

LESSON | What is regeneration?

14

A lizard is attacked and grabbed by its tail. Its tail breaks off. The lizard escapes. Gradually, the lizard's tail grows back. The tail grows back by the process of **regeneration** [ri-jen-uh-RAY-shun]. Regeneration is the ability of an animal to regrow lost body parts.

Regeneration in animals varies greatly. Some animals can regrow only small parts. The lizard is one such animal. Others can regenerate large body parts. Still others can regenerate a whole organism from just part of the animal. This is a kind of asexual reproduction.

For example, a sea star can reproduce by regeneration. Most sea stars have five arms, or rays. If just one arm is cut off, along with part of the center of the sea star's body, a whole new sea star will grow.

How much an animal can regenerate depends upon how simple or complicated that animal is. Regeneration in complicated animals is very limited. Mammals can regenerate only skin, nails, hair, and certain other tissues. Mammals cannot regenerate whole parts—like an arm or a leg.

SEA STAR REGENERATION

Figures A and B show sea star regeneration. Study the figures and answer the questions.

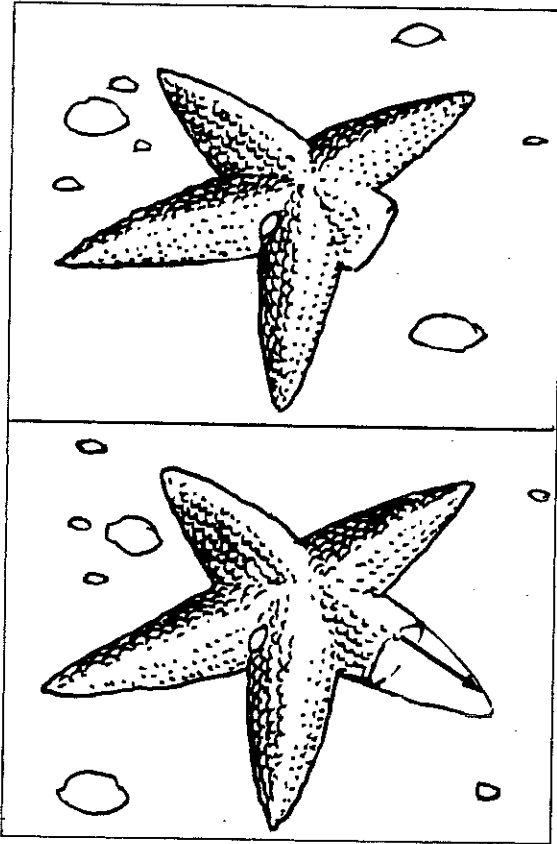


Figure A

A sea star can regenerate lost arms. However, a sea star can regenerate more than an arm.

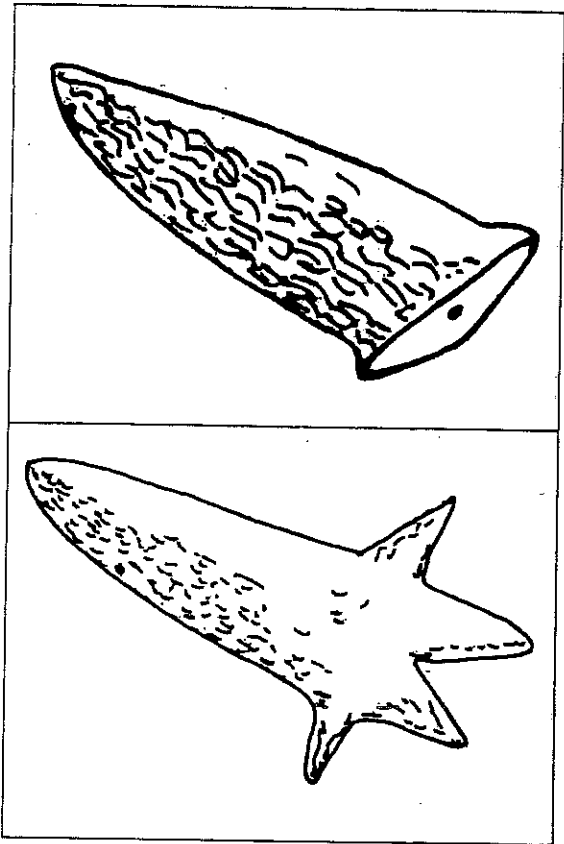


Figure B

A sea star can regenerate a complete sea star from just one arm and part of the center.

