

A suture is best described as:

- ☐ A junction between two sclerites.
- ☐ A thick ridge of cuticle.
- ☐ A point of attachment between segments.
- ☐ A membranous bridge.

What function do quinone cross-linkages have in the exoskeleton?

- ☐ They make it impermeable to water.
- ☐ They make membranes more flexible.
- ☐ They darken the color of the exoskeleton.
- ☐ They make the sclerites rigid.

An apodeme could NOT be described as:

- ☐ A point of attachment for muscles.
- ☐ An internal ridge of the exoskeleton.
- ☐ A brace to strengthen the exoskeleton.
- ☐ A flexible joint in the exoskeleton.

Which structure is unicellular?

- ☐ Spine
- ☐ Seta
- ☐ Gland
- ☐ Sclerite

An insect's head is specialized for:

- ☐ Reproduction and digestion
- ☐ Ingestion and perception
- ☐ Orientation and locomotion
- ☐ Adaptation and respiration

Which structure is NOT part of the head capsule?

- ☐ Pronotum
- ☐ Clypeus
- ☐ Tentorium
- ☐ Vertex

The frontal suture lies between:

- ☐ The compound eyes and the gena.
- ☐ The frons and the compound eyes.
- ☐ The clypeus and the frons.
- ☐ The labrum and the clypeus.

The frons and the clypeus are separated by the:

- ☐ Epistomal suture
- ☐ Labrum
- ☐ Gena
- ☐ Subgenal suture

The clypeus is located between:

- ☐ The gena and the frons.
- ☐ The vertex and the labium.
- ☐ The frons and the labrum.
- ☐ The occiput and the gena.

The mouthparts include all of these structures EXCEPT:

- ☐ Hypopharynx
- ☐ Maxillae
- ☐ Clypeus
- ☐ Labium
- ☐ Labrum

Which mouthpart(s) lie(s) between the labrum and the maxillae?

- ☐ Tentorium
- ☐ Mandibles
- ☐ Labium
- ☐ Palps

Which structure is NOT part of an insect's antenna?

- ☐ Scape
- ☐ Flagellum
- ☐ Pedicel
- ☐ Coxa

Which part of an insect's antenna articulates with its head capsule?

- ☐ Pedicel

- ☐ Arista
- ☐ Flagellum
- ☐ Scape

The hypopharynx separates the mouth opening from the:

- ☐ Cibarium
- ☐ Labrum
- ☐ Mandibles
- ☐ Salivarium

5 Multiple Choice Questions

1. What is the definition of mandibles?

- A. paired; responsible for tearing or biting food
- B. immovable; above the labrum
- C. upper lip ; can be bent
- D.all of the above apply

2.What is a type of secretions?

- A. salivary Channel
- B. non - Invasive sucking of liquids
- C. toxins
- D.proboscis

3.What is an example of sponging ?

- A. mayflies
- B. termites
- C. lice
- D. housefly

4.What is an eample of chewing ?

- A. mantis
- B. mosquito
- C. grasshopper
- D. both A and C

5.What is a type of liquid diet ?

- A. plant juices
- B. antistetics

C. toxins

D. enzymes

Which structure would NEVER be found on an insect's prothorax?

- ☐ Leg
- ☐ Wing
- ☐ Spiracle
- ☐ Pronotum

To which body segment are the elytra attached?

- ☐ Mesothorax
- ☐ Metathorax
- ☐ Prothorax
- ☐ First abdominal

Which structure would NOT be found on an insect's leg?

- ☐ Trochantin
- ☐ Arolium
- ☐ Coxa
- ☐ Tarsomere

Which part of the leg lies between the femur and the tarsus?

- ☐ Coxa
- ☐ Trochanter
- ☐ Arolium
- ☐ Tibia

What happens when you press down on the top of an insect's thorax?

- ☐ The wings go up.
- ☐ The wings go down.
- ☐ The wings go forward.
- ☐ The wings go backwards.

Which of these is NOT a longitudinal wing vein?

