

Reproduction 2 Star

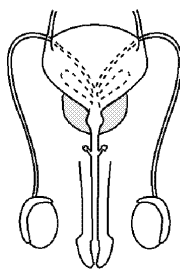
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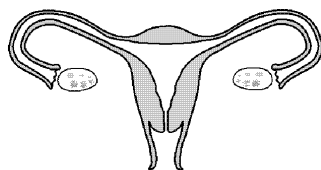
1. It was once thought that decaying meat turned into maggots (fly larvae). Careful experimentation by scientists demonstrated that maggots actually come from fly eggs and not meat. These experiments illustrate that new individual result only from

- A. genetic engineering
- B. reproduction and development
- C. nutrition and replication
- D. metabolic homeostasis

2. The diagrams represent organs of two individuals. The diagrams are followed by a list of sentences. For each phrase in the questions, select the sentence from the list below that best applies to that phrase.



Individual A



Individual B

Sentences

- 1. The phrase is correct for both Individual A and Individual B.
- 2. The phrase is not correct for either Individual A or Individual B.
- 3. The phrase is correct for Individual A, only.
- 4. The phrase is correct for Individual B, only

Contains organs that produce gametes

3. Base your answer(s) to the following question(s) on the information below and on your knowledge of biology.

Egg Laying vs. Bearing Live Young

Three groups of animals in which most species lay eggs for reproduction are amphibians, reptiles, and birds. Most female amphibians lay hundreds of eggs in water, which are then fertilized by sperm from the male. Many reptiles lay between 1 and 200 eggs at a time, often in nests on land. The eggs have a leathery shell. Birds usually lay between one and four eggs at a time in nests on land. Wild bird eggs usually have shells similar to those of the domestic chicken.

Most mammals bear live young. Some of these mammals, humans, for example, usually give birth to one live offspring at a time.

Explain why fertilization in reptiles and birds must be internal.

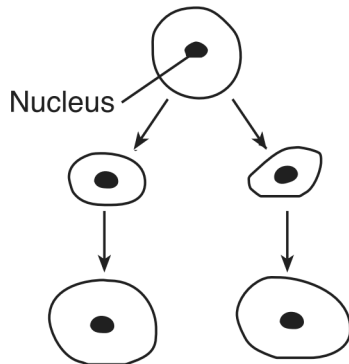
4. Cloning an individual usually produces organisms that

- A. contain dangerous mutations
- B. contain identical genes
- C. are identical in appearance and behavior
- D. produce enzymes different from the parent

5. If mitotic cell division is the only way a particular species of single-celled organism can reproduce, it is most likely that

- A. mutations can not occur in this species
- B. the rate of evolution in this species is slower than in one that reproduces sexually
- C. the number of organisms of this species in an area will remain constant
- D. this species belongs to the animal kingdom

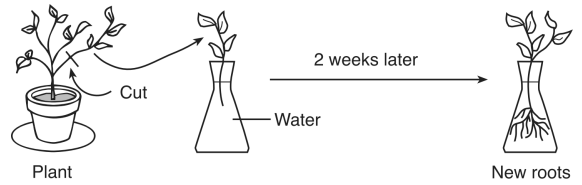
6. A pattern of reproduction and growth in a one-celled organism is shown below.



Which statement best describes this pattern of reproduction?

- A. All genetic material comes from one parent.
- B. Only some of the genetic material comes from one parent.
- C. The size of the parent determines the amount of genetic material.
- D. The size of the parent determines the source of the genetic material.