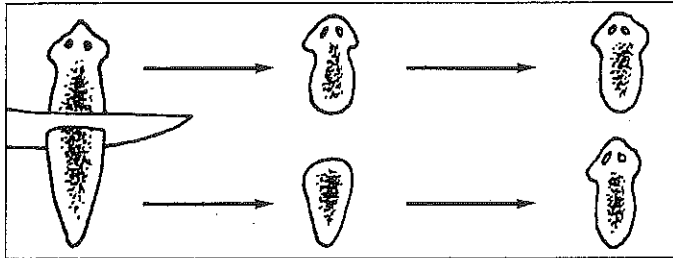
1. a) Can more than one sea star regenerate from just one five-arm sea star?
_____ b) How many? _____
2. a) Which figure shows a form of asexual reproduction? _____
A, B, both
b) Explain your answer. _____

3. a) Which figure shows only regeneration of a body part? _____
A, B, both
b) Explain your answer. _____

HEADS OR TAILS?

A *planarian* [pluh-NER-ee-un] is a tiny flatworm. It lives in ponds.

If a planarian is cut into pieces, it will regenerate its missing parts.



A planarian can be cut in half across its body. The head portion will grow a new tail. The tail portion will grow a new head.

Figure C

The way a planarian regenerates depends upon how it is separated. This happens in nature, but it can also be done in the laboratory.

Figure D shows four planaria. Each one was separated in a different way. (The dotted lines show the separations.)

Figure E shows four groups of regenerated planaria.

Which planarian regenerated into which group? Answer by placing the correct number on the line.

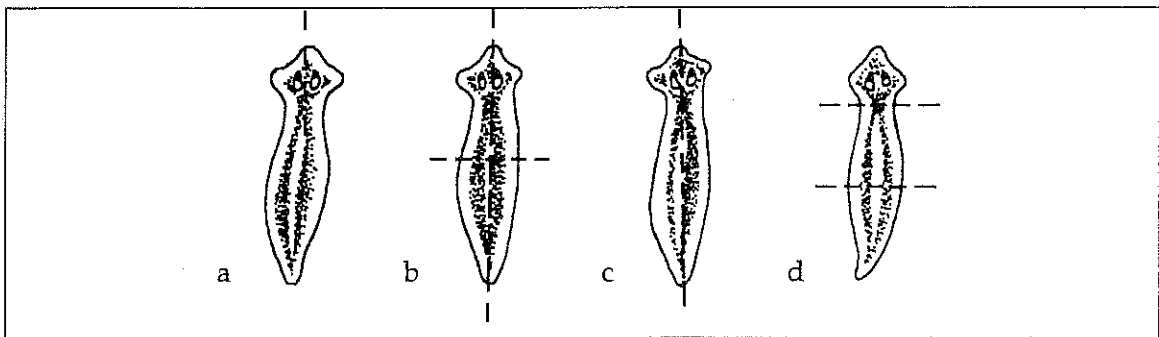


Figure D

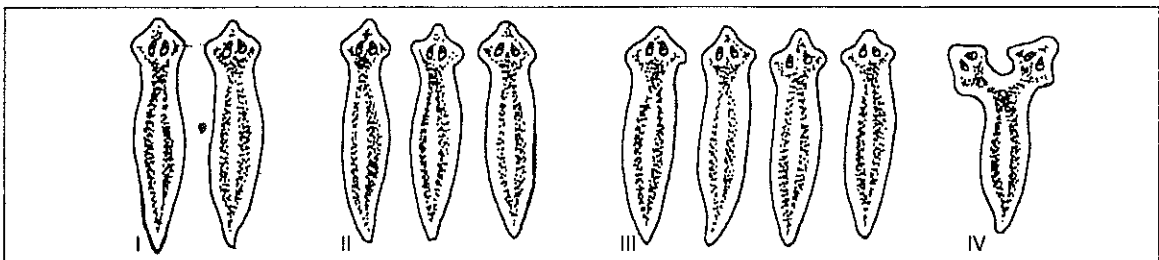


Figure E

- Planarian a became group _____ .
- Planarian b became group _____ .
- Planarian c became group _____ .
- Planarian d became group _____ .

SOME INTERESTING ANIMAL REGENERATIONS

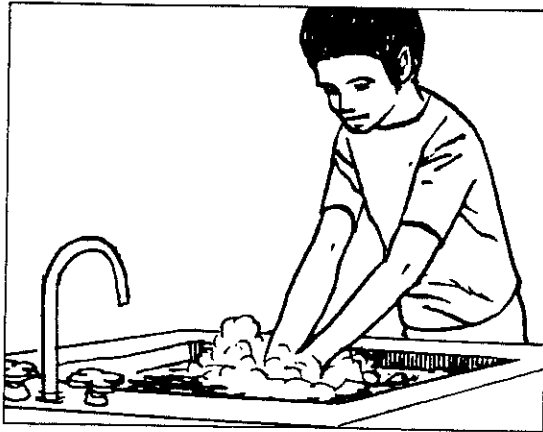


Figure F

Every day billions of your body cells die.

