

Lesson 2

Before You Read

4. agree
5. disagree
6. disagree

Read to Learn

1. a type of reproduction in which one parent organism produces offspring without meiosis and fertilization
2. It is copied, with one copy going to each daughter cell.
3. Fission is faster.
4. Each piece can regenerate the cells needed to form a new organism.
5. All offspring are genetically identical to the parent.
6. Students should circle either of the two smaller plants that are connected by stolons to the parent plant.
7. yes, because clones form from the cells of a single parent plant
8. Students should circle Sheep X and Dolly.
9. All types involve only one parent and result in offspring that are genetically the same as the parent. Fission is cell division in prokaryotes. In budding, a new organism grows on the body of its parent. Mitotic cell division is cell division in unicellular eukaryotes. In regeneration (animals) and vegetative reproduction (plants), an offspring grows from a piece of its parent. Cloning produces individuals from a cell or a cluster of cells taken from a multicellular organism.
10. Organisms can reproduce without a mate. Also, some organisms can quickly produce a large number of offspring.

After You Read


1. Possible answer: They are both forms of asexual reproduction in which offspring grow from a piece of a parent organism.
2. cloning, regeneration, vegetative reproduction
3. Students should explain how discussing each paragraph with a partner helped them learn about asexual reproduction.

Lesson 2 | Asexual Reproduction (continued)

Main Idea

I found this on page _____.

Details

 **Sequence** the steps of cell division through fission.

1. Fission starts with a prokaryote, which does not have a membrane-bound nucleus.


2. The prokaryote's DNA molecule is copied.

3. The cell grows longer, pulling the two copies of DNA apart.

4. The cell membrane pinches inward along the middle of the cell.


5. The cell splits. Two identical daughter cells are formed.

I found this on page _____.

 **Write** a complete sentence that defines mitotic cell division and identifies what type of organism undergoes the process.

Accept all reasonable responses. Sample answer: Mitotic cell division is a form of asexual reproduction in which an organism, such as a unicellular eukaryote, divides into two individual offspring through mitosis and cell division.

I found this on page _____.

 **Draw** a representation of budding. Write a definition of the term on the lines below your drawing.

Drawings should show a smaller but identical organism attached to a larger mature organism.

Definition: **Sample answer: Budding is the form of asexual reproduction in which an offspring grows on the body of its genetically identical parent until it is mature enough to break off and live on its own.**

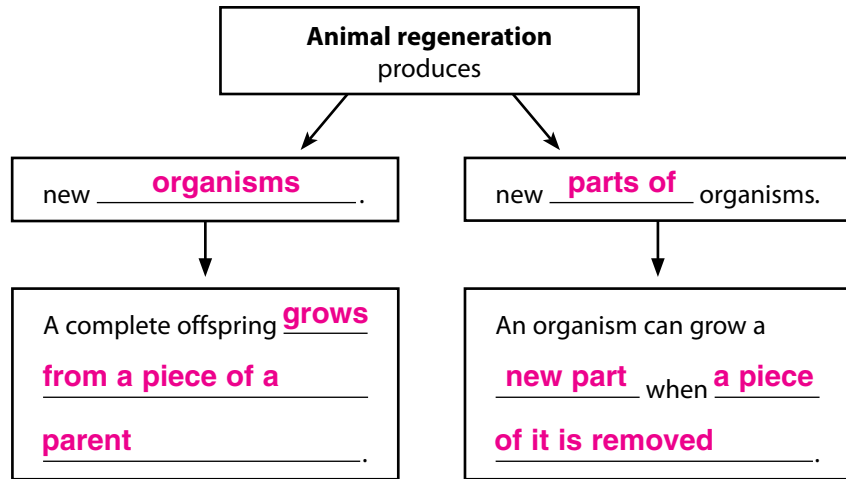
Lesson 2 | Asexual Reproduction (continued)

Main Idea

I found this on page _____.

Details

Explain how animal regeneration can produce two results.



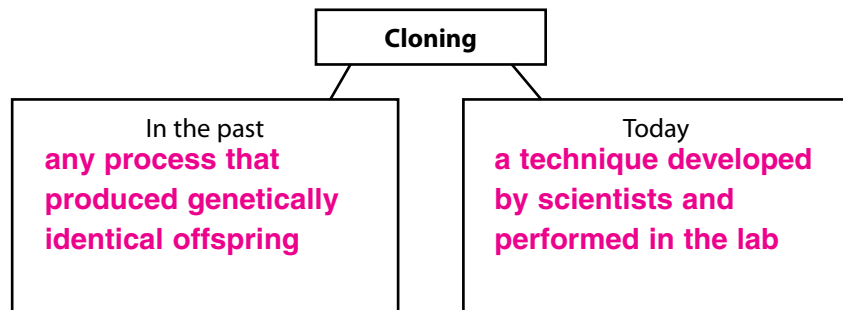
I found this on page _____.

Identify the structures of plants usually involved in vegetative reproduction.



I found this on page _____.

Explain how the definition of cloning has changed over time.



I found this on page _____.

Identify three advantages of using tissue culture to clone plants.

1. **Plant growers can make many copies of plants with desirable traits.**
2. **A greater number of plants can be produced more quickly than by vegetative reproduction.**
3. **Growers can reproduce plants that have become infected using disease-free meristem.**

Lesson 2 | Asexual Reproduction (continued)


Main Idea

I found this on page _____.

Details


Sequence the steps scientists used to produce the cloned sheep, Dolly.

1. A cell is removed from the first animal. DNA is removed from an unfertilized egg cell from a second animal.
2. The cells from the two animals are fused . The new cell contains only DNA from the first animal .
3. The cell develops into an embryo in the lab.
4. Embryos are implanted _____ into the animal that donated the unfertilized egg.
5. A new individual is born. This individual is an exact genetic copy of the original animal .

 **Classify** features of asexual reproduction as advantages or disadvantages. Write “A” for advantage and “D” for disadvantage in the center column of the table below. Explain your reasoning in the right-hand column.

I found this on page _____.

Does not require a mate	A	Because organisms do not need to search for mates in order to reproduce, they use less time and energy.
Can occur rapidly	A	Organisms can reproduce rapidly, producing a large number of offspring.
Produces little genetic variation	D	Less genetic variation within a species makes it more vulnerable to environmental changes.

 **Synthesize It** Use your understanding of asexual reproduction to explain why it is important that organisms reproduce in a variety of ways.

Accept all reasonable responses. Answers should reflect that a variety of means of reproduction permits a diverse range of organisms to survive a variety of environmental challenges.
