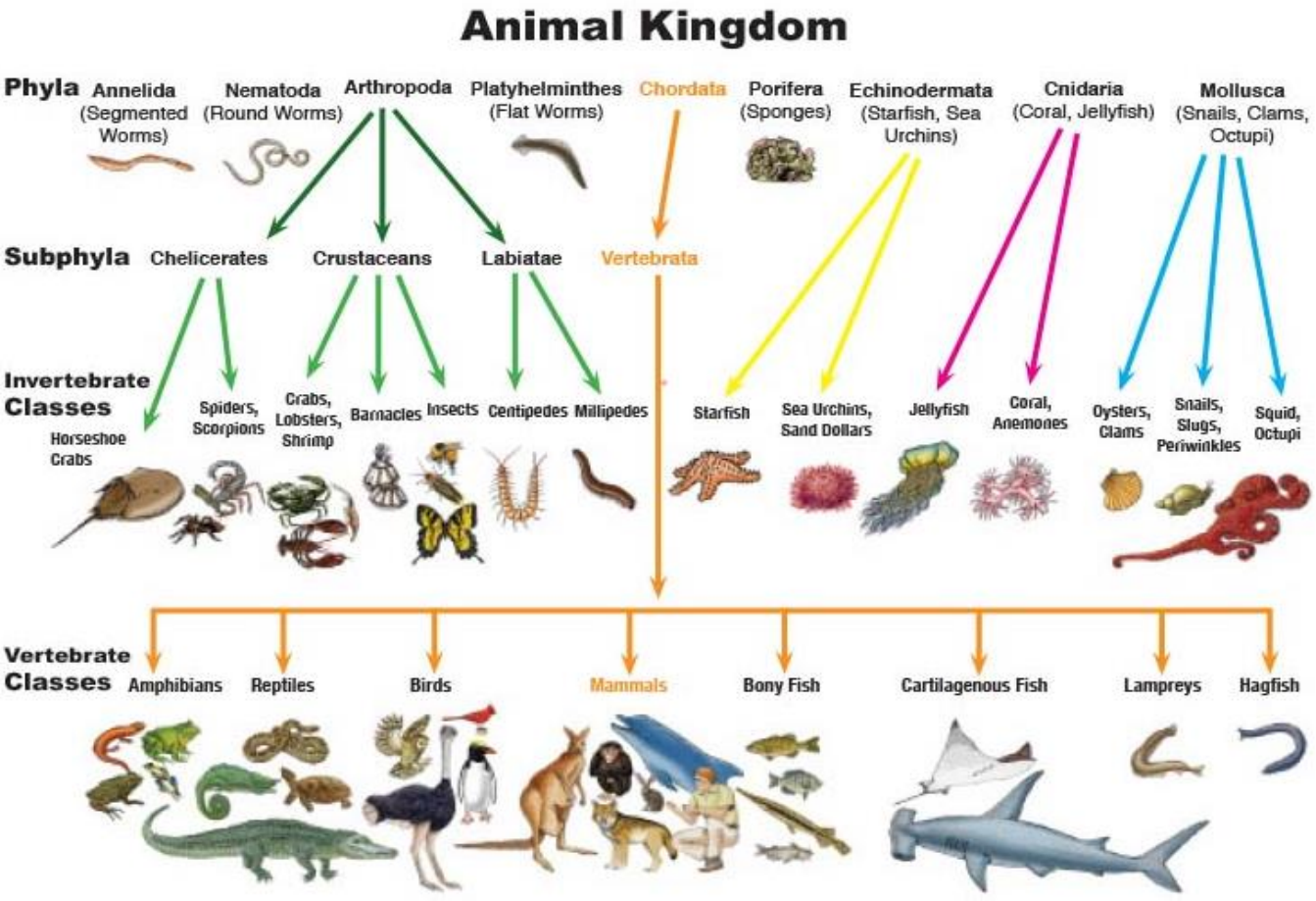
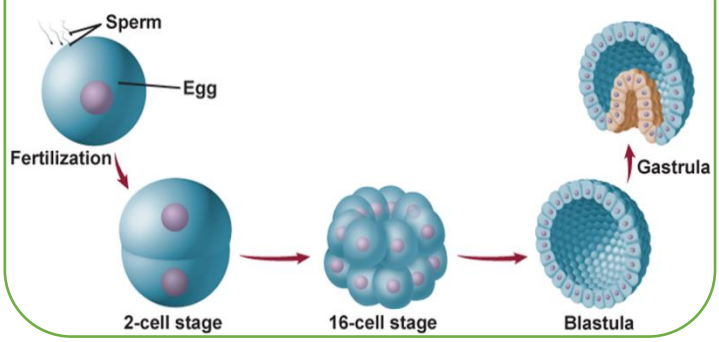


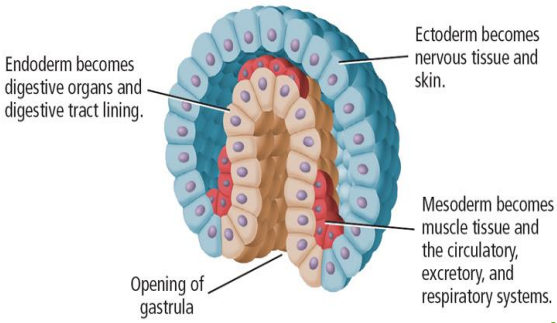
Reproduction in Animals	
Sexual Reproduction	**Asexual Reproduction**
1- Both parents are involved	Single parent is involved
2- Gametes are formed	Gametes are not formed
3- Fertilization occurs	Fertilization does not occurs
4- Characteristics are inherited by both the parents	Characteristics are inherited by one parent
5- Occurs in all animals	Occurs in simple animals

Types of Fertilization in Animals	
Internal Fertilization	**External Fertilization**
1- Occurs inside the female body	Occurs outside of the body generally in an aquatic medium
2- Mating is essential	Mating is not essential
3- Special organs of copulation are present	Special organs of copulation are present
4- Number of eggs laid are limited	Generally numerous eggs are laid
5- Ex: Reptiles, Birds, Mammals, and Sharks	Ex: Fish and Amphibians

