Andrew Foor

Oceanography

Complete the following pages below.

Notes are on Pages 3-5 and 9-10.

Any questions please let me know via email at afoor@nps.k12.va.us

There is a quiz to be completed on Google Classroom.

NAME:

Mollusks are one of the largest and most diverse phyla in the world- this phylum is comprises of animals such as squid, clams, snails, and octopus. Within this vast phylum are three main classes of marine invertebrates: Gastropods, Cephalopods, and Bivalves. The Gastropod class contains organisms like snails and slugs, the Bivalve class contains clams, mussels and oysters, and the Cephalopod class contains squid, octopus, and cuttlefish. Their name in Latin means soft bodied and therefore most mollusks have a shell to protect themselves, but some do not. All Mollusks have bilateral symmetry and have a heart to pump blood through their bodies. Like all invertebrates all mollusks are eukaryotes and animals but they lack a vertebral column. Finally, some mollusks are mobile and able to swim through the water/crawl along the bottom of the ocean but others (like mussels) are sessile and never move in their adult form.

The body of a mollusk can be broken into several main parts – the visceral mass, the mantle and the foot. The visceral mass is the internal part of the mollusk where the organs are located. This body section also contains the gills, which enable the mollusks to breathe underwater. The epidermis in mollusks is referred to as the mantle and it covers the outside of the animal. If the mollusk has a shell (like a snail or clam) the mantle secrets and makes the shell. Finally, a large muscular 'foot' protrudes out of the mantle and is used for movement. In some mollusks like squid and octopus the foot has been modified into tentacles.

Questions:

1. What are three examples of Mollusks?

2. What class contains snails and slugs?

3. What class contains clams, mussels, and oysters?

4. What class contains squid and octopus?

5. What does mollusk mean?

6. What kingdom are mollusks in?

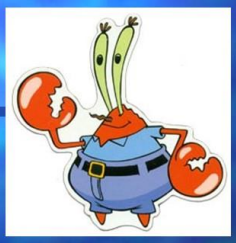
7. What kind of symmetry do mollusks have?

8. What body section are the gills located in?

9. If a mollusk has a shell, what part of the body makes the shell?

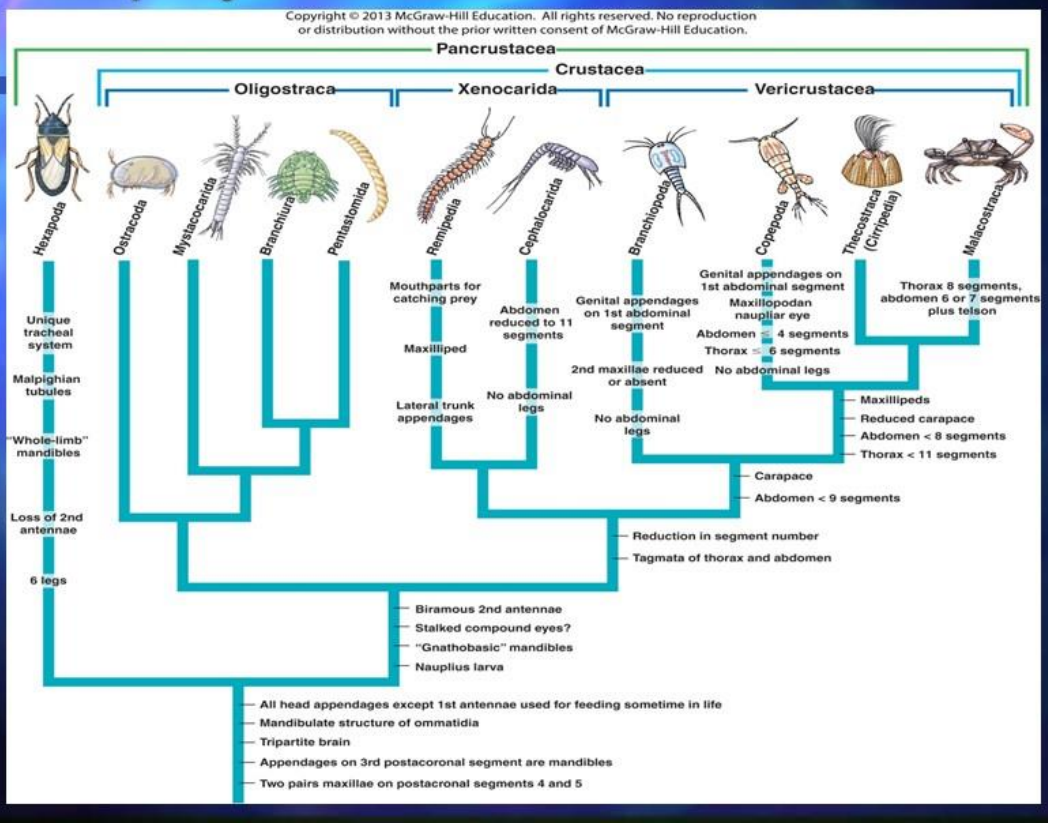
10. What part of the body does a mollusk use to move around?

