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Forensic Entomology

Due Date:

**Guide \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Review \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Critical Thinking \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Concept Map \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Crossword \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

Forensic Entomology Guide

entomology

post mortem interval

interface area

larva

molt

ectothermic

complete metamorphosis

bloated stage

decay stage

post decay stage

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| --- | --- | --- | --- |
| entomology | larva | complete metamorphosis | decay stage |
| post mortem interval | molt | bloated stage | post decay stage |
| interface area | ectothermic |  |  |
|  |  |  |  |

Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Score\_\_\_\_\_\_\_\_\_
Forensic Entomology Review

1. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ begins when the skin breaks and the gases escape.
2. Most of the flesh is gone from the corpse, with only cartilage, bone, and skin remaining is the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
3. The area between the body and the ground is the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
4. The \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ begins when the body becomes inflated due to the production of gases.
5. Cold blooded animals are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
6. During \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ there are four stages – egg, larva, pupa, and adult.
7. The shedding of an exoskeleton by an insect is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
8. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is the study of insects.
9. The \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is the time between death and the discovery of the body.
10. The \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is the wormlike stage of an insect’s life cycle.

Put the stages of decay in order from first to last. (use numbers)

1. \_\_\_\_\_Bloated stage
2. \_\_\_\_\_Post-decay stage
3. \_\_\_\_\_Fresh stage
4. \_\_\_\_\_Decay stage

Determine the stage at which each insect arrives at a corpse. Early stage (E), early to late stage (EL) or late stage (L).

1. \_\_\_\_\_Skin beetles
2. \_\_\_\_\_Ham beetles
3. \_\_\_\_\_Carrion beetles
4. \_\_\_\_\_Hide beetles
5. \_\_\_\_\_Rove beetles
6. \_\_\_\_\_Clown beetles

Determine whether the statement is true (T) or false (F).

1. \_\_\_\_\_Temperature data is important for entomologists to know because it affects the activity of insects.
2. \_\_\_\_\_During metamorphosis, the pupa comes before the larva.
3. \_\_\_\_\_The stage of decomposition that smells bad is the bloated stage.
4. \_\_\_\_\_It takes about 8 days for a blowfly to complete its life cycle.
5. \_\_\_\_\_Chemicals in the victim’s body (drugs or poisons) can affect how insects develop on the corpse.
6. \_\_\_\_\_Stage when body fills with gases. a. fresh stage
7. \_\_\_\_\_Stage immediately following death. b. bloated stage
8. \_\_\_\_\_Stage when gases escape. c. post-decay stage
9. \_\_\_\_\_Stage when only bone and skin remain. d. decay stage

Identify the insect as either dipetera (D) or coleoptera (C).

1. \_\_\_\_\_Green bottle
2. \_\_\_\_\_Rove
3. \_\_\_\_\_Carrion
4. \_\_\_\_\_Blow
5. \_\_\_\_\_Clown
6. \_\_\_\_\_Cheese skipper
7. \_\_\_\_\_Flesh
8. Factors forensic entomologist consider when examining a corpse include
	1. Temperature
	2. Position and condition of the body
	3. Insects found on and around the body
	4. All of the above
9. Temperature is important when examining insects because
	1. Insects are exothermic
	2. Insects are only active when it is warm enough
	3. Insects development depends on temperature
	4. Both b and c
10. Insects found on a corpse can help a forensic entomologists determine
	1. Cause of death
	2. Location of death
	3. Time of death
	4. Weapons used
11. The first insect to arrive at a corpse is a
	1. Carrion beetle
	2. Blowfly
	3. House fly
	4. Skin beetles
12. If an investigator found blowfly larva on a corpse, approximately how long has the victim been dead?
	1. 12-24 hours
	2. 6-8 days
	3. 4-5 days
	4. It depends on the size of the larva, anywhere from 12 hours to 5 days.
13. The last insect to arrive at a corpse is the
	1. Blowfly
	2. Ham beetle
	3. House fly
	4. Hide beetle
14. Gases build up in a body because of
	1. Blowflies
	2. Maggots
	3. Bacteria
	4. Beetle larva
15. If a forensic entomologist found skin beetles at a crime scene, he/she could conclude that
	1. The person died recently.
	2. Decomposition is almost complete.
	3. The corpse is in the bloated stage.
	4. The copse is in the decay stage.
16. Insects can enter the body through
	1. The nose
	2. The eyes
	3. The ears
	4. All of the above
17. A forensic entomologist found carrion beetles on a corpse. What conclusions can he/she make?
	1. Flies have already invaded the body.
	2. Skin beetles have invaded the body.
	3. The body is in the post decay stage.
	4. The temperature outside is too cold for flies.
18. Why might wrapping a victim in a plastic tarp hinder a forensic entomologist?
	1. The body would be too warm for insects.
	2. Insects would not be able to get to the body.
	3. The tarp would trap moisture that would drown the insects.
	4. It wouldn’t matter because insects can eat through the tarp to get to the body.
19. With no external wounds present, why would insects invade the trunk of the body last?
	1. The trunk is the thickest part of the body.
	2. Insects invade the trunk of the body first.
	3. There are no openings for insects to lay their eggs.
	4. The trunk is the last part of the body to decompose.
20. The tissues are liquefied by
	1. Beetles
	2. Fly larva (maggots)
	3. Bacteria
	4. Heat

Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Score\_\_\_\_\_\_\_\_

Forensic Entomology Critical Thinking

1. What are three pieces of information entomologists get from insect evidence?
2. What are the two major orders of insects used in forensic entomology?
3. Give one factor that might affect PMI.
4. Describe blowfly metamorphosis.
5. Why is knowing the weather important for entomologists?
6. What happens during the decay stage of decomposition?
7. What happens during the fresh stage of decomposition?
8. What happens during the post decay stage of decomposition?
9. What happens during the bloated stage of decomposition?

Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Score\_\_\_\_\_\_\_\_\_\_\_

Forensic Entomology Concept Map

Use the following terms to create a concept map: fresh stage, immediately after death, post-decay stage, gases escape, bloated stage, only bone and skin remain, decay stage, body fills with gases, stages of decomposition.

Use the following terms to create a concept map: blow, carrion, green bottle, flesh, diptera, clown, cheese skipper, rove, coleopteran, insects.

**Forensic Entomology**



Across

7. Most of the flesh is gone from the corpse, with only cartilage, bone, and skin remaining

8. wormlike stage of an insect’s life cycle

Down

1. Begins when the skin breaks and the gases escape

2. area between the body and the ground

3. metamorphosis with four stages – egg, larva, pupa, and adult.

4. Begins when the body becomes inflated due to the production of gases

5. cold blooded animals

6. study of insects

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| K | R | F | L | J | W | Y | N | M | U | A | Q | A | M | S | S | C | E | C | G |
| F | S | Q | P | S | T | B | B | J | S | N | V | V | K | A | E | T | V | F | R |
| R | X | A | H | Z | V | Z | O | C | Y | O | G | R | T | G | T | O | W | N | O |
| P | I | N | T | E | R | F | A | C | E | A | R | E | A | M | L | T | T | C | S |
| F | M | K | P | O | U | O | A | N | V | I | A | T | P | L | O | H | F | C | Y |
| B | D | Z | Y | I | P | A | T | S | U | F | S | N | O | E | M | E | K | R | I |
| U | L | A | T | R | C | O | H | H | C | Y | C | I | T | A | C | R | W | H | A |
| D | P | O | R | K | M | X | W | O | A | Y | V | M | X | M | G | M | U | M | O |
| D | I | S | A | O | P | B | R | C | K | P | E | E | K | J | I | I | D | E | G |
| G | R | S | L | T | K | R | E | A | E | G | A | T | S | Y | A | C | E | D | D |
| C | B | O | U | K | E | D | Z | T | A | C | V | R | T | P | M | J | C | T | T |
| S | G | Z | W | N | T | D | N | N | O | O | Y | O | R | E | Z | L | H | C | F |
| Y | C | P | T | S | U | X | S | T | R | Z | Q | M | V | U | V | T | W | Z | L |
| L | I | A | O | L | K | R | M | T | V | G | I | T | E | X | P | U | U | Q | F |
| Y | N | P | A | O | W | J | Z | I | A | O | H | S | K | R | E | Y | G | B | J |
| I | F | A | B | Z | M | R | A | J | Q | G | U | O | K | G | Z | X | W | T | C |
| V | H | G | Q | I | R | V | F | C | G | T | E | P | S | X | X | K | X | F | X |
| H | B | O | N | J | C | X | N | R | S | N | F | C | D | Q | J | M | N | Z | Z |
| Z | I | X | K | O | K | L | S | Y | M | W | N | N | C | I | P | W | J | W | H |

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|  |
| BLOATEDSTAGE | DECAYSTAGE | ECTOTHERMIC |
| ENTOMOLOGY | INTERFACEAREA | LARVA |
| MOLT | POSTDECAYSTAGE | POSTMORTEMINTERVAL |

