Building for the Land

How Indigenous engineers solved challenges of land, water, and travel

SS24.8.6b "Describe technological and engineering achievements of Indigenous societies."

NAME _____ DATE _____

1 READ AND MARK

Read it twice

YOUR JOB Underline three engineering achievements, circle the materials or structures that made each work, and write 1, 2, or 3 beside the problem each achievement solved, matching the numbers to the order of the achievements.

Solutions Shaped by Place

1. In the 1400s, Inca builders faced steep Andean slopes where rain could wash soil downhill. They cut level steps, called terraces, into hillsides and supported them with stone walls. Layers of gravel and sand beneath the growing soil helped water drain instead of collecting around crop roots. Farmers also guided water through canals to reach fields. The steps made more land usable for farming and reduced erosion. This was not just a way to shape a hillside. It was a system for managing soil and water in mountain conditions.

2. Mountains also made travel difficult across deep gorges. Inca engineers built suspension bridges from braided grass fibers. Workers twisted fibers into thick cables and anchored them on opposite sides of a gorge. Smaller ropes formed the walkway and handrails. Communities replaced the woven parts as they wore out. The bridges helped people carry goods and messages along the Inca road network without climbing into dangerous valleys. Their design used strong, flexible local materials to cross spaces where building a stone bridge would have been difficult.

3. In the 1400s, Mexica farmers near Tenochtitlan faced a different problem: how to grow food beside shallow lakes. They built chinampas, raised planting beds made by piling lake mud and plant matter inside fenced plots. Canals between the beds let farmers travel by canoe and bring water close to crops. Trees planted along the edges helped hold the beds in place. Chinampas were fixed to the lakebed, not floating gardens. By creating fertile land beside the city, farmers could grow food near the people who needed it.

2 ANSWER WITH EVIDENCE

Use the passage

1. Describe how the layers beneath an Inca terrace helped crops on a steep hillside.

2. Describe how Inca builders used grass fibers to make a crossing over a gorge.

3. Describe how Mexica farmers built chinampas and how the canals helped them use the planting beds.

4. Both Inca terrace builders and Mexica chinampa builders used canals. Describe a different job the canals did in each design.

3 YOUR TURN

Your own words

Choose two different achievements from the passage. For a new settlement with a steep hillside, a marsh, and a river between neighborhoods, write five sentences proposing how you would adapt them, including one change to each design and the local problem each would solve.

ANSWER KEY

Building for the Land

GRADE 8 · SS24.8.6b

PART 1 · READ AND MARK

Underline three engineering achievements, circle the materials or structures that made each work, and write 1, 2, or 3 beside the problem each achievement solved, matching the numbers to the order of the achievements. Accept any marking that follows this job and points at the right text.

PART 2 · ANSWERS

#	QUESTION	ANSWER
1	Describe how the layers beneath an Inca terrace helped crops on a steep hillside.	**Gravel and sand helped water drain instead of collecting around crop roots. The terrace's level steps also made the steep land usable for farming.**
2	Describe how Inca builders used grass fibers to make a crossing over a gorge.	**They twisted and braided grass fibers into thick cables anchored on both sides of the gorge. Smaller ropes formed a walkway and handrails.**
3	Describe how Mexica farmers built chinampas and how the canals helped them use the planting beds.	**Farmers piled lake mud and plant matter inside fenced plots to make raised beds. Canals let them travel by canoe between the beds and brought water close to crops.**
4	Both Inca terrace builders and Mexica chinampa builders used canals. Describe a different job the canals did in each design.	**Inca canals guided water to hillside fields. Canals between chinampas brought water close to crops and provided routes for canoes.**

PART 3 · YOUR TURN (SAMPLE ANSWER)

I would build terraces on the steep hillside so farmers could plant on level ground. Because heavy rain runs toward the marsh, I would add drainage channels at the bottom of each terrace to guide extra water away from crops. I would also build a fiber suspension bridge over the river to connect the two neighborhoods. I would place its anchors above the river's highest seasonal water level so floods would not reach them. The bridge would let people carry food between neighborhoods when the river is too dangerous to cross on foot.

For Part 3, accept other feasible adaptations of two different achievements if each includes a change suited to the new setting and explains the problem it would solve.