Subphylum CRUSTACEA

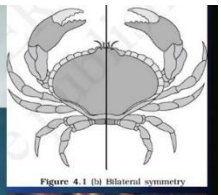


Arthropods in the water!

Subphylum Crustacea



Crustaceans

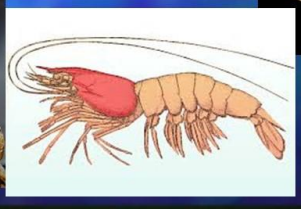





- Bilateral symmetry
- Contains shellfish such as: lobsters, crabs, shrimp, krill and copepods

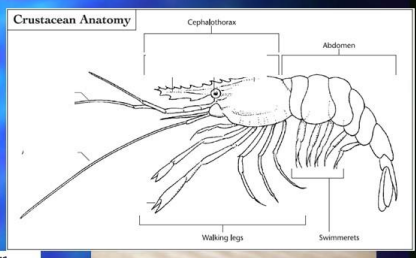
CRUSTACEANS

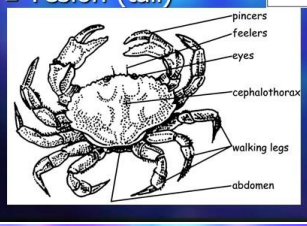
- Crustaceans have a carapace which covers their cephalothorax
- The teslon (tail) of some crustaceans is tucked under


Crustaceans

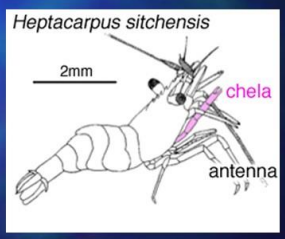
- Divided into 3 parts
  - cephalothorax
  - Abdomen
  - Teslon (tail)





Morphology

- **Some** crustaceans have a cheliped or a leg that has evolved into a claw

All Crustaceans have:

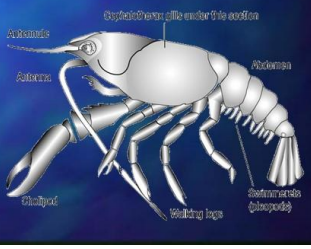
- 1. Exoskeleton
- 2. Jointed Legs
- 3. A Teslon (tail)
- 4. Antenna (2 pairs)



Morphology continued

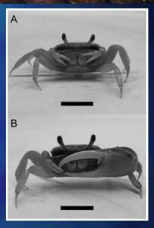
- crustaceans have separate swimming legs and walking legs

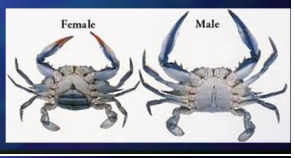




Reproduction

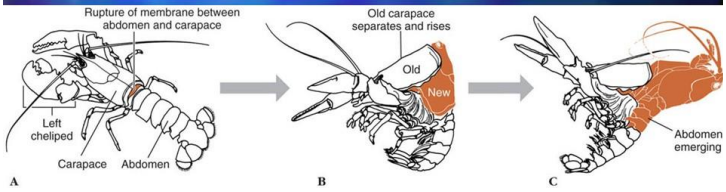
- Crustaceans are dioecious
  - Sexual dimorphism = males and females look different
- Most female crustaceans keep eggs attached to their swimming legs until eggs hatch





Molting

- Animal sheds its old exoskeleton in order to grow larger
  - Molting occurs often in young animals and may cease in adults.
- After a molt the shell is very soft for about a week



Molting

- Allows a crustacean to grow bigger
  - Bonus - After every molt a crustacean can regenerate lost limbs

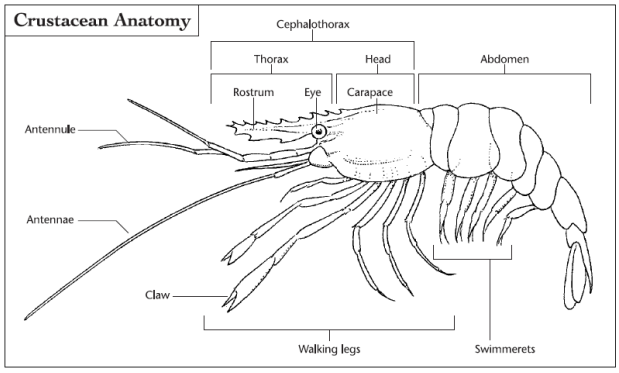
Diet

- What do they eat?
- Ranges based on species.
- Phytoplankton, snails, plants, dead carcasses, other marine life

Arthropoda Notes Name_____

Crustacean

- _____ symmetry
- Contains shellfish such as: lobsters, crabs, shrimp, krill and _____
- Divided into 3 parts
  - cephalothorax
  - _____
  - Teslon (tail)



All Crustaceans have:

- 1. Exoskeleton
- 2. _____
- 3. A Teslon (tail)
- 4. Antenna (2 pairs)

Crustaceans have a carapace which covers their cephalothorax

The teslon (tail) of some crustaceans is _____ _____

Morphology

- Some crustaceans have a cheliped or a leg that has evolved into a _____
- crustaceans have separate swimming legs and _____ legs

Reproduction

- Crustaceans are _____
  - Sexual dimorphism = males and females look different
- Most female crustaceans keep eggs attached to their swimming legs until _____ _____

Molting

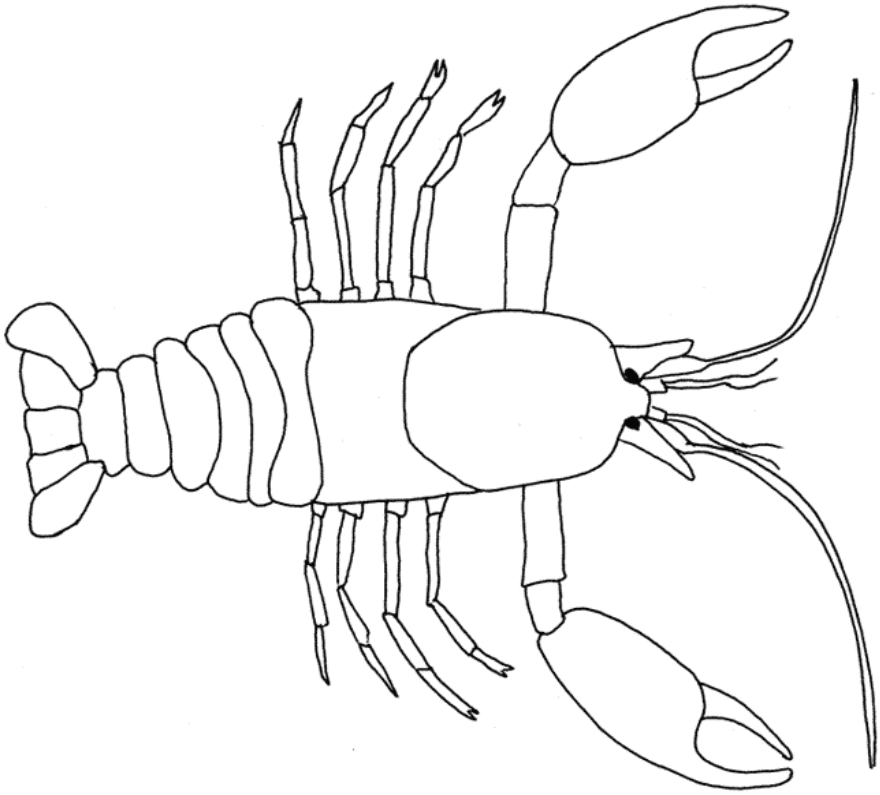
- Animal sheds its old _____ in order to grow _____
  - Molting occurs often in young animals and may cease in adults.
- After a molt the shell is very soft for about a _____
- Allows a crustacean to grow bigger
  - Bonus - After every molt a crustacean can regenerate lost _____