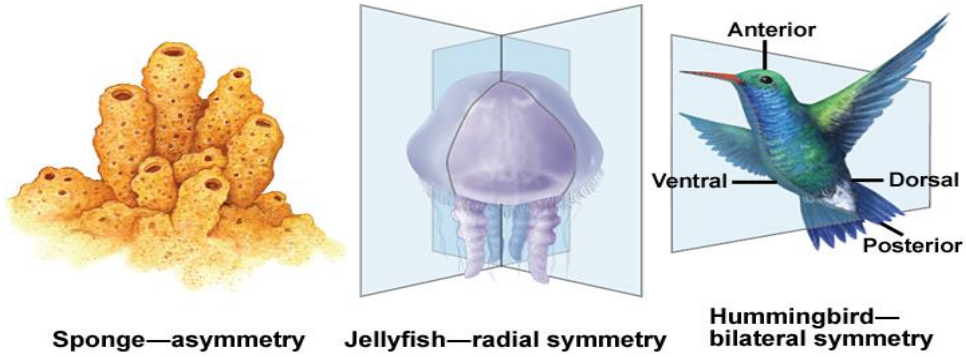
Early Development of animals:



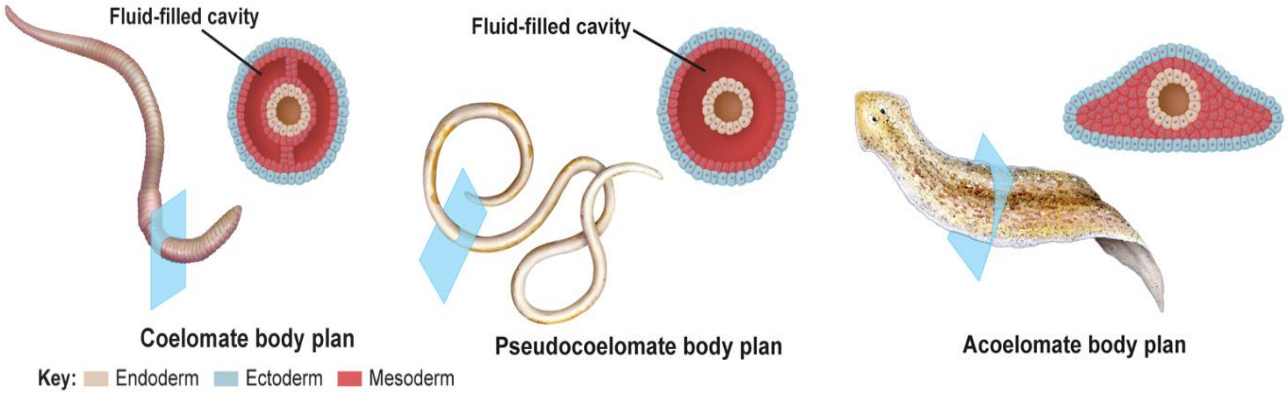
Tissue Development



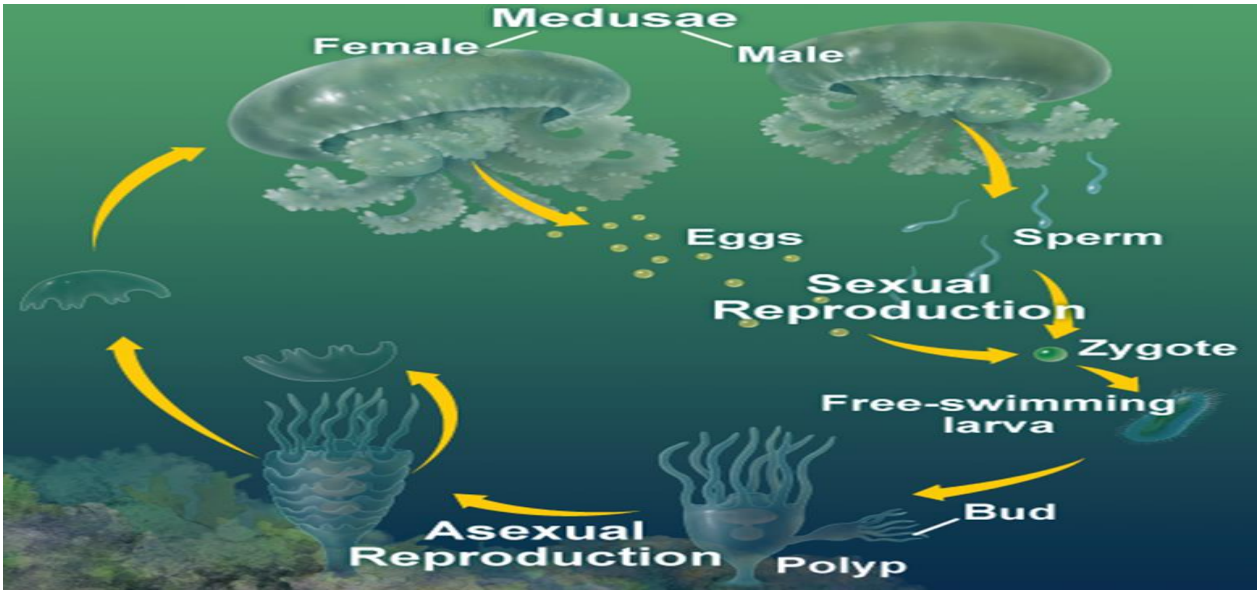
Animal Body Plans

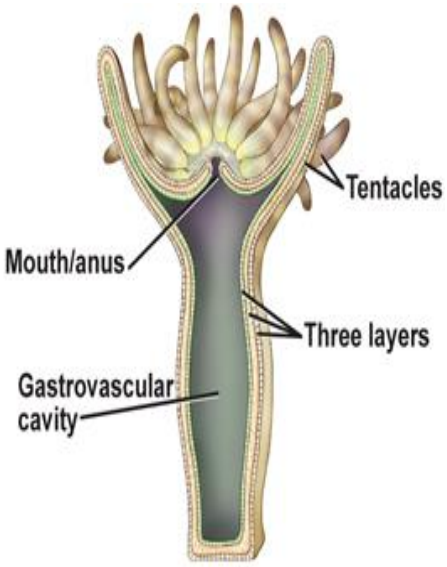


Body Cavities



Cnidarians Reproduction

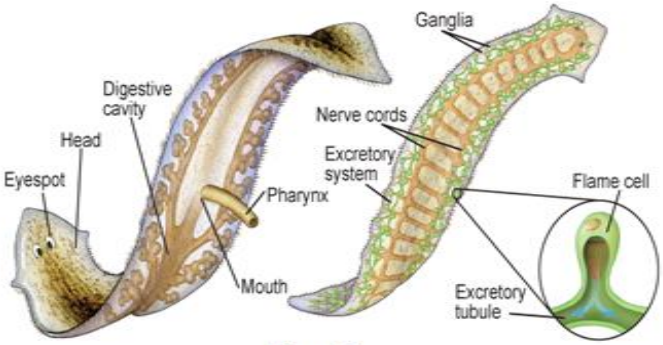




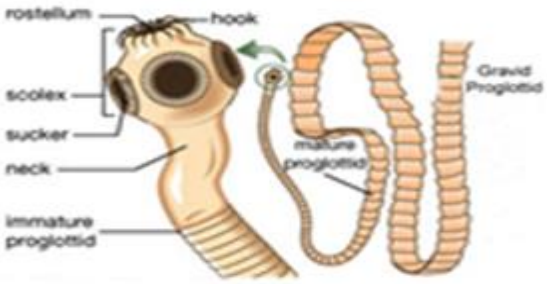
Hydra

Comparison of Sponges and Cnidarians		
	Sponges	Cnidarians
Example		
Body plan	Generally, has asymmetry	Has radial symmetry
Feeding and digestion	- Filter feed - Digestion take place within individual cells	- Capture prey with nematocysts and tentades. - Digestion take place in gastrovascular cavity
Movement	Sessile	Aquatic floating or sessile
Response to stimuli	- No nervous system - Cells react to stimuli	Simple nervous system consisting of nerve net
Reproduction	- Hermaphrodites reproduce sexually - Asexual reproduction by fragmentation, budding, or gemmule production	- Separate sexes reproduce sexually - Polyp stage reproduces asexually by budding

Flatworms



Planaria

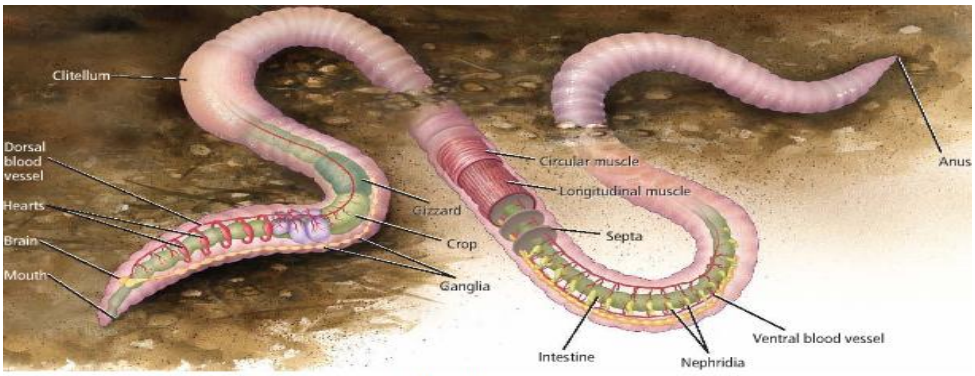


