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Name _____ Date _____ Hour _____

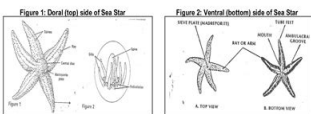
DISSECTION GUIDE FOR THE STARFISH

The starfish is a member of the echinoderms, this phylum is characterized by a thin membranous epidermis, a mesodermal skeleton with spines sticking through the epidermis, and a water-vascular system used mainly for food capture and movement. The animal phylum includes sea urchins, sand dollars, sea cucumbers, and brittle stars. Starfish have been serious predators of oyster beds. At one time oyster fishermen caught starfish, cut them up, and threw them back into the ocean. Then it was discovered that each of the pieces could regenerate, growing into another starfish. Today, "sea mops" made of cloth are dragged over the oyster beds to entrap the starfish. The starfish are then separated to the salt to dry.

Echinoderms are one of the animal groups most closely related to the vertebrates because echinoderms and vertebrates share a common ancestor and similar patterns of development (both are deuterostomes, which means that as an embryo the anus develops before the mouth). The starfish has five rays or arms. Some of the specimens may have fewer, but this is usually because they have been broken off in handling. Some starfish may have more than five arms; in rare cases specimens with up to 25 rays have been found.

A. EXTERNAL ANATOMY

On your starfish, with the help of Figures 1 and 2 below, locate the following external features:



- Place your sea star in the dissecting tray so that the top surface faces upward.
- Examine the animal's top surface. Locate the **central disc** and the five arms, or **rays**, that extend from the central disc. **Circle it on the figure above.**
- Locate the **madreporite plate**. It is a round, sieve-like structure that looks almost like a wart. The madreporite plate is a perforated structure, which regulates the movement of water in and out of the **water-vascular system**. **Underline it on the figure above.**
- Note that many spines are scattered over the surface of the arms and the central disc. These spines are attached to the plates of the sea star skeleton just under the skin. These plates are called **ossicles**. **Shade these structures using a pen or pencil.**
- Turn the sea star over. Locate the **mouth** and the five **ambulacral grooves** that extend from the mouth along the middle of each ray. **Put a box around them.**

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