Diet

- What do they eat?
- Ranges based on species.
- _____, snails, plants, dead carcasses, other marine life

Notes are below this assignment
NAME:

Label the parts shown below on the crayfish: Cheliped, walking legs, antennae, antennules, carapace, cephalothorax, abdomen, teslon, uropod , rostrum



1. What surface is the crayfish showing?

2. Which body section are the following found on:
   a. Swimming legs
   b. Walking legs
   c. Uropods
   d. Cheliped
   e. Anus
   f. Mandible

3. What type of body symmetry do crustaceans have?

4. What structure is used for catching prey and defense?

5. The drawing above does not show the maxillipeds – how are these related to eating?

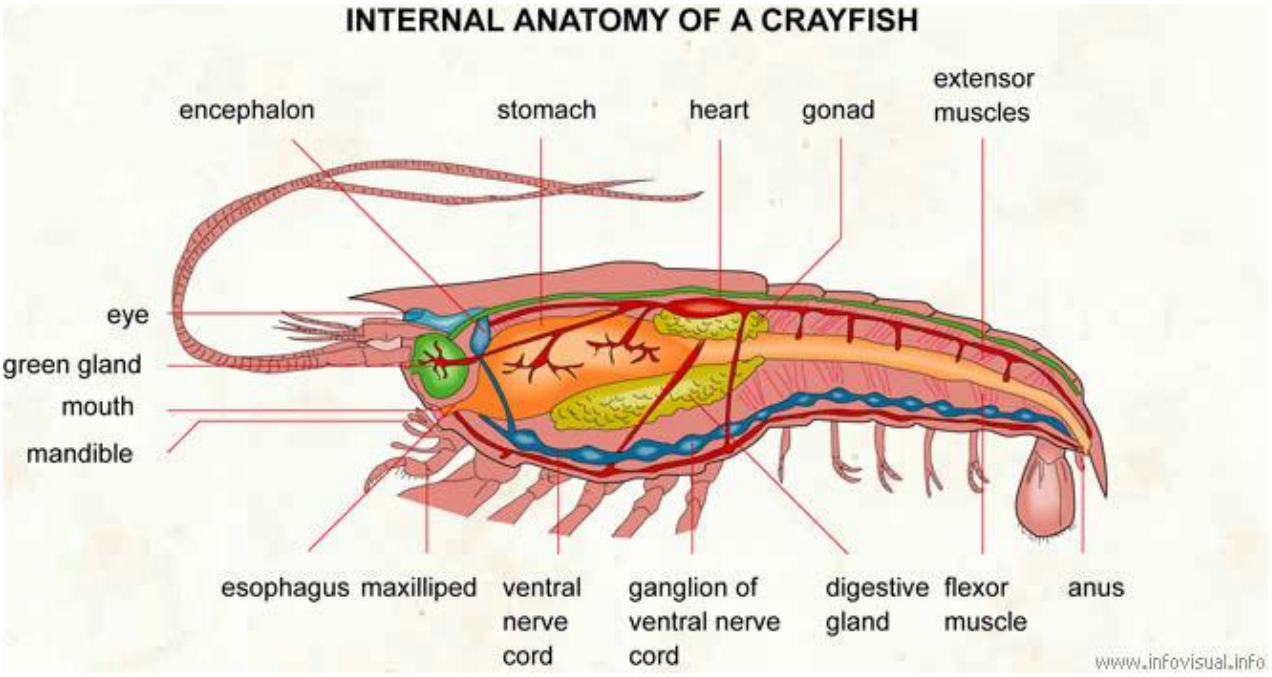
6. What is the function of the gills in crayfish?

