

Echinoderms

By Cindy Grigg

¹ Echinoderm (ee KY noh durm) is the name given to one phylum of invertebrate animals that live in salt water. These strange-looking animals look more like pincushions, coins, or stars. The echinoderm family is large. It contains about six thousand separate species. Of these species, about 1,600 are sea stars, also called asteroids. The echinoderm family also includes sea urchins, sea cucumbers, sea lilies, and sand dollars.



² Echinoderms have radial symmetry. Their body parts are arranged like spokes on a wheel. If you count the legs on a sea star or the body sections of a sea urchin, you will almost always get five or a multiple of five. Their bodies have a tough outer covering of stiff spines. In fact, their name means "spiny skin." They have rows of tube feet on the undersides of their bodies. These feet act like suction cups to help the animal move and grab onto food. They also have a water vascular system that also helps them move.

³ The water vascular system is a system of water-filled tubes inside the echinoderm's body. Parts of the tubes contract, squeezing water into the tube feet that line each of the body sections. Each tube foot acts like a sticky suction cup that grips the surface beneath the echinoderm. In this way they are able to move around. They do not have a head with sense organs. Instead, they are adapted to respond to food or predators coming from any direction.

⁴ To reproduce, females release eggs into the water. Males release sperm. This is called spawning. If the two find each other, the eggs become fertilized. The fertilized eggs develop into tiny, swimming larvae that look nothing like the adults. They will undergo metamorphosis and change into adult echinoderms.

⁵ Sea stars are probably the best-known of the echinoderms. Sea stars are sometimes called "starfish." This is not accurate because they are not fish. They come in a wide range of colors. They are predators that eat mollusks, crabs, and even other echinoderms. A sea star uses its arms and tube feet to capture prey. If the sea star loses an arm, it can grow a new one. This is called regeneration. A few species of sea stars can even grow a whole new animal from just one arm. Some

sea stars reproduce by splitting into many parts. Its arms pull the sea star apart in five different directions. Five new sea stars regenerate.

⁶ Sea lilies have a mouth on their top surface that is surrounded by feeding arms. They look a little like flowers, which is where their common name comes from. Sometimes they are called feather stars because of the feathery appearance of their feeding arms. They are attached to the sea floor at some points in their life cycle; at other times they are free-swimming.

⁷ Sand dollars and sea urchins have no arms. Sand dollars look like coins. Their flat bodies are covered with spines that help them burrow into the sand. Sea urchins look like pincushions or round brushes. The spines cover a central shell made of plates joined together. Sea urchins move by using bands of tube feet. Sea urchins scrape algae, chew seaweed, and crush pieces of coral and the shells of small mollusks. They do all these things with five teeth that can be projected from their mouths. Some sea urchins use their teeth and spines to dig themselves into rock crevices to hide from predators.

⁸ Sea cucumbers look like cucumbers or dill pickles. They may be red, brown, blue, or green. They crawl along the ocean bottom with their rows of tube feet. At one end of their bodies, they have a mouth surrounded by tentacles. These animals can lengthen their tentacles to sweep food toward their mouths and then pull the tentacles back into their tough skin. They are not predators. They feed on organic debris found in the water and plankton. Sea cucumbers do something called "defensive vomiting." When threatened, they expel sticky threads and then their internal organs to thwart their attacker. The internal organs can then be re-grown.

⁹ This phylum contains some of the strangest looking animals on Earth. Echinoderms live in oceans and have spiny skin. They are invertebrates. They have radial symmetry, often with body sections in multiples of five. Some of them can expel their internal organs and pull them back in or re-grow new ones. They are interesting to learn about.

Name _____

Science Pd: _____

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<p>1. What type of symmetry do echinoderms have?</p> <p><input type="radio"/> A None</p> <p><input type="radio"/> B Radial symmetry</p> <p><input type="radio"/> C Bilateral symmetry</p>	<p>2. Echinoderms' body segments often occur in multiples of what number?</p> <p><input type="radio"/> A Two</p> <p><input type="radio"/> B Five</p> <p><input type="radio"/> C Three</p>
<p>3. What does "echinoderm" mean?</p> <p><input type="radio"/> A Strange looking</p> <p><input type="radio"/> B Star-like</p> <p><input type="radio"/> C Spiny skin</p>	<p>4. Besides sea stars, name two other members of the echinoderm phylum.</p> <p>_____</p> <p>_____</p>
<p>5. What is regeneration?</p> <p><input type="radio"/> A The way echinoderms reproduce</p> <p><input type="radio"/> B The ability to grow a new body part</p> <p><input type="radio"/> C Larvae changing into adult life forms</p>	<p>6. Sea stars move by using:</p> <p><input type="radio"/> A Arms</p> <p><input type="radio"/> B Tube feet</p> <p><input type="radio"/> C Ocean currents</p>
<p>7. Which members of the echinoderm phylum look like pin cushions?</p> <p><input type="radio"/> A Sea lily</p> <p><input type="radio"/> B Sea urchin</p> <p><input type="radio"/> C Sea star</p>	<p>8. What special ability do sea cucumbers have?</p> <p><input type="radio"/> A They can re-grow internal organs.</p> <p><input type="radio"/> B They can use camouflage to hide from predators.</p> <p><input type="radio"/> C They can out-swim predators.</p>