Seeds and Runners

Trace how reproduction passes genetic information to offspring.

S7L3 "Obtain, evaluate, and communicate information to explain how organisms reproduce either sexually or asexually and transfer genetic information to determine the traits of their offspring."

NAME _____ DATE _____

1 READ AND MARK

Read it twice

YOUR JOB Underline the final sentence in each paragraph, then write 1, 2, and 3 beside those sentences. These three sentences explain how genetic information affects the traits of offspring.

Two Paths to New Plants

(1) In a school greenhouse, a bean plant makes flowers that can form seeds. This is sexual reproduction because cells from two parents join. Pollen made in an anther lands on the stigma of a flower. A pollen tube then grows through the style to an ovule, carrying sperm cells. One sperm cell joins an egg cell in the ovule. The resulting seed contains genetic information from both parents, so a new bean plant may have a combination of their traits.

(2) Strawberry plants can also reproduce asexually. A parent plant sends out a horizontal stem called a runner. Where the runner touches soil, it can grow roots and a new shoot. The new plant develops without an egg and sperm joining. Its cells receive a copy of the parent plant's genetic information as it grows. Therefore, the new strawberry plant is usually genetically identical to the parent and usually has the same traits, such as fruit flavor and leaf shape.

(3) Seeds from sexual reproduction do not always grow into plants that look alike. Each offspring receives a different combination of genetic information, because meiosis and fertilization mix genetic information from two parents. For example, two tomato plants with different inherited fruit-color versions can produce seeds. A seedling may inherit one version from each parent. In contrast, plants produced from one runner receive copied genetic information from one parent. This difference helps explain why seed-grown plants can vary, while runner-grown plants usually match their parent.

2 ANSWER WITH EVIDENCE

Use the passage

1. Trace the path of pollen in a bean flower from where it is made to where a sperm cell joins an egg cell.

2. Compare the genetic information in a bean seed with the genetic information in a strawberry plant grown from a runner.

3. Why can seed-grown plants vary from one another while runner-grown plants usually match the parent plant?

4. A student says that a strawberry plant grown from a runner receives genetic information from two parents. Is this claim supported by the passage? Explain.

3 YOUR TURN

Your own words

A gardener wants to grow plants with a chance of different trait combinations. Should the gardener start tomato seeds or new strawberry plants from runners? Write two sentences that state your choice and explain how the genetic information leads to your prediction.

ANSWER KEY

Seeds and Runners

GRADE 7 · S7L3

PART 1 · READ AND MARK

Underline the final sentence in each paragraph, then write 1, 2, and 3 beside those sentences. These three sentences explain how genetic information affects the traits of offspring. Accept any marking that follows this job and points at the right text.

PART 2 · ANSWERS

#	QUESTION	ANSWER
1	Trace the path of pollen in a bean flower from where it is made to where a sperm cell joins an egg cell.	**Pollen is made in an anther and lands on the stigma. A pollen tube grows through the style to an ovule, carrying sperm cells, and one sperm cell joins an egg cell there.**
2	Compare the genetic information in a bean seed with the genetic information in a strawberry plant grown from a runner.	**A bean seed contains genetic information from two parents. A strawberry plant grown from a runner receives a copy of genetic information from one parent.**
3	Why can seed-grown plants vary from one another while runner-grown plants usually match the parent plant?	**Seed-grown plants can receive different combinations of genetic information from two parents. Runner-grown plants receive copied genetic information from one parent.**
4	A student says that a strawberry plant grown from a runner receives genetic information from two parents. Is this claim supported by the passage? Explain.	**No. The passage says a runner-grown strawberry plant receives a copy of genetic information from one parent.**

PART 3 · YOUR TURN (SAMPLE ANSWER)

The gardener should start tomato seeds, because sexual reproduction gives each seedling a different combination of genetic information from two parents. The seed-grown plants may vary in traits, unlike runner-grown strawberry plants, which usually match one parent.

Accept a choice of tomato seeds with an explanation that sexual reproduction combines genetic information from two parents and can produce variation. The response should contrast this outcome with runner-grown strawberry plants receiving copied information from one parent.