Tapeworm

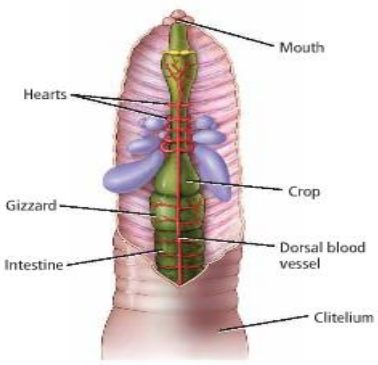
Roundworms


Ascarid worms (10-35 cm in length

Segmented worms (Annelids)



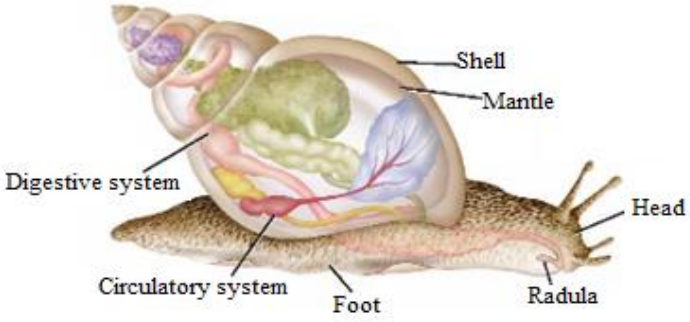
Earthworm



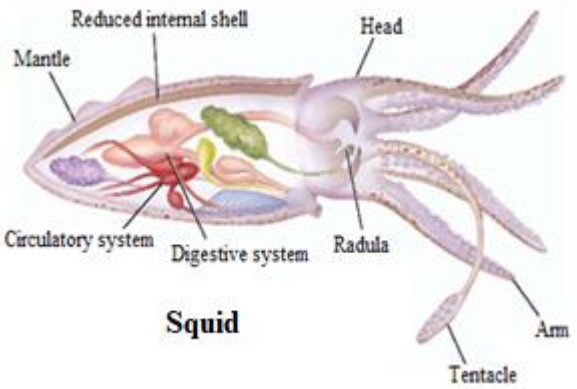
An earthworm has five hearts that pump blood through its circulatory system.

Ecological Importance of annelids				
Type of annelid	Example	Characterisyics	Habitat	Ecological Benefits
Earthworms		Few setae on most body segments	Terrestrial	- They aerate soil roots can grow more easily and water can move efficiently - They are food for many different animals
Polychaetas		- Well-developed sense organs	Mainly marine	They convert organic debris in oceans into carbon dioxide, which is used by marine plankton for photosynthesis
Leeches		- Usually no setae on body segments -Front and near suckers	Mainly fresh water	They maintain blood flow after microsurgery

Mollusks



Snail



Squid

Gastropods

Gastropods move by sending waves of contractions along their muscular foot. A film of mucus lubricates the foot and helps propel the animal forward.

