

Science Grade 7 E

Grade Level Standard(s): Science 7 Engineering and Technology: Define the criteria and constraints of a design problem to ensure a successful solution, and potential impacts on people and the environment that may limit possible solutions.

Material(s) Provided for Science 7 E	Question(s)	Page Number
Science 7 E Map of School Campus	3	15
Science 7 E Attainment Task Questions for Student Use	1 – 5	19

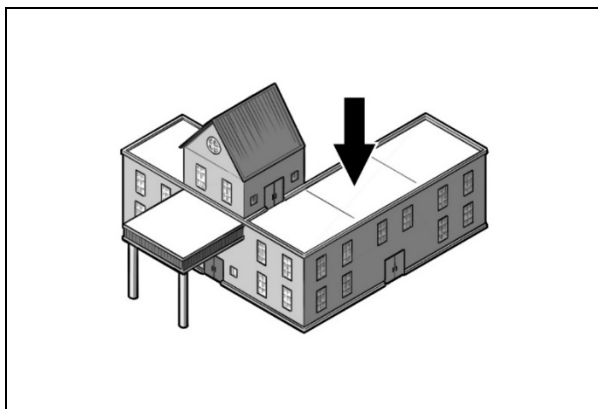
Response Code:

- Indicate the answer provided by the student.

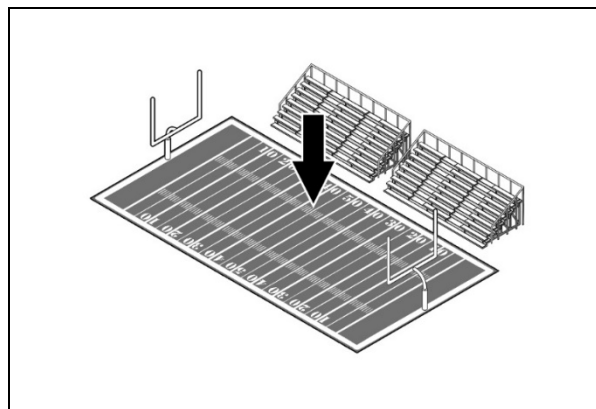
Text Coding:

- “Quotation marks” indicate the script that the teacher should read to the student.
- *Italicized text* provides further direction for the test administrator.
- Words in parenthesis () are optional; they may replace or be read in addition to the word(s) immediately preceding.

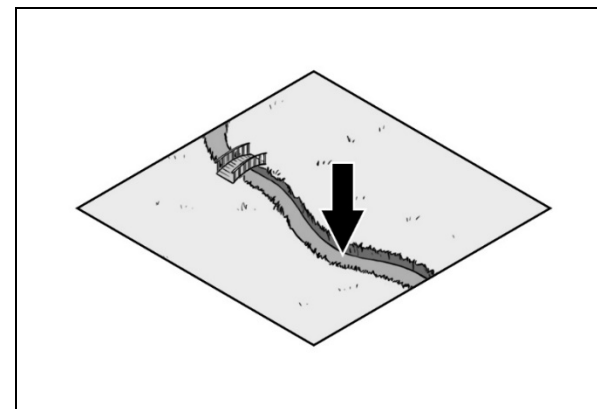
a. On top of the roof



b. On the football field



c. In the creek



Before beginning task administration, please ensure that all conditions specified in the administration protocol (starting on page 10 of the Administration Guide Overview and Attainment Task Administration) have been met. Inform the student that the task is about to start by saying, “We are about to start the task, and I am going to ask you some questions.”

All questions from this task are available for presentation to the student in the supplemental material Science 7 E Attainment Task Questions for Student Use.

