

Name \_\_\_\_\_

## ESTIMATING TIME OF DEATH

### Objective:

Estimate time of death using insect, algor mortis, livor mortis, and rigor mortis evidence.

**Procedure:** Working with a partner, answer the following questions

1. A naked, male corpse was found at 8 a.m. on Tuesday, July 9. The air temperature was already 26.7°C (81°F). The body exhibited some stiffness in the face and eyelids and had a body temperature of 34.4°C (93.9°F). Livor mortis was not evident.
  - a. Approximately how long ago did the man die?
  - b. Justify your answer.
  - c. Would clothing on the body have made a difference in determining actual time of death? Why or why not?
  
2. At noon, a female corpse was found partially submerged on the shore of a lake. The air temperature was 26.7°C (81°F), and the water temperature was about 15.6°C (61°F). Rigor mortis was not evident, and the body's temperature was 15.6°C. Livor mortis showed a noticeable reddening on the victim's back that did not disappear when pressed. Bacterial activity was not significantly increased, and the lungs were filled with water.
  - a. Approximately how long ago did the woman die?
  - b. Justify your answer.
  
3. The body felt cool to the touch. The thermometer gave a reading of 70°F. No rigor mortis was evident, but permanent livor mortis had set in, with blood pooling along the back. There was no noticeable increase in bloating or bacterial activity in the digestive system and no putrefaction. The man had been dead for over four days. How is that possible?
  
4. The dead body contained evidence of blowfly infestation. The larvae were collected and reared in a lab in an environment similar to the conditions surrounding the dead

body. Adult flies mated and laid eggs. Data was collected, noting the time required to progress from one stage to the other, and recorded in the Data Table below.

<b>Life Cycle of Insects Collected from Dead Body</b>		
<b>Stage</b>	<b>Accumulated Time Since Egg Was Laid (Hours)</b>	<b>Accumulated Time Since Egg Was Laid (Days)</b>
<b>Egg</b>	<b>Egg laid minutes after death</b>	<b>0</b>
<b>Larva stage 1</b>	<b>24</b>	<b>1</b>
<b>Larva stage 2</b>	<b>60</b>	<b>2.5</b>
<b>Larva stage 3</b>	<b>96–120</b>	<b>4–5</b>
<b>Pupa</b>	<b>192–288</b>	<b>8–12</b>
<b>Adult</b>	<b>432–576</b>	<b>18–24</b>

- a. Record the estimated time since death if the insects recovered from the dead body were in these stages: egg; larva 1; larva 2; larva 3; pupa; adult.
  - b. Record the estimated time since death if insects were in the following stages: Some eggs and some larva stage 1; some adults and some pupae; some larva found in stage 2 and stage 3.
5. A dead body of an elderly gentleman was discovered in an abandoned building. Blowfly pupae were found on the body. A missing person’s report was filed for an elderly gentleman who had wandered away from home just two days before. The body found was similar in age, height, and weight to the missing person. Could this possibly be the same person as the person described in the missing person’s report? Explain your answer.
  6. The police received a report about a body found in the woods behind the local shopping center. The forensic investigator collected 5 different types of living insects on the man’s body. It’s important to stress that investigators found all 5 insects alive on the body at the same time. The insects were sent to the forensic entomology lab, where they were raised under similar conditions to those found around the dead body. The following chart describes the life cycles of each of the five different types of insects found on the dead body. How long has the man been dead? Explain.

<b>Day</b>										
<b>Insect</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>	<b>9</b>	<b>10</b>
<b>Blowfly</b>	1	1	1	1	1	1	1	1	1	0
<b>Species A</b>	0	0	0	0	1	1	1	1	1	1
<b>Species B</b>	0	0	0	0	0	0	1	1	1	0
<b>Species C</b>	0	0	0	0	0	0	0	0	1	1
<b>Species D</b>	0	0	0	0	0	1	1	1	1	1

**0 = no evidence of fly species    1 = evidence of egg, larva (maggot) or pupa**