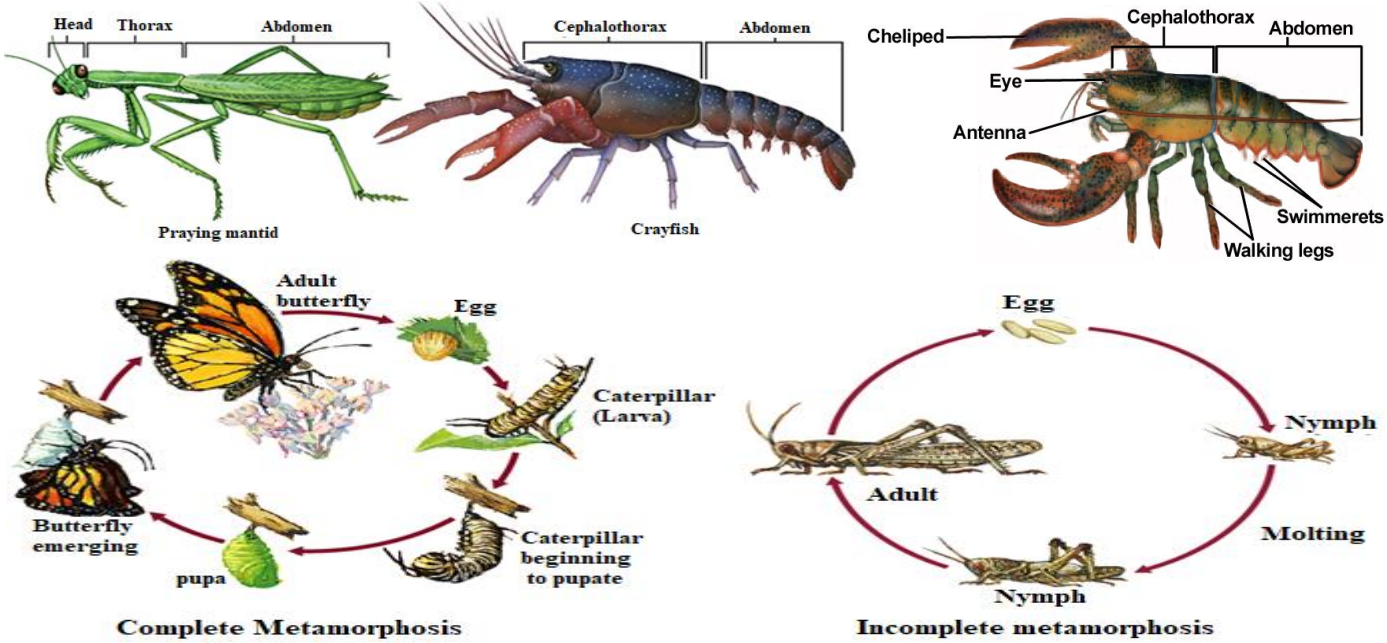
Bivalves

Most bivalves do not move much unless they are threatened by a predator. Then, a bivalve either uses its muscular foot to burrow into sediment, as shown on the left or uses jet propulsion to flee, as shown on right.

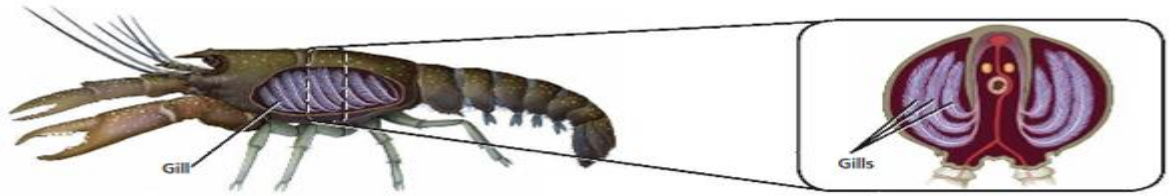
Cephalopods

Members of class Cephalopoda, such as octopuses and squids move by jet propulsion. To avoid predators, a cephalopod draws in water through slits in the body wall. Then the water is pumped rapidly through the siphon, jet-propelling the cephalopod away from danger.

Arthropods

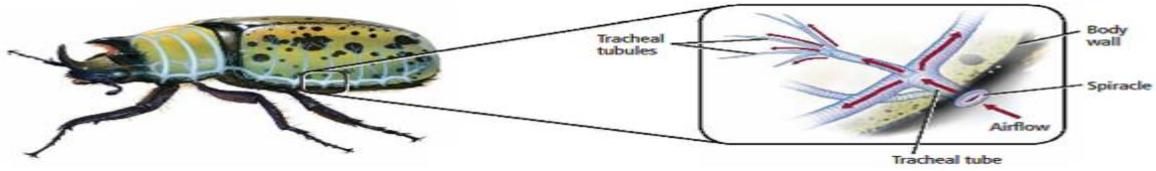


Gills: A crayfish lives in an aquatic environment and uses gills to obtain oxygen. The cross-section illustrates how the gills are divided. This provides a large surface area in a small space for the exchange of gases.



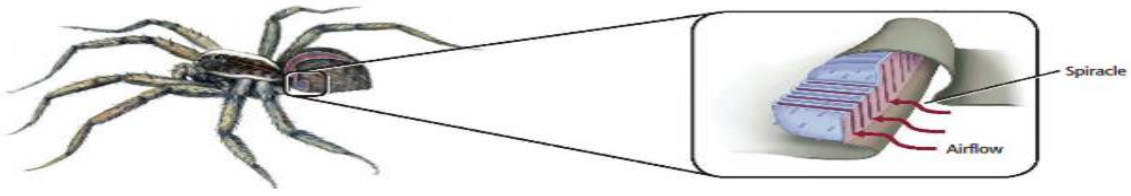
Crayfish gills

Tracheal Tubes: Insects such as this beetle have tracheal tubes that branch into smaller and smaller tubules to carry oxygen throughout the body. Air enters the respiratory system through spiracles, then travels from the tracheal tubes to tracheal tubules until it reaches the muscle.



Beetle tracheal system

Book lungs: This spider uses book lungs to draw on oxygen. As in arthropods with tracheal tubes, air enters the book lungs

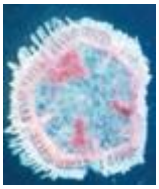


Spider book lungs

Arthropod Characteristics			
Group	Crustaceans	Spiders and Their Relatives	Insects and Their Relatives
Example			
Characteristics	Two pairs of antennae, two compound eyes, mandibles, five pairs of legs (chelipeds and walking legs), and swimmerets.	No antennae, two body sections (cephalothorax and abdomen), and six pairs of jointed appendages (chelicerae pedipalps, and four pairs of walking legs).	Antennae, compound eyes, simple eyes, three body sections (head, thorax, and abdomen), two pairs of legs, and generally two pairs of wings on the thorax.

