Beyond the Finish Line

Compare inherited traits and life experiences in a runner's progress.

SS24.P.4 "Compare the effects of heredity and environment on development and behavior.*"

NAME _____ DATE _____

1 READ AND MARK

Read it twice

YOUR JOB Underline two statements about heredity and circle three details about environment. Number two sentences that show why both may matter for a teen's running or training choices.

Two Runners, Different Paths

1. Jules and Ari sign up for a school 5K run. During their first week, Jules can run longer before stopping, while Ari needs more walking breaks. Inherited differences may help explain part of this gap. Genes passed from biological parents influence traits such as how the heart and muscles respond to exercise. However, a first-week run cannot reveal which genes either teen has. It also cannot show how often each teen has exercised before. Heredity can shape a range of possible responses to training, but it does not set a fixed race time or decide whether someone will enjoy running.

2. Outside school, Jules has played soccer for two years. Ari has not had regular access to a safe place to run. These experiences are environmental influences, not traits passed through DNA. After joining a free running club, Ari follows a gradual plan and gets advice from a coach. Ari begins taking fewer walking breaks and chooses to practice on weekends. Jules improves too, but late shifts at a family store sometimes leave less time for sleep. Practice, coaching, and sleep can affect performance and the decision to keep training. Neither teen's first run tells the whole story.

3. By the end of six weeks, Ari has cut more time from the first run than Jules, although Jules still finishes faster. That pattern does not prove that one teen has better running genes. People can differ in inherited responses to exercise, and they can also differ in earlier practice, rest, and opportunities. A supportive coach may help Ari stay with a plan, while inherited traits may influence how quickly each body adapts. Heredity and environment can work together: genes may affect a person's response to training, but training helps determine which abilities develop and which habits last.

2 ANSWER WITH EVIDENCE

Use the passage

1. Why can't Jules's longer first run be explained by heredity alone? Compare one possible inherited influence with one environmental influence.

2. How could both heredity and the running club affect Ari's improvement over six weeks?

3. Ari cuts more time from the first run, but Jules still finishes faster. Give one possible inherited explanation and one possible environmental explanation for their different results.

4. How might heredity and environment each affect whether Ari keeps training?

3 YOUR TURN

Your own words

Invent a student learning a new skill other than running. In 4 to 5 sentences, explain one possible inherited influence, one environmental influence, how they could work together, and why success would not prove that genes alone caused it.

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PART 1 · READ AND MARK

Underline two statements about heredity and circle three details about environment. Number two sentences that show why both may matter for a teen's running or training choices. Accept any marking that follows this job and points at the right text.

PART 2 · ANSWERS

#	QUESTION	ANSWER
1	Why can't Jules's longer first run be explained by heredity alone? Compare one possible inherited influence with one environmental influence.	**Inherited traits may affect how Jules's body responds to exercise, but two years of soccer may also help explain the longer run.**
2	How could both heredity and the running club affect Ari's improvement over six weeks?	**Inherited traits may affect how quickly Ari's body adapts. The club provides a gradual plan and coaching that help Ari practice and improve.**
3	Ari cuts more time from the first run, but Jules still finishes faster. Give one possible inherited explanation and one possible environmental explanation for their different results.	**They may differ in inherited responses to exercise. Their earlier practice, coaching, and opportunities to rest also differ.**
4	How might heredity and environment each affect whether Ari keeps training?	**Inherited traits may affect how quickly Ari adapts to training. Coaching and access to practice may help Ari choose to continue.**

PART 3 · YOUR TURN (SAMPLE ANSWER)

A student named Luz learns to play the violin. Inherited differences may influence how easily Luz hears changes in pitch. Weekly lessons and time to practice are environmental influences that help Luz improve. Her ability to hear pitch may affect how she uses feedback during practice, while practice develops her skill. Her progress would not prove that genes alone caused it because lessons and practice also matter.

Accept other passage-supported comparisons that treat inherited traits as possible influences, not fixed outcomes. For the open task, accept plausible examples that distinguish inherited and environmental influences and explain their interaction without claiming that genes guarantee success.