7. Describe the difference between antennae and antennules.

8. What is the function of swimming legs in females?

9. What is the function of the mandible?

Label the following on the diagram below: heart, green gland, intestine, stomach, gonad



10. What is the function of the intestine?

11. Explain where the brain is found in a crayfish.

12. What is the function of gonads in crustaceans?

13. Are crustaceans hermaphrodites or dioecious?

14. What is an example of a crustacean besides a crayfish?

15. What kingdom are crustaceans in?

16. What domain are crustaceans in?

17. What is the function of the green gland?

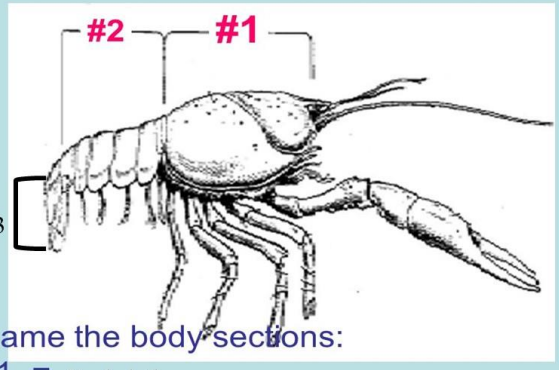
18. Where is the green gland located?

Dorsal Vs. Ventral Surface

Dorsal

Ventral

Body Sections



Name the body sections:

#1. = Cephalothorax

#2. = Abdomen

#3 = Teslon

The arrows are pointing at the

Walking legs

Name the body segment these are attached to. thorax

Name these feathery appendages

Swimming legs

Give a function

Transfer sperm (males), carry eggs (females)

Image by Riedell/Vanderwal © 2005

Name this exit opening

anus

Name the part of the body it is found on

Ventral Surface / Telson

Name these tail sections.

uropods

The probe is pointing at the

mandible

Give a function.

Eating

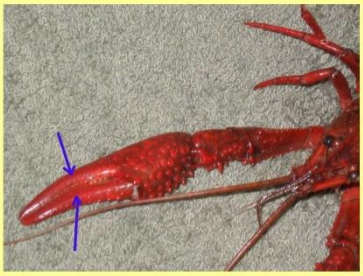
What side?

Ventral

Name this piece of exoskeleton that covers the cephalothorax in a crayfish

carapace

On the Dorsal Surface The piece that sticks out between the eyes is the rostrum.



Name this claw

cheliped

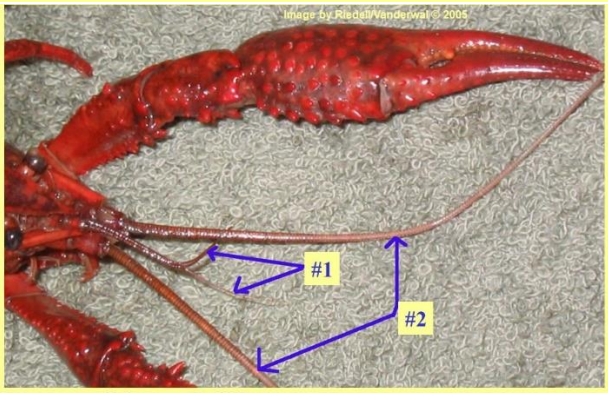
Give a function.