Insect Mouthparts				
Type of mouthpart	Siphoning	Sponging	Piercing/Sucking	Chewing
Example				
Function	A feeding tube is uncoiled and extended to suck	Fleshy and end of mouthpart act like a sponge to mop up food	A thin, needlelike tube pierces the skin of the plant wall to suck liquids into the mouth	Mandible pierces of cut animal or plant tissue, and other mouthparts bring food to the mouth
Insect with adaptation	Butterflies, moths	Houseflies, fruit flies	Mosquitoes, leafhoppers, stink bugs, fleas	Grasshoppers, beetles, ants, bees, earwigs

Echinoderms

Classes of Echinoderms						
Class	Asteroidea	Ophiuroidea	Echinoidea	Crinoidea	Holothuroidea	Concentricyoidea
Examples						
Class Members	Sea stars	Brittle star	Sea urchins, Sand dollars	Sea lilies, Feather stars	Sea cucumbers	Sea daisies
Distinctive Features	- Often five-armed - Tube feet used for feeding and movement	- Often five-armed - Arms break off easily and can be regenerated - Move by arm movement - Tube feet have no suction cups	- Body encased in a test with spines - Sea urchins burrow in rocky areas - Sand dollars, burrow in the sand	- Sessile for some part of life - Sea lilies have long stalks - Feather stars have long branching arms	- Cucumber shape - Leathery outer body - Tube feet modified to tentacles near mouth	- Less than 1 cm in diameter - No arms - Tube feet located around a central disk

CHAPTER 4: Invertebrates

Part 1: Introduction to Animals

Animal Characteristics

- Animals are made of many cells. Different kinds of cells carry out different functions such as sensing the environment, getting rid of wastes and reproducing.
-Animal cells have a nucleus and specialized structures inside the cells called organelles.
- Animals depend on another living thing in the environment for food, some eat other animals, and some eat plants and animals.
Animals digest their food. The proteins, carbohydrates, and fats in food are broken down into simple molecules that can move into animal cells.
- Many animals move from place to place. They can escape from their enemies and find food, mates, and places to live. Animals that move slowly or not at all have adaptations that make it possible for them to take care of these needs in Other ways.
- All animals are capable of reproducing sexually. Some animals also can reproduce asexually.

Reproduction in Animals

Sexual reproduction

- Male produce sperms and females produce eggs. - Fertilization occurs when the sperm penetrates the egg to form a fertilized egg cell called a zygote - The zygote continues growing for forming a fluid-filled ball of cells called a blastula
- Blastula continues to undergo cell division and some cells move inward to form gastrula which is a two-cell layer sac with an opening at one end.

Asexual reproduction

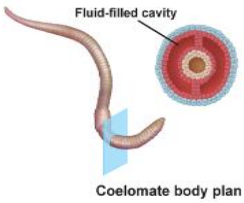
- Budding: an offspring develops as a growth on the body of the parent.
- Regeneration: a new organism can regenerate or regrow from the lost body part if the part contains enough genetic information.
- Parthenogenesis: a female animal produces eggs that develop without being fertilized.

Animal Body Plans

Symmetry: describes the similarity or balance among body structures of organisms.
-Types of symmetry:
1- Asymmetry: such as sponges. 2- Radial symmetry: can be divided along any plane through a central axis into roughly equal halves. Such as jellyfishes. 3- Bilateral symmetry: animals can be divided into mirror-image halves only along one plane through the central axis. Such as hummingbird

Body Cavities

- Coelomates: Have a fluid-filled cavity with tissue formed from mesoderm that lines and encloses the organs in the coelom



Development in Coelomate Animals
Protostomes: The mouth develops from the first opening in the gastrula.
Deuterostomes The anus develops from the first opening in the gastrula.
Pseudocoelomate: is an organism with body cavity that is not derived from the mesoderm, as in a true coelom, or body cavity. it is also known as a blastocoelomate, as the body cavity is derived from the blastocoel, or cavity within the embryo.
- Acoelomates: Have solid bodies without a fluid-filled body cavity between the gut and the body walls

Segmentation

- Segmented animals can be "put together" from a succession of similar parts.
- Can survive damage to one segment - Movement is more effective

Cephalization: The tendency to concentrate nervous tissue and sensory organs at the anterior end of the animal Jellyfish, sponge, and starfish. Snail exhibits cephalization

---

1 **The first stage after fertilization in plants and animals is**

CH 4 **A** Egg **B** Yolk sac **C** Embryo **D** Zygote

Fertilization occurs when the sperm penetrates the egg to form a fertilized egg cell called a zygote. → D

---

2 **A development stage with two cell layer sac with an opening at one end is**

CH 4 **A** Blastula **B** Gastrula **C** Oocyte **D** Zygote

Gastrula is a two-cell layer sac with an opening at one end. → B

---

3 **Asexual reproduction where an offspring develops as a growth on the body of the parent is…**

CH 4 **A** Budding **B** Parthenogenesis **C** Regeneration **D** Fragmentation

Budding: an offspring develops as a growth on the body of the parent. →A

---

4 **A female produces eggs that develop without being fertilized is…**

CH 4 **A** Budding **B** Parthenogenesis **C** Regeneration **D** Fragmentation

Parthenogenesis: a female animal produces eggs that develop without being fertilized. →B

---

5 **What kind of symmetry can be divided along any plane, through a central axis, into roughly equal halves?**

CH 4 **A** Radial symmetry **B** Bilateral symmetry **C** Vertical symmetry **D** Asymmetry

Radial symmetry: can be divided along any plane through a central axis into roughly →A

---

6 **What form of reproduction produces a new organism from the lost body part of another organism?**

CH 4 **A** Budding **B** Parthenogenesis **C** Regeneration **D** Fragmentation

Regeneration: a new organism can regenerate or regrow from the lost body part if the part contains enough genetic information →C

---

1 **Which organism exhibit cephalization?**

Do It? **A** Jellyfish **B** Snail **C** Sponge **D** Starfish

Part 2: Sponges & Cnidarians

Sponges

Sponges are filter feeder's digestion takes place within each cell. Asymmetrical and have no nervous system.

Archaeocytes: Specialized cells that secrete spicules, which are the support structures of sponges. Sponges do not have a nervous system.

Spicules are small, needle-like structures made of calcium carbonate, silica, or a tough fibrous protein called spongin

- Reproduction:

Hermaphrodites reproduce sexually and asexually.

Reproduce sexually:

Eggs remain within a sponge. Sperm are released into the water.

Asexual reproduction by fragmentation, budding, and gemmules.