Every time you wash your hands, you wash off hundreds—even thousands—of skin cells. New skin cells are always being regenerated.

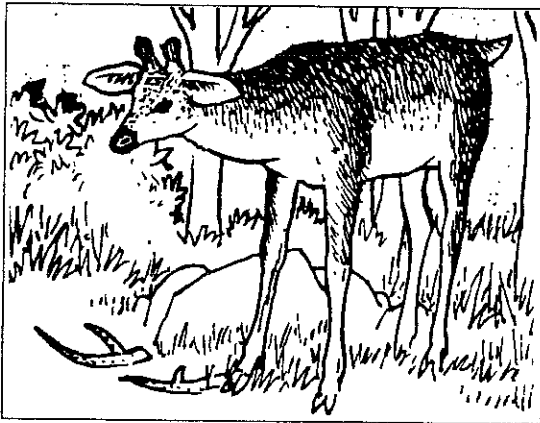


Figure G

A deer sheds its antlers every year. New antlers grow back.

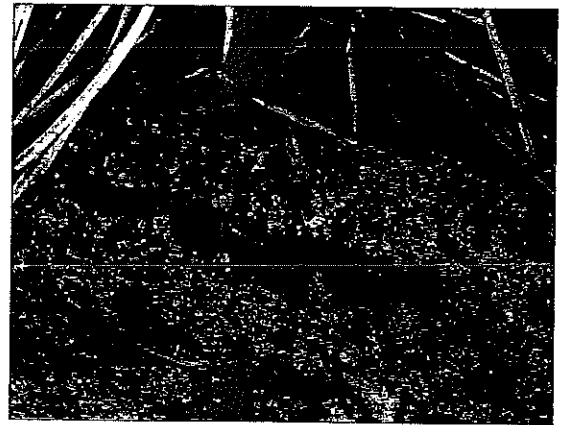


Figure H

If an earthworm is cut in two, the front half can grow into a complete worm if enough sections are left.



Figure I

The glass-tailed lizard escapes from its enemies by breaking off the end of its tail. Later, a new tail will grow.

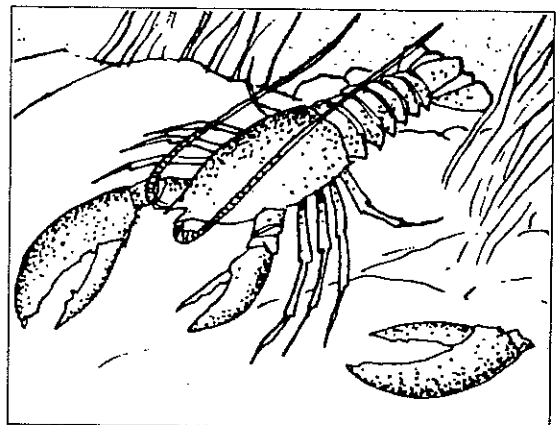


Figure J

If a lobster or crab loses a claw to an enemy, it can grow a new one.

FILL IN THE BLANK

Complete each statement using a term or terms from the list below. Write your answers in the spaces provided. Some words may be used more than once.

nails	sea star	whole parts
simple	lizard	regeneration
lobster	skin	people
asexual reproduction	complicated	hair
five	dogs	planarian

1. Most sea stars have _____ arms.
2. The ability to regrow lost body parts is called _____.
3. In animals, regeneration power greatly depends upon how _____ or how _____ the animal is.
4. Mammals are _____ animals.
5. Examples of mammals are _____ and _____.
6. Mammals can regenerate tissues like _____, _____, and _____.
7. Mammals cannot regenerate _____.
8. Two simple animals that can regenerate a complete animal from just a part are the _____ and the _____.
9. Animals like the _____ and the _____ can grow certain whole parts. But they cannot regenerate a whole organism from just a part.
10. Regeneration that forms a whole organism from just one part is said to be a kind of _____.

REACHING OUT

Sea stars feed on oysters. At one time, oyster fishermen tried to kill the sea stars. They scooped up the sea stars from the oyster beds. They chopped them up and dumped the pieces back into the water. What do you think happened? Finish the story in your own words.
