important formulas:**

 **Formula 1 Formula 2**

**Temp Loss =** (constant loss rate) x (# hours) **#hours** = Temp Loss

Temp loss per hour hour

 Constant Loss Rate

**Example:** What is the temperature (OF) loss for someone who has been dead for 12 hours?

What is the temp of the body found in this example?

1. What is the temperature (OF) loss for a body who has been dead for 8 hours?

1a. At the time the body was found, what was the temperature of the body?

1. At the time a body was found, the body temp was 90 (OF). How long ago did this person die? (Note: to find temp loss, you must subtract 98.6 – 90)

2a. If the body was found at 12 noon, about what time did this person die?

1. **Challenge:** A dead body was found and the internal temperature was found to be 72 OF.

3a. Calculate the total Temperature lost

3b. Calculate the temp lost for the first 12 hours (use formula 1)

3c. Calculate the remaining temperature loss. Subtract total temp lost by your answer from #3b

3d. Calculate the # hours after the initial 12 hours. Use formula # 2. Enter your answer from question 3c and use the after *12 hours constant loss rate* found in table 2

4d. Calculate the total time of death. Answer from 3d + 12.

1. **Super challenge:** A dead body was found @ 10pm. The internal boy temperature was 68 OF. What was the time of death?
2. **Graph Fun:** On the attached graph, plot the following body temperature measurements taken at 30-minute intervals on a murder victim.

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| **Time** | **Temperature (C)** |
| 7:00 am | 32.5 |
| 7:30 am | 31.8 |
| 8:00 am | 31.2 |
| 8:30 am | 30.5 |
| 9:00 am | 29.9 |
| 9:30 am | 29.3 |

5a. The average body temperature in Celsius is 37 OC. using your plot, estimate the time of death.

1. List 3 things that could making calculating time of death with Algor Mortis inaccurate.
2. Why is it so important to get an accurate estimate of the time of death when someone has died under suspicious circumstances?

Graph Title

Y-axis Title:

37

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9:30

3am

 3:30 4am 4:30 5am 5:30 6am 6:30 7am 7:30 8am 8:30 9am

X-axis Title: