# Sea Star Beginnings

Two ways a new sea star can begin

**ZOO.6.4** "Describe the sexual and asexual reproduction of starfish."

NAME _____ DATE _____

## 1 READ AND MARK

Read it twice

**YOUR JOB** Underline and number four stages of sexual reproduction, from the release of eggs and sperm to a young sea star. Circle the actions that create a new sea star asexually.

### New Life on the Seafloor

1. On a rocky seafloor, two sea stars can produce offspring without ever touching. In many species, adults release eggs or sperm into seawater during a shared spawning period. Fertilization happens outside their bodies when a sperm joins an egg in the water. The fertilized egg begins dividing and becomes an embryo. Releasing eggs and sperm at about the same time raises the chance that they will meet before currents carry them apart. This is sexual reproduction because an offspring receives genetic material from an egg and a sperm, usually produced by different adults.

2. The embryo develops into a tiny, free-swimming larva rather than a miniature adult sea star. In many species, larvae drift in the plankton and feed while they grow. Later, a larva settles on the seafloor and changes shape through metamorphosis. The young sea star then grows toward adult size. This journey matters when describing sexual reproduction: fertilization starts a new organism, but development continues through stages before it resembles its parents. A larva may be carried far from the place where its egg was fertilized, so spawning can spread young to new habitats.

3. Some sea star species also reproduce asexually. In fission, one adult splits into two parts, and each part regenerates the structures it lacks. In other species, a detached arm can grow into a new sea star if it carries enough of the central disk. Not every broken arm can do this, and regeneration that only repairs an injured adult does not create offspring. Asexual reproduction begins with one parent and does not involve the joining of egg and sperm. Its offspring inherit genetic material from that parent and are generally much more genetically similar to it than sexually produced offspring.

## 2 ANSWER WITH EVIDENCE

Use the passage

1. Describe how eggs and sperm begin sexual reproduction in sea stars. Where does fertilization happen?

2. Describe how a fertilized egg develops into a young sea star.

3. Describe how fission produces new sea stars without eggs or sperm joining.

4. When can a detached arm produce a new sea star, and how is that different from an adult repairing an injured arm?

## 3 YOUR TURN

Your own words

A tide-pool visitor says, "A sea star growing an arm must be having a baby." Write five or six sentences that correct this idea. Describe how sexual reproduction produces and develops a new sea star, how fission can produce one, and why arm repair alone is different.

ANSWER KEY

# Sea Star Beginnings

HIGH SCHOOL · ZOO.6.4

## PART 1 · READ AND MARK

Underline and number four stages of sexual reproduction, from the release of eggs and sperm to a young sea star. Circle the actions that create a new sea star asexually. Accept any marking that follows this job and points at the right text.

## PART 2 · ANSWERS

| # | QUESTION | ANSWER |
|---|---|---|
| 1 | Describe how eggs and sperm begin sexual reproduction in sea stars. Where does fertilization happen? | **Adults release eggs or sperm into seawater. A sperm joins an egg outside their bodies, and the fertilized egg begins dividing.** |
| 2 | Describe how a fertilized egg develops into a young sea star. | **The fertilized egg becomes an embryo, then a free-swimming larva. The larva settles on the seafloor and changes shape through metamorphosis.** |
| 3 | Describe how fission produces new sea stars without eggs or sperm joining. | **One adult splits into two parts. Each part regenerates the structures it lacks.** |
| 4 | When can a detached arm produce a new sea star, and how is that different from an adult repairing an injured arm? | **In some species, a detached arm with enough of the central disk can grow into a new sea star. Repairing an injured arm restores part of the existing adult and does not create offspring.** |

## PART 3 · YOUR TURN (SAMPLE ANSWER)

A sea star growing an arm may be repairing an injury, not producing a new sea star. In sexual reproduction, adults release eggs or sperm into the water, where a sperm can fertilize an egg. The embryo develops into a swimming larva that later settles and changes shape into a young sea star. Some species can also reproduce asexually by fission. One adult splits, and each part regrows the structures it lacks. Fission creates new individuals, but repairing an arm on an existing adult does not.

Accept descriptions that distinguish the creation of a new individual from repair of an existing one. For the detached-arm question, students should note that this occurs only in some species and requires enough central disk tissue.