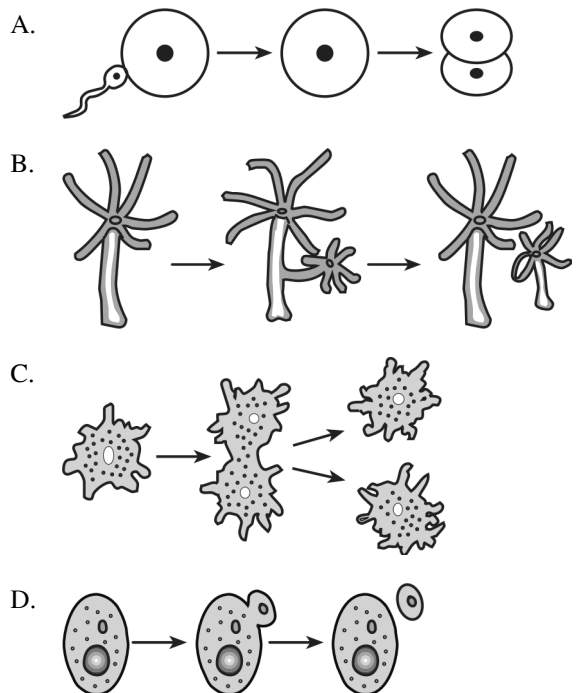
7. A technique used to reproduce plants is shown in the diagram below.



This technique is a form of

- A. sexual reproduction
- B. asexual reproduction
- C. gamete production
- D. gene manipulation

8. Which process usually results in offspring that exhibit new genetic variations?



9. Base your answer(s) to the following question(s) on the information below and on your knowledge of biology.

**Female Shark Reproduced
Without Male DNA, Scientists Say**

A hammerhead shark that gave birth in a Nebraska aquarium reproduced without mating, a genetic analysis shows.

This form of asexual reproduction, called parthenogenesis, has been found in other vertebrate species, including some snakes and lizards. But this is the first time it has been documented in a shark...

Instead, the female shark's own genetic material combined during this process of cell division that produces an egg. A cell called the secondary oocyte, which contains half the female chromosomes and normally becomes the egg, fused with another cell called the secondary polar body, which contains the identical [amount of] genetic material...

Robert E. Hueter, director of the Center for Shark Research at the Mote Marine Laboratory in Sarasota, Fla., said the finding helped fill a gap in understanding parthenogenesis, which has been found to occur in most vertebrate lines except mammals, and until now, cartilaginous fishes like sharks...

"It's a last-resort tactic that animals use when they absolutely can't find another mate," Dr. Hueter said.

Source: Henry Fountain, *The New York Times*, May 23, 2007

State why parthenogenesis is considered a form of asexual reproduction.

10. Write one or more paragraphs that compare the two methods of reproduction, asexual and sexual.

Your answer must include at least:

- one similarity between the two methods
- one difference between the two methods
- one example of an organism that reproduces by asexual reproduction
- one example of an organism that reproduces by sexual reproduction

1.
 Answer: B
2.
 Answer: 1
3.
 Answer: The egg is surrounded by a shell that the sperm could not penetrate outside the body of the female. OR The sperm must fertilize the egg before the shell is formed.
4.
 Answer: B
5.
 Answer: B
6.
 Answer: A
7.
 Answer: B
8.
 Answer: A
9.
 Answer: Parthenogenesis involves one parent, only.
 The genetic material of the offspring comes from only one parent.
 Mating does not occur.
 No sperm is involved.

10.
 Answer: Similarities between asexual and sexual reproduction:
 • both produce new organisms
 • both transfer genetic material
- Differences between asexual and sexual reproduction:
 • no fusion of nuclei in asexual reproduction; fusion of gamete nuclei in sexual reproduction
 • asexual reproduction involves no sex cells; sexual reproduction involves sex cells, the sperm and the egg
 • offspring of asexual reproduction is from one parent; offspring of sexual reproduction is from a combination of two parents' DNA
 • in asexual reproduction, there is little or no variation (e.g., binary fission); in sexual reproduction, there is greater variation
- Examples of organisms that reproduce by asexual reproduction:
 • bacteria
 • hydra
 • yeast
 • planaria
 • ameba
 • bread mold
- Examples of organisms that reproduce by sexual reproduction:
 • humans
 • fish
 • grasshoppers
 • most animals
 • earthworms
 • flowering plants