

## Teacher's Entomology Case Worksheet

1. What task was Dr. Krinsky asked to help with in the 1986 murder case?

Dr. Krinsky was "asked to examine the insect evidence from the carpet and help determine approximate time of death." [from the Case introduction section of the Case Summary file]

2. What types of evidence and information did Dr. Krinsky gather?

The following information was gathered [from the Gathering evidence and Asking other important questions section of the Case Summary file]:

- from the carpet
  - i. insect evidence
  - ii. the way the carpet encased the body
  - iii. how the carpet was handled
- from the site where the body was found
  - i. additional insect evidence
  - ii. where the body was placed
  - iii. vegetation where the body was placed
  - iv. direction of the sunlight
  - v. humidity
- weather data in September 1986
- autopsy report

In addition, Dr. Krinsky also made various observations related to the maggot activities on the carpet [from Dr. Krinsky's Note file]

3. What kind of observations did Dr. Krinsky make about the collected insect evidence?

Dr. Krinsky made observations on maggot activities on the carpet. He noted various areas where maggots were abundant, how various pupae have moved to the carpet folds as well as the observation that the detective made when removing the plastic from the body. [from Dr. Krinsky's Note file]

4. How did Dr. Krinsky process the blow fly puparia collected from the carpet on September 22, 1986?  
Why?

Dr. Krinsky processed the collected insect evidence in various ways [from Laboratory work section of the Case Summary file]:

- some were pinned or preserved in ethanol,
- some were made into slides to study the biological structures, and
- others were reared to develop into adults to help calculate the accumulated degree hour in order to estimate the postmortem interval

5. What are some factors (variables) that affect the insect life cycle?

Temperature and environmental factors affecting temperature such as direct sunlight, shade, etc.

6. Describe in your own words how insect life cycle is applied in estimating the time of death.

Students' descriptions should demonstrate their understanding of the following concepts:

- Insects undergo various developmental stages—egg; second and third instar; pupa; and adult insect
- An insect requires a specific amount of heat (thermal energy) to develop from one stage to the next—egg to adult insect which is called accumulated degree hour (ADH).
- With a known ADH of an insect, one can calculate back to the first time of the egg deposit from the emergence of the adult insect given the temperatures during the development stages are known.