- ☐ Costa
- ☐ Radius
- ☐ Furca
- ☐ Cubitus

The furca is best described as:

- ☐ An internal brace for the legs.
- ☐ A springing organ.
- ☐ A fulcrum for the wings.
- ☐ A hinge for the neck.

The abdomen is specialized for:

- ☐ Feeding and locomotion
- ☐ Locomotion and reproduction
- ☐ Reproduction and digestion
- ☐ Digestion and ingestion

How many abdominal segments are found in a typical insect?

- ☐ Less than 5
- ☐ 6 to 11
- ☐ 12 or 13
- ☐ More than 15

The dorsal sclerite of each abdominal segment is called a:

- ☐ Sternite
- ☐ Pleurite
- ☐ Coxite
- ☐ Tergite

Which structure NEVER occurs on an abdominal segment?

- ☐ Spiracle
- ☐ Spine
- ☐ Apodeme
- ☐ Pleural suture

Junctions between abdominal segments are best described as:

- ☐ Telescoping
- ☐ Dovetailed
- ☐ Ball and socket
- ☐ Hinged

Male genitalia include all the these EXCEPT:

- ☐ Valvifer
- ☐ Clasper

- ☐ Aedeagus
- ☐ Paramere

Which abdominal structure is unpaired?

- ☐ Cercus
- ☐ Epiproct
- ☐ Valvifer
- ☐ Paraproct

Which abdominal structures are primarily sensory in function?

- ☐ Paraprocts
- ☐ Valvulae
- ☐ Cerci
- ☐ Sternites

Which structures are part of the ovipositor?

- ☐ Paraprocts
- ☐ Cerci
- ☐ Aedeagus
- ☐ Valvulae

Of the structures listed, which one lies just above the anus in a typical insect?

- ☐ Genital opening
- ☐ Paramere
- ☐ Cercus
- ☐ Epiproct

The pedicel is the name for the:

- ☐ First leg segment
- ☐ Second leg segment
- ☐ First antennal segment
- ☐ Second antennal segment

Which structure is NOT part of the female reproductive system?

- ☐ Follicle
- ☐ Accessory gland
- ☐ Spermatheca
- ☐ Bursa copulatrix

Which structure lies between the crop and the gastric caecae?

- ☐ Colon
- ☐ Pyloric valve
- ☐ Proventriculus
- ☐ Esophagus

What is the maximum number of ocelli that may be found in an adult insect?

- ☐ Zero.
- ☐ Three.
- ☐ Five.
- ☐ Twenty.

In insects with chewing mouthparts, which structure lies between the mandibles and the maxillae?

- ☐ Clypeus
- ☐ Hypopharynx
- ☐ Labium
- ☐ Labrum

What type of chemical monomer forms the backbone of a chitin molecule?

- ☐ Lipid
- ☐ Quinone
- ☐ Sugar
- ☐ Amino acid

In an abdominal segment, the ventral sclerite is known as:

- ☐ Epimeron
- ☐ Notum
- ☐ Epiproct
- ☐ Sternum

The axilla is a small pleural sclerite located just above the mesepimeron in some insects. It provides a site for attachment of direct flight muscles. On which thoracic segment would you expect to find this sclerite?

- ☐ First
- ☐ Second
- ☐ Third
- ☐ No way to tell

Which mouthparts bear palps?

- ☐ Labrum and labium

- ☐ Labium and maxillae
- ☐ Maxillae and mandibles
- ☐ Mandibles and labrum

The ovipositor is formed by the:

- ☐ Valvifers and valvulae
- ☐ Claspers and parameres
- ☐ Epiproct and paraprocts
- ☐ Aedeagus and subgenital plate

To which body segment are the halteres attached?

- ☐ Mesothorax
- ☐ First abdominal
- ☐ Prothorax
- ☐ Metathorax

What structure braces the head internally and serves as a point of attachment for mandibular muscles?