Catch food, defense

The arrows are pointing at the maxillipeds

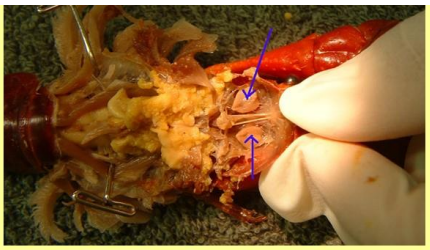
Give a function.

manipulate food



Name #1 and #2 Antennules and antennae

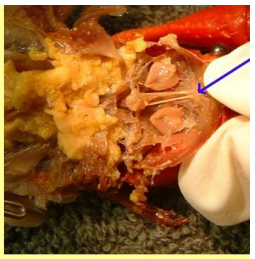
Give a function. Sensory



The arrows are pointing at the Green glands

Give a function.

Excrete waste;



Name this small white spot.

brain

Give a function

Control the body

The arrows are pointing at the intestine

Give a function.

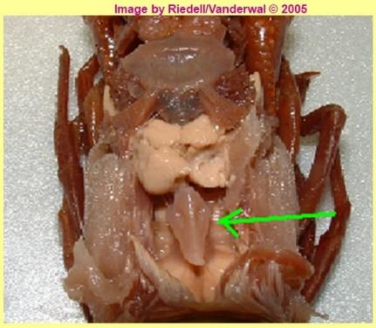
Digestion and remove waste

Name this part

gonad

Give a function

reproduction



Name it

heart

Give the function

Pump blood

Name

Invertebrate Similes

Example: The epidermis is like a shield because it protects you from the outside

1. The carapace is like _____ because _____
2. The cheliped is like _____ because _____
3. Filter feeding is like _____ because _____
4. A hermaphrodite is like _____ because _____
5. Sessile is like _____ because _____
6. A spicule is like _____ because _____
7. Budding is like _____ because _____
8. A cnidoctye is like _____ because _____
9. The osculum is like _____ because _____
10. Regeneration is like _____ because _____
11. A madreporite is like _____ because _____
12. A Pore is like _____ because _____
13. Molting is like _____ because _____
14. A Flagella is like _____ because _____
15. The tube feet are like _____ because _____

Crustacean Quiz on Google Classroom

1 attempt, Open Notes, 35 Minutes only!

Any issues please let me know, however must be completed in 35 Minutes!

CREATE AN INVERTEBRATE

Scenario

It is the year 2050 and due to overfishing, pollution of the estuaries and habitat destruction, many species of shrimp, crabs, and other invertebrates of the 20th century are disappearing. You are a marine biologist who has been hired by the United States Government to create a new invertebrate species by splicing together parts of known species. The hope is that this new animal will fix the holes present in the food webs of many ecosystems.

Your invertebrate must have special adaptations to enable it to survive in its new environment. It must also have special adaptations to protect it from predators. Your invertebrate should also have some type of adaptation to enable it to live in the polluted environment of 2050. It should not look like any known invertebrate! Use your imagination and be creative.

1. **Write summary describing your new creation. In the summary you should explain the following:**
    - **a.** The name of your new invertebrate.
    - **b.** The general environment of your invertebrate (including temp/water depth)
        - **i.** How is your invertebrate adapted to living in its environment?
        - **ii.** How does it deal with the pollution present in its environment
    - **c.** How does your invertebrate obtain its food?
        - **i.** Does it have any special appendages for food getting?
        - **ii.** What does it eat?
        - **iii.** How advanced is its digestive system?
    - **d.** Does it move? If so how.
    - **e.** How does your invertebrate defend itself from predators?
        - **i.** Does it have a shell/exoskeleton/ endoskeleton
        - **ii.** Other defensive adaptations
    - **f.** How does your invertebrate reproduce?
        - **i.** How is fertilization accomplished?
        - **ii.** Is it a hermaphrodite or dioecious (sexual dimorphism?)
    - **g.** Any other unique features present

2. **Draw AND Color a picture of your invertebrate. You must be neat with this!**
    a. You must include AT LEAST 4 parts from other phylum we have studied so far this year.
        i. These must be labeled on your drawing
            1. Ex. Tentacles to help grab prey from Mollusks