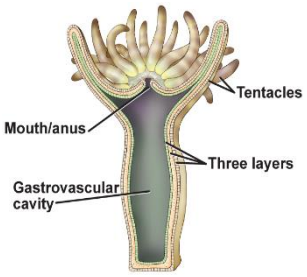
Cnidarians

Characteristics:

- Have one body opening and two layers of cells
- Radial symmetry
- Have cnidocytes that contain nematocyst, digestion takes place in the gastrovascular cavity.
- Response to Stimuli by nerve net conducts impulses to and from all parts of the body.
- Cnidarians have two stages in reproduction:

The first one is the Polyp stage which reproduces asexually by budding, and the second stage is Medusa with an umbrella shape. The two body forms of cnidarians can be observed in the life cycle of jellyfishes. Polyp is the dominant stage in the life cycle of a sea anemone.

of a sea anemone



Cnidarian Diversity: - Hydroids - Jellyfishes - Sea anemones - Corals

7 **How can a sponge get its food?**

CH 4 **A** Filtration **B** Autotroph **C** Saprobes **D** Parasitic

Sponges are filter feeder's digestion takes place within each cell → A

8 **Where does digestion occur in sponges?**

CH 4
A Digestive tract
B Gastrovascular cavity
C Stomach
D Inside each cell

Sponges are filter feeder's digestion takes place within each cell →D

9 **Which of the following living organism do not have a nervous system?**

CH 4 **A** Falcon **B** Fish **C** Deer **D** Sponge

Sponges do not have a nervous system. → D

10 **Which of the following ways is not considered a way sponges reproduce?**

CH4
A Fragmentation **B** Budding
C Gemmules **D** Conjugation

Sponges reproduce asexually by fragmentation, budding, and gemmules. →D

11 **You found an organism that has nematocysts, the organism is…**

CH 4
A Cnidarians **B** Sponges
C Mollusks **D** Echinoderms

Cnidarians have cnidocytes that contain nematocyst →A

12 **Which of the following is not a part of the cnidarian's? body?**

CH 4
A Cnidocytes
B Nematocyst
C Spicules
D Gastrovascular cavity

Cnidarians: - Have one body opening and two layers of cells
- Have cnidocytes that contain nematocyst, digestion takes place in the gastrovascular cavity.
- Response to Stimuli by nerve net conducts impulses to and from all parts of the body →C

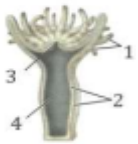
13 **Sea anemone is…**

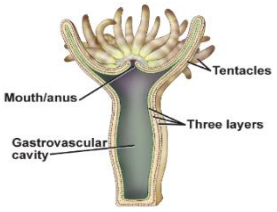
CH 4
A Echinoderms **B** Sponges
C Protists **D** Cnidarians

- Cnidarian Diversity:
- Hydroids - Jellyfishes
- Sea anemones - Corals →D

14 **The adjacent figure represents a hydra creature, which parts contain a toxic substance?**

CH 4
A 1
B 2
C 3
D 4





→A

15 **An animal with radial symmetry**

CH 4
A Sponge **B** Bird
C Hydra **D** Camel

Cnidarians have radial symmetry. →C

2 **In jellyfishes, the medusa is the sexually reproducing phase because it _____.**

Do It?
A Produces cnidocytes
B Reproduces by mitosis
C Produces eggs and sperm
D Produces polyps

3 **Which is the dominant stage in the life cycle of a sea anemone?**

Do It?
A Bud **B** Hydroid
C Medusa **D** Polyp

Part 3: Worms & Mollusks

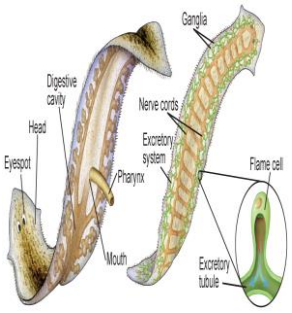
Flatworms

- Characteristics:

Bilateral symmetry, acoelomate, with an excretory system that contains flame cells.

Response to Stimuli: The nervous system regulates the body's response to stimuli.

Reproduction: - Flatworms are hermaphrodites. - Two different flatworms exchange sperm, and the eggs are fertilized internally.

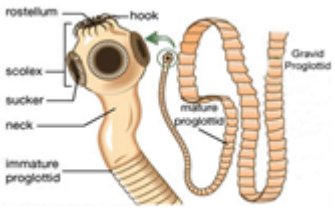


-Diversity of flatworms

*** Turbellarians:** free-living flatworms. Like planarians, can reproduce asexually by regeneration, and have eyespots that can detect the presence or absence of light.

*** Trematodes:** are parasites that infect the blood or body organs of their hosts. For example, bilharzias (Schistosoma), and you can be infected with it by swimming in contaminated water.

*** Cestodes:** a parasitic worm, for example, tapeworms that infect humans by eating undercooked beef.



Tapeworms

Nematodes (Roundworms) &Rotifers

- Have Bilateral Symmetry, Pseudocoelomates, Gastrointestinal Tract, Tapered at both ends.

Nematodes include Several Types of Worms**.**

- **Trichina:** Worm Causes Trichinosis.
- **Hookworms:** Affect Human when walking barefoot.
- **Ascaris:** Come into Human Body by Contaminated Vegetables.
- **Pinworms:** Usually Infects Children, Female Live in Intestine.
- **Filaria Worms:** Lives in Lymphatic System و Its host is mosquitoes وand Causes A Disease Called Elephantiasis.

Rotifers:

Laterally symmetrical, pseudopodia, they use cilia for locomotion and rowing

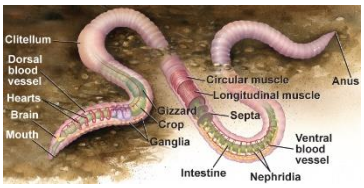
Annelids (segmented worms)

The body plan consisting of segments**.**

Earthworm has a crop and a gizzard.

- Setae are tiny bristles that anchor worms into the soil

- Clitellum: a thickened band of segments that produces a cocoon.



Diversity of annelids…

- Oligochaeta: like earthworm, it aerates the soil.

- Polychaeta: like bristle worms, it converts the organic debris in the oceans to carbon dioxide.

- Hirudinea: like leeches, it helps with the blood circulation after medical surgeries.

Bristle worms

Leech

Mollusks

Characteristics:

Mollusks are coelomate animals with bilateral symmetry, a soft internal body, complete digestive tract (two openings mouth and anus) , a muscular foot, and a mantle.