- ☐ Tentorium
- ☐ Pedicel
- ☐ Furca
- ☐ Epiproct

Which is the correct sequence for the layers in an insect's exoskeleton?

- ☐ Procuticle, epicuticle, endocuticle
- ☐ Exocuticle, cuticulin layer, endocuticle
- ☐ Wax layer, cuticulin layer, exocuticle
- ☐ Wax layer, endocuticle, exocuticle

Which structure would NOT be found on an insect's pretarsus?

- ☐ Trochanter
- ☐ Claws
- ☐ Spines
- ☐ Sticky pads

In which region of the exoskeleton do quinone cross-linkages form?

- ☐ Endocuticle
- ☐ Exocuticle
- ☐ Procuticle

- ☐ **Epicuticle**

The tibia lies between:

- ☐ **The trochanter and the femur**
- ☐ **The femur and the coxa**
- ☐ **The coxa and the trochanter**
- ☐ **The tarsus and the femur**

What is the function of the furca?

- ☐ **It provides a site for attachment of leg muscles.**
- ☐ **It is an organ of locomotion.**
- ☐ **It prevents water loss.**
- ☐ **It is a sense organ.**

Which structure is NOT found on the thorax of a grasshopper?

- ☐ **Trochantin**
- ☐ **Tympanum**
- ☐ **Spiracle**
- ☐ **Scutellum**

What is the function of the cement layer in the insect's exoskeleton?

- ☐ **It prevents water loss.**
- ☐ **It protects the wax layer from abrasion.**
- ☐ **It acts as an insulator during molting.**
- ☐ **It makes the exoskeleton rigid.**

An apophysis is best described as:

- ☐ **An invagination of the exoskeleton**
- ☐ **Part of the male genitalia**
- ☐ **An internal brace in the head**
- ☐ **Part of an insect's pretarsus**

Which statement about wing veins is INCORRECT?

- ☐ **Veins are laminated between a double layer of membrane.**
- ☐ **Veins are hollow and contain hemolymph.**
- ☐ **The costa is a vein that forms the wing's leading edge.**
- ☐ **Longitudinal veins are parallel to one another and lie in a single plane.**

What structure protects the midgut from abrasion by food particles?

- ☐ **Intima**

- ☐ Peritrophic membrane
- ☐ Proventriculus
- ☐ Pyloric valve

Insects have a(n):

- ☐ Four-chambered heart
- ☐ Closed circulatory system
- ☐ Dorsal blood vessel
- ☐ Lymphatic system

An insect's heart is located:

- ☐ In its head.
- ☐ In its thorax.
- ☐ In its abdomen.
- ☐ In more than one body region

The heart lies along the:

- ☐ Upper side of the digestive tract.
- ☐ Ventral side of the body.
- ☐ Dorsal side of the body.
- ☐ Left side of the body.

In the circulatory system of insects:

- ☐ Capillaries are found only in the head
- ☐ Oxygen is carried to all parts of the body
- ☐ Blood is pumped from the abdomen to the head
- ☐ There is a heart in each segment of the body

An insect's heart is best described as a:

- ☐ Four-chambered muscle
- ☐ Vibrating diaphragm
- ☐ Rotating piston
- ☐ Pulsating tube

One-way flow valves in the heart are called:

- ☐ A blood sinus is best described as:
 - ☐ An allergic reaction by an insect.
 - ☐ A body cavity where blood moves freely.
 - ☐ A region of the heart that collects blood.

- ☐ A pulsating organ near the base of the wings.

Immediately after blood leaves an insect's aorta:

- ☐ It is collected in the vena cava.
- ☐ It goes into the wings.
- ☐ It enters the ostia.
- ☐ It flows over the brain.

Which of these do NOT circulate in the blood of an insect?

- ☐ Molting hormones
- ☐ Antibodies
- ☐ Nutrients
- ☐ Nitrogenous waste products

The blood cells of most insects:

- ☐ Contain hemoglobin
- ☐ Secrete platelets for clotting
- ☐ Carry oxygen and carbon dioxide
- ☐ Immobilize foreign bodies by encapsulation

Which structure collects and excretes uric acid?

