Evolution of Echinoderms Name:_____

California Standards

5.a Students know plants and animals have levels of organization for structure and function…

6. Physical and principles underlie biological structures and functions.

3.a Students know both genetic variation and environmental factors are causes of evolution and diversity of organisms.

Middle School NGSS

MS-LS1.A - Structure and Function: In multicellular organisms, the body is a system of multiple interacting subsystems. These subsystems are groups of cells that work together to form tissues and organs that are specialized for particular body functions.

Echinoderm comes from the Greek language meaning "spiny skin" like the spines on sea urchins. Echinoderms possess a unique water vascular system that works on hydraulic pressure. This is a network of (water) fluid-filled canals that function in gas exchange, feeding, and secondarily in motion. This system may have allowed echinoderms to function without gill slits. They don't have a brain but a unique system comprises a central ring and radial arms. The tube feet are extensions of the water vascular system, which poke through holes in the skeleton and can be extended or contracted by the redistribution of fluid between the foot and internal sac. Evolution is the process of change in species, such as how echinoderms changed over time. Evolution of the echinoderms explains why this phylum has 7,000 types.

1. What does Echinoderm mean in Greek?

2. What type of system do echinoderms use for the vascular system?

3. Do echinoderms need gills?

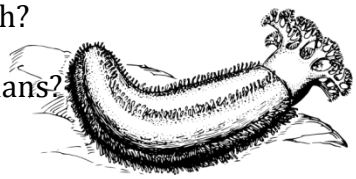
4. What do echinoderms have instead of brains?

5. What type of feet do echinoderms have?

6. What process created over 7,000 types of echinoderms?

Guided Practice: Watch the movie Echinoderms Ultimate Animal

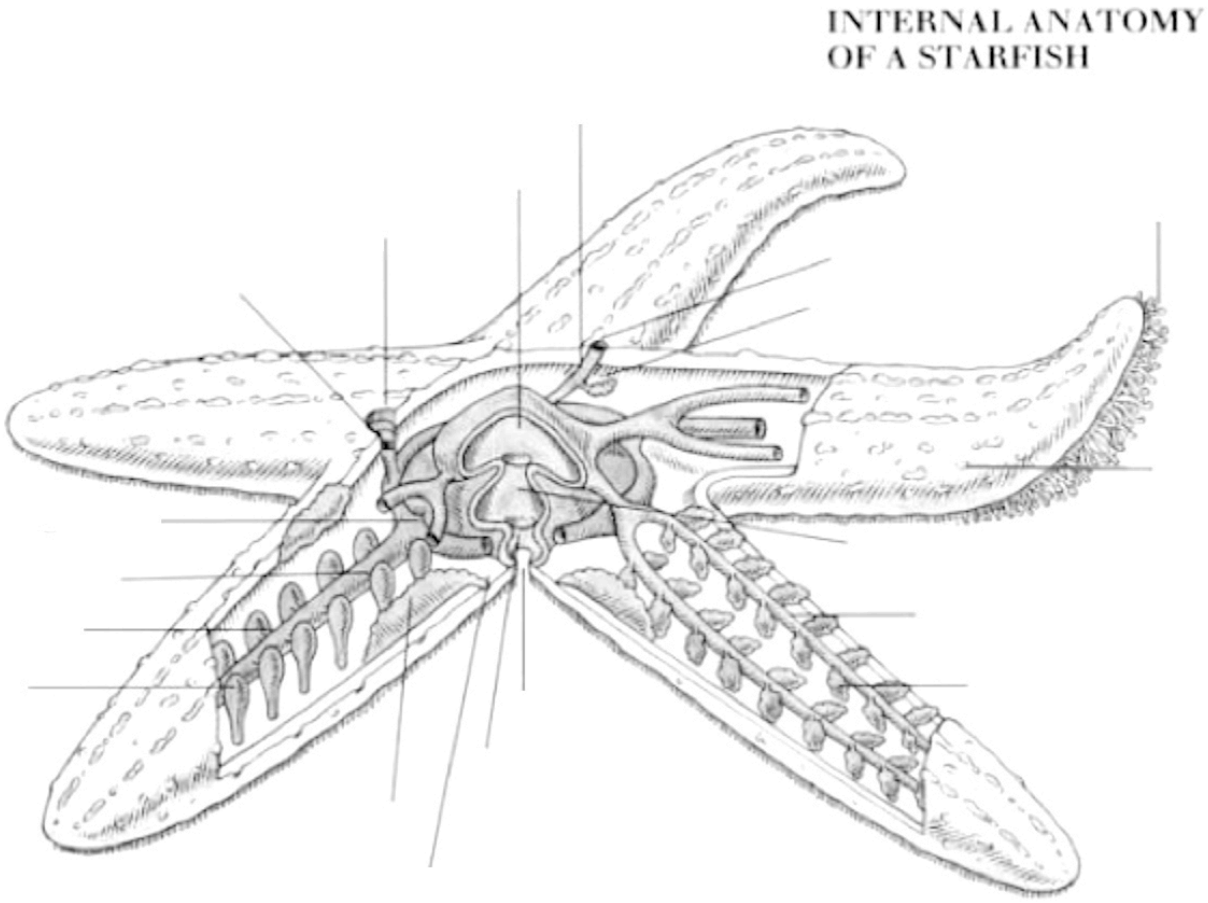
1. Why are echinoderms animals even though they have no brain?
2. Do echinoderms have heads or faces?
3. How many parts in the symmetry of sea star?
4. What happens when the arms of a sea star are joined together?
5. What happens when the urchin is turned on its side and has a good stretch?
6. Is an echinoderm's skeleton (like a sea star) similar or different than humans?
7. What is in the echinoderms bony platelets?
8. What holds the echinoderms in a certain shape together for hours?
9. What is the name of the living relay system that coordinates movement of arm?
10. What do sea urchins eat?
11. What do urchins use to help them find food?
12. Where does the urchin's food move to with help from its tube feet?
13. Why are sea cucumbers called vacuum cleaners of deep sea?
14. What animal makes up vast majority of animals on ocean floor?
15. Why do its tube feet shovel sand into the sea cucumber's mouth?
16. How many brittle stars are on the ocean floor?
17. How are brittle stars patient predators?
18. What type of system controls the tube feet?
19. What is the name of the plate where water is inflated?
20. What is the name of the round muscles that are in the five arms?
21. What part of the echinoderm body helps them detect food?
24. What is at the end of feet that helps sense light and darkness?
25. How do sea stars attack mussels on a wharf?
26. What part of the sea star's body moves into body of prey?
27. What do sea stars puts into mussel to digest it?
28. What is the name of the giant sea star with up to 20 arms?



29. Explain how the giant sea star hunts.

30. What process is responsible for the different forms echinoderms that all live in the ocean successfully?

31. Lab: Color in the different parts of the echinoderms the starfish. Label the parts of the starfish.



Teacher's edition: