Population Patterns

Compare reproduction, diversity, and survival across generations.

7.13.C "compare the results of asexual and sexual reproduction of plants and animals in relation to the diversity of offspring and the changes in the population over time; and"

NAME _____ DATE _____

1 READ AND MARK

Read it twice

YOUR JOB Underline statements about asexual reproduction once and statements about sexual reproduction twice. Circle statements that explain how diversity can change a population over time.

Reproduction at the Pond Edge

1. Along a pond edge, a strawberry plant sends out runners that root and grow into new plants. Each new plant receives DNA from one parent, so it is usually genetically very similar to that parent and to the other runner plants. Nearby, a hydra can make a new hydra by budding. This animal offspring also begins with one parent's DNA. Asexual reproduction can build a population quickly when conditions are steady, because an individual does not need to find a mate. Mutations can still create occasional genetic differences.

2. Sexual reproduction combines genetic information from gametes. In many flowering plants, pollen carries male gametes to an ovule, and fertilization produces a seed. In many animals, sperm and egg join during fertilization. Offspring from sexual reproduction are not usually identical to either parent or to one another. Meiosis and fertilization create new combinations of inherited traits. A field of plants grown from seeds may therefore contain plants with different heights, leaf shapes, or resistance to a particular disease.

3. Over time, diversity can affect how a population responds when conditions change. If a fungus infects the pond-edge strawberries, many genetically similar runner plants may be harmed by the same weakness. A mutation could give one a helpful trait, but such changes are uncommon. In a sexually reproducing population, some individuals may already have trait combinations that help them survive a drought, predator, or disease. Those survivors can reproduce, so the population's traits may become more common in later generations. Sexual reproduction does not guarantee survival, but it increases the variety available for natural selection.

2 ANSWER WITH EVIDENCE

Use the passage

1. Compare the genetic similarity of offspring made by asexual reproduction and sexual reproduction.

2. Why can asexual reproduction build a population quickly when conditions are steady?

3. Why might a fungus harm many strawberry plants that grew from runners?

4. How can sexual reproduction change a population over later generations after a drought or disease?

3 YOUR TURN

Your own words

Invent a hypothetical plant or animal population facing a new disease. In 3 or 4 sentences, compare what could happen if the population reproduced asexually and if it reproduced sexually, then state which population is more likely to include survivors and why.

ANSWER KEY

Population Patterns

GRADE 7 · TEKS 7.13.C

PART 1 · READ AND MARK

Underline statements about asexual reproduction once and statements about sexual reproduction twice. Circle statements that explain how diversity can change a population over time. Accept any marking that follows this job and points at the right text.

PART 2 · ANSWERS

#	QUESTION	ANSWER
1	Compare the genetic similarity of offspring made by asexual reproduction and sexual reproduction.	**Asexual offspring are usually genetically very similar to one parent and to one another. Sexual offspring are usually not identical to either parent or to one another.**
2	Why can asexual reproduction build a population quickly when conditions are steady?	**One individual can reproduce without finding a mate.**
3	Why might a fungus harm many strawberry plants that grew from runners?	**The runner plants are genetically similar, so many may share the same weakness to the fungus.**
4	How can sexual reproduction change a population over later generations after a drought or disease?	**Some individuals may have trait combinations that help them survive. If they reproduce, those helpful traits may become more common in later generations.**

PART 3 · YOUR TURN (SAMPLE ANSWER)

Imagine a beetle population facing a new parasite. If one beetle reproduced asexually, its descendants would be very similar, so many could share a weakness to the parasite. If beetles reproduced sexually, their offspring would have more trait combinations. The sexually reproducing population would be more likely to include parasite-resistant survivors.

Accept comparisons that accurately connect asexual reproduction with usually low diversity and sexual reproduction with greater diversity. For the open response, accept any logical disease, drought, predator, or other environmental challenge if the student explains why variation can leave some survivors.