- ☐ Malpighian tubule
- ☐ Rectal pad
- ☐ Accessory gland
- ☐ Proventriculus

Most enzymatic digestion occurs in the:

- ☐ Midgut
- ☐ Gastric caecae
- ☐ Proventriculus
- ☐ Crop

Which structure is INCORRECTLY paired with its function?

- ☐ Crop -- storage
- ☐ Proventriculus -- secretion of enzymes
- ☐ Malpighian tubules -- excretion
- ☐ Mesenteron -- digestion

Which part of the digestive system prevents excessive water loss in terrestrial insects?

- ☐ Proventriculus.
- ☐ Gastric caecae.
- ☐ Rectal pads.
- ☐ Accessory glands.

Which structure would probably NOT be found in an insect that has a continuous supply of food?

- ☐ Gastric caecae
- ☐ Malpighian tubules
- ☐ Intima
- ☐ Crop.

Which structure would probably NOT be present in an insect that feeds exclusively on blood?

- ☐ Crop
- ☐ Proventriculus
- ☐ Gastric caecae
- ☐ Rectum

What is the principle energy source for most insects?

- ☐ Proteins
- ☐ Cellulose
- ☐ Carbohydrates
- ☐ Vitamins

Which of these compounds must be present in the diet of most insects?

- ☐ Cellulose
- ☐ Fat soluble vitamins
- ☐ Honeydew
- ☐ Cholesterol

Which of these is found ONLY in the male reproductive system?

- ☐ Seminal vesicle
- ☐ Accessory gland
- ☐ Spermathecal gland
- ☐ Primary germ cells

Each ovariole contains:

- ☐ A single follicle.

- ☐ Many primary oocytes.
- ☐ More than one developing egg.
- ☐ Stored sperm for selective reproduction.

In male insects, sperm is stored in the

- ☐ Spermatheca
- ☐ Accessory glands
- ☐ Seminal vesicles
- ☐ Bursa copulatrix

After an egg leaves the ovary, it passes through the:

- ☐ Accessory gland
- ☐ Seminal vesicle
- ☐ Spermathecal gland
- ☐ Bursa copulatrix

Which statement about the female reproductive system is CORRECT?

- ☐ Sperm are stored in the spermathecal gland.
- ☐ Each ovary produces one egg every month.
- ☐ Fertilization occurs in the spermatheca.
- ☐ The accessory gland secretes the egg shell.

Sometimes an egg develops without being fertilized by a member of the opposite sex. This type of reproduction is known as:

- ☐ Ovipary.
- ☐ Parthenogenesis.
- ☐ Paedogenesis.
- ☐ Ovovivipary.

Which statement about sex determination in insects is INCORRECT?

- ☐ Male wasps are haploid
- ☐ Male butterflies are haploid
- ☐ Female grasshoppers are diploid
- ☐ Female caddisflies are diploid

The genotype of a female butterfly is:

- ☐ XX
- ☐ XY
- ☐ WW

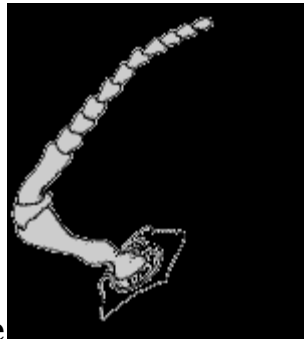
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Insects that become sexually mature and produce offspring before they molt into adults are said to be:

- ☐ Paedogenic
- ☐ Embryonic
- ☐ Parthenogenic
- ☐ Viviparous

☐ Clavate

☐ Pectinate



☐ Plumose

☐ Geniculate

☐ Capitate

filiform

Monoliform

5

Scutellum

6

Labium

6

Paraglossa

3

Occiput

3

Clypeus

1. Abdomen

2.

Walking Leg

3.

Head Capsule

4.

Antenna

5.

Thorax

6.

Mouthparts