-Mantle: membrane surrounding internal organs of mollusks and secretes calcium carbonate which is used in the formation of a shell **-Radula:** tongue-like structure used by mollusks in feeding

Movement in mollusks:

-Oysters: Uses its muscular foot to burrow under wet sand

-Snails & slugs: crawl using the foot

-Squid & octopus: jet propulsion; water enters the squid's mantle cavity and then is expelled through the siphon

Diversity of mollusks

- Gastropods: Snails, slugs, and abalone

- Bivalves: Clams, oysters, mussels **(Sea stars feed on oysters making their numbers decrease)**

- Cephalopods: cuttlefish, squid, octopus(is the most intelligent invertebrate)

16 **What type of body cavity does a flat worm have?**

CH 4

A Coelomate **B** Pseudocoelomates

C Acoelomates **D** Medium coelomate

Flatworms are acoelomates →C

17 **A person ate an undercooked beef what type of worms could he get infected with?**

CH 4

A Tape worms

B Ascaris worms

C Bilharzia worms

D Hook worms

Cestodes: Are parasitic worm. For example: Tapeworms that infect humans by eating undercooked beef. →A

18 **How can you get bilharzias?**

CH 4

A Breathing contaminated air

B Eat contaminated food

C Contaminated injections

D Swim in contaminated water

Trematode: are parasites that infect the blood or body organs of their hosts. For example: bilharzias (Schistosoma), that you can be infected with it by swimming in contaminated water. →D

19 **Which of the following is an example of flatworms?**

CH 4

A Ascaris **B** Pin worms

C Filarial worms **D** Planarian

Turbellarians: free-living flatworms. Like planarians. →D

20 CH 4 **Which of the following is a free-living worm?**
A Turbellarian
B Tape worm
C Trematode
D None of the above
Turbellarians: free living flatworms. Like planarians. →A

21 CH 4 **How do ascaris worms infect humans?**
A Eating contaminated vegetables
B Drinking contaminated water
C Swimming in contaminated water
D Walking barefoot on dirt
Ascaris: Come into Human Body by Contaminated Vegetables. →A

22 CH 4 **Nematodes and Flatworms are similar by …**
A They have bilateral symmetry
B They are acoelomate
C They have radial symmetry
D They have pseudocoelomates
Nematodes and Flatworms have bilateral Symmetry. →A

23 CH 4 **A student dissected a worm. He found that its digestive system has a gizzard and a crop, what worm is it?**
A Ascaris **B** Roundworm
C Flatworm **D** Segmented worms
Annelids (segmented worms) The body plan consisting of segments. Earthworm has a crop and a gizzard. →D

24 CH 4 **Worms that work on converting the organic debris in oceans to carbon dioxide**
A Round worms **B** Leeches
C Polychaeta **D** Flatworm
Polychaeta: like bristle worms, it converts the organic debris in the oceans to carbon dioxide. →C

25 CH 4 **Which of the following worms is considered a segmented worm**
A Ascaris worms **B** Leeches
C Planaria **D** Fluke
Hirudinea are segmented worms like leeches. →B

26 CH 4 **How are leeches different from parasitic flatworms and roundworms?**
A Leeches have a mouth.
B Leeches feed on humans.
C Leeches do not have setae.
D Leeches are external parasites.
Leeches are external parasites →D

27 CH 4 **Which structure physically breaks down food in the earthworm digestive tract?**
A Pharynx **B** Crop
C Gizzard **D** Clitellum
The muscular gizzard is used to grind food particles. →C

28 CH 4 **Which of the following structures is essential to earthworm locomotion?**
A Setae **B** Crop
C Gizzard **D** Clitellum
Setae are tiny bristles that push into the soil and anchor the worms during movement →A

27 CH 4 **A person dissected an animal and found that its internal organs are covered with a membrane and it has a muscular foot and radula which of the following creatures did person finds?**
A Crab **B** Snail
C Sponge **D** Earth worm
Oysters: Used its muscular foot to burrow under wet sand Snails & slugs: crawl using the foot →B

28 CH 4 **The mantle in bivalves is used in.…**
A Formation of the shell.
B Transport food.
C Excretion of waste
D Movement
Mantle: membrane surrounding internal organs of mollusks and secretes calcium carbonate which is used in the formation of a shell →A

29 CH4 **In squids water enters the mantle cavity and then is expelled through the…**
A Siphon **B** Biphon **C** Shiboon **D** Riboon
Squid & octopus: jet propulsion; water enters the squid's mantle cavity and then is expelled through the siphon. →A

30 CH4 **Which of the following mollusks is a bivalve?**
A Oyster **B** Octopus **C** Squid **D** Snail
Bivalves: Clams, oysters, mussels →A

31 CH 4 **Why are oyster numbers decreasing…?**
A Lack of food
B Reduction in reproduction rate
C Water pollution
D Sea stars feed on them
Sea stars feed on oysters making their numbers decrease →D

32 CH 4 **What organ does a mollusk use to feed?**
A Foot **B** Mantle **C** Radula **D** Tentacle
Radula: tongue-like structure used by mollusks in feeding →C

33 CH 4 **Which is the most intelligent invertebrate?**
A Leech **B** Nematode **C** Octopus **D** Snail
Octopus is the most intelligent invertebrate →C

34 CH 4 **What creature does the figure represent?**

A Roundworms **B** Tapeworms
C Planaria **D** Rotifers
Rotifers →D

4 Do It? **Which structure secretes the coating that produces a pearl in an oyster?**
A Mantle **B** Foot
C Nephridium **D** Shell

5 Do It? **Clams and oysters are members of which class of mollusk?**
A Gastropods **B** Cephalopods
C Bivalves **D** Nematodes

CHAPTER 4: Invertebrates

Part 4: Arthropods, Echinoderms, and Invertebrate Chordates

Arthropods are segmented into the head, thorax, and abdomen.
- **Exoskeleton:** made of chitin. - **Appendages:** structures that grow and extend from an animal's body, such as legs and antennae.
- **Molting:** the process of shedding the exoskeleton. - **Excretion:** through Malpighian tubules.

Arthropods' respiratory Structures:
- **Gills:** as in Crayfish - **Tracheal Tubes:** as in beetles. - **Book lung:** as in spiders.

Diversity of Arthropods:
Crustaceans, Spiders and their relatives, Insects and their relatives, Centipedes, and Millipedes
-**Crustaceans** Ex: crabs and lobsters
Characteristics: Two pairs of antennae, two compound eyes, five pairs of legs (chelipeds and walking legs), and swimmerets for swimming and reproduction.

Spiders and their relatives
EX: spiders, ticks, scorpions, mites - **Characteristics:** No antennae, two body sections (cephalothorax and abdomen), and six pairs of jointed appendages (chelicerae, pedipalps, and four pairs of walking legs)
- Spiders have spinnerets that produce silk that is made from a fluid protein secreted by glands.

Insects and their relatives
EX: Butterflies, Flies, Mosquitos. - **Characteristics:** Antennae, three body sections (head, thorax, abdomen), three pairs of legs, and two pairs of wings. - **Insect mouthparts:** siphoning like butterflies, sponging like flies, piercing/sucking like mosquitoes and fleas, chewing like grasshoppers and ants.
- **Metamorphosis:** A series of major changes from a larval form to an adult form.
- **Complete metamorphosis:** insects develop through the four stages of complete metamorphosis: egg, larva pupa, and adult.
- **Incomplete metamorphosis:** insects develop through three stages, egg, nymph, and adult.

Echinoderms
- **Characteristics:** It has an endoskeleton with thorns for support and protection, a gastrovascular system, and tubular feet, for their adults have radial symmetry.
- **Gastrovascular system:** enable the organism to move and capture food.
- **Tubular feet:** Tubes are filled with fluid and have closed ends, used in movement and collecting food, and breathing.
- **Breathing:** use its tubular foot for breathing, and Sea Cucumber uses a breathable tree structure.

Diversity of Echinoderms
- **Asteroidea:** Like sea stars that reproduce by regeneration - **Ophiuroidea:** Like Brittle stars
- **Echinoidea:** Like Sea urchins and Sand dollars - **Crinoidea:** Like Feather stars and Sea lilies
- **Holothuroidea:** Like Sea cucumber
- **Concentricycloidea:** Like Sea daisies

Most sea urchins have a chewing apparatus inside their mouths.

Invertebrate Chordates
- **Their properties:** dorsal tubular nerve cord, a notochord, pharyngeal pouches, and a post-anal tail.
- **Example of Cephalochordate:** Amphioxus - **Example of chordate:** tunicates

35 **Arthropods and segmented worms share a feature** — CH 4
A Gills **B** Trachea tube
C Segmented bodies **D** Malpighian tubules
Arthropods are segmented into the head, thorax, and abdomen. →C

36 **The process of shedding the exoskeleton** — CH 4
A Metamorphosis **B** Regeneration
C Fragmentation **D** Molting
Molting: the process of shedding the exoskeleton. →D

37 **In most arthropods, cellular wastes are removed from the blood through…** — CH 4
A Diffusion **B** Flame cells
C Nephridia **D** Malpighian tubules
Excretion: through Malpighian tubules. →D

38 **A student was visiting a park. He found a living organism that has antennae, the organism belongs to…** — CH 4
A Polychaeta **B** Rotifers
C Segmented worms **D** Arthropods
Appendages: structures that grow and extend from an animal's body, such as legs and antennae. →D

39 **If you dissected a spider and found a respiratory structure, the structure is…** — CH 4
A Gills **B** Air sacs
C Book lung **D** Tracheal tube
Arthropods' respiratory Structures: - Gills: as in Crayfish - Tracheal Tubes: as in beetles. - Book lung: as in spiders →C

40 **Crustacean has …… pairs of legs.** — CH 4
A Three **B** Four
C Five **D** Six
Crustaceans like crabs and lobsters have five pairs of legs (chelipeds and walking legs →C

41 **An example of spiders** — CH 4
A Ticks **B** Butterflies
C Crabs **D** Flies
Spiders and their relatives - EX: spiders, tick scorpions, mites. →A

42 **which of the following animals has no antennae** — CH 4
A Spiders **B** Crustaceans
C Insects **D** Crabs
Spiders don't have antennae →A

43 **What is the function of spinnerets in spiders?**

CH 4

A Protection **B** Excretion of wastes

C Rotation **D** Produce silk

spiders have spinnerets that produce silk that is made from a fluid protein secreted by glands. →D

44 **A biologist found an arthropod that has a body consisting of the head, thorax, and abdomen.**

CH 4

A spider **B** Butterfly

C Scorpion **D** Crabs

Insects and their relatives: EX: butterflies, flies, mosquitos. - Characteristics: antennae, three body sections head, thorax, abdomen), compound eyes, three pairs of legs, and two pairs of wings. →B

45 **It's Not a characteristic of insects …**

CH 4

A Compound eye **B** Spinnerets

C Antennae **D** Two pairs of wings

Insects and their relatives: EX: butterflies, flies, Insects and their relatives: EX: butterflies, flies, mosquitos. - Characteristics: antennae, three body sections head, thorax, abdomen), compound eyes, three pairs of legs, and two pairs of wings. → B

46 **Mosquitoes have which mouthpart?**

CH 4

A Sponging **B** Siphoning

C Piercing/sucking **D** Chewing

- Insect mouthparts: siphoning like butterflies, sponging like flies, piercing/sucking like mosquitoes and fleas, chewing like grasshoppers and ants. →C

47 **Growth Changes in the shape and composition of a living organism…**

CH 4

A Graduation **B** Metamorphosis

C Morphology **D** Evolution

Metamorphosis: a series of major changes from a larval form to an adult form. → B

48 **An Aquatic animal that has an endoskeleton with spines and gastrovascular system**

CH 4

A Sponges **B** Cnidarians

C Echinoderms **D** Mollusks

Echinoderms Characteristics: Aquatic animals have an endoskeleton with thorns for support and protection, a gastrovascular system, and tubular feet, for their adults they have radial symmetry. → C

49 **A Structure that helps in protecting Echinoderms**

CH 4

A Refinery **B** Gastrovascular system

C Collecting feet **D** Endoskeleton

Echinoderms have an endoskeleton with thorns for support and protection. → D

50 **What are the three uses of tubular feet:**

CH 4

A Movement, feeding, and breathing.

B Feeding, Protecting, neurological regulation.

C Excretion, digestion, and movement.

D Reproduction, protection, and digestion

Tubular feet: Tubes are filled with fluid and have closed ends, used in movement and collecting food, and breathing →A

51 **While dissecting an animal, a respiratory organ in The form of respiratory trees was found, what is this animal?**

CH 4

A Sea Stars **B** Sea Cucumber

C Sand Dollars **D** Sea Urchins

Sea Cucumber uses a breathable tree structure. → B

52 **When cutting sea stars into pieces it...**

CH 4

A Dies **B** Dehydrates

C Decomposes **D** Regenerates

Asteroidea: Like sea stars that reproduce by regeneration → D

53 **Which of the following contain a chewing apparatus?**

CH 4

A Sea Urchins **B** Sea Cucumber

C Sea Star **D** Sponges

Most sea urchins have a chewing apparatus inside their mouths. → A

54 **Which of the following belong to Cephalochordate**

CH 4

A Amphioxus **B** Tunicates

C Sea Stars **D** Sponges

Example of Cephalochordate: Amphioxus →A

Chapter 4: Do It Answer key				
1	2	3	4	5
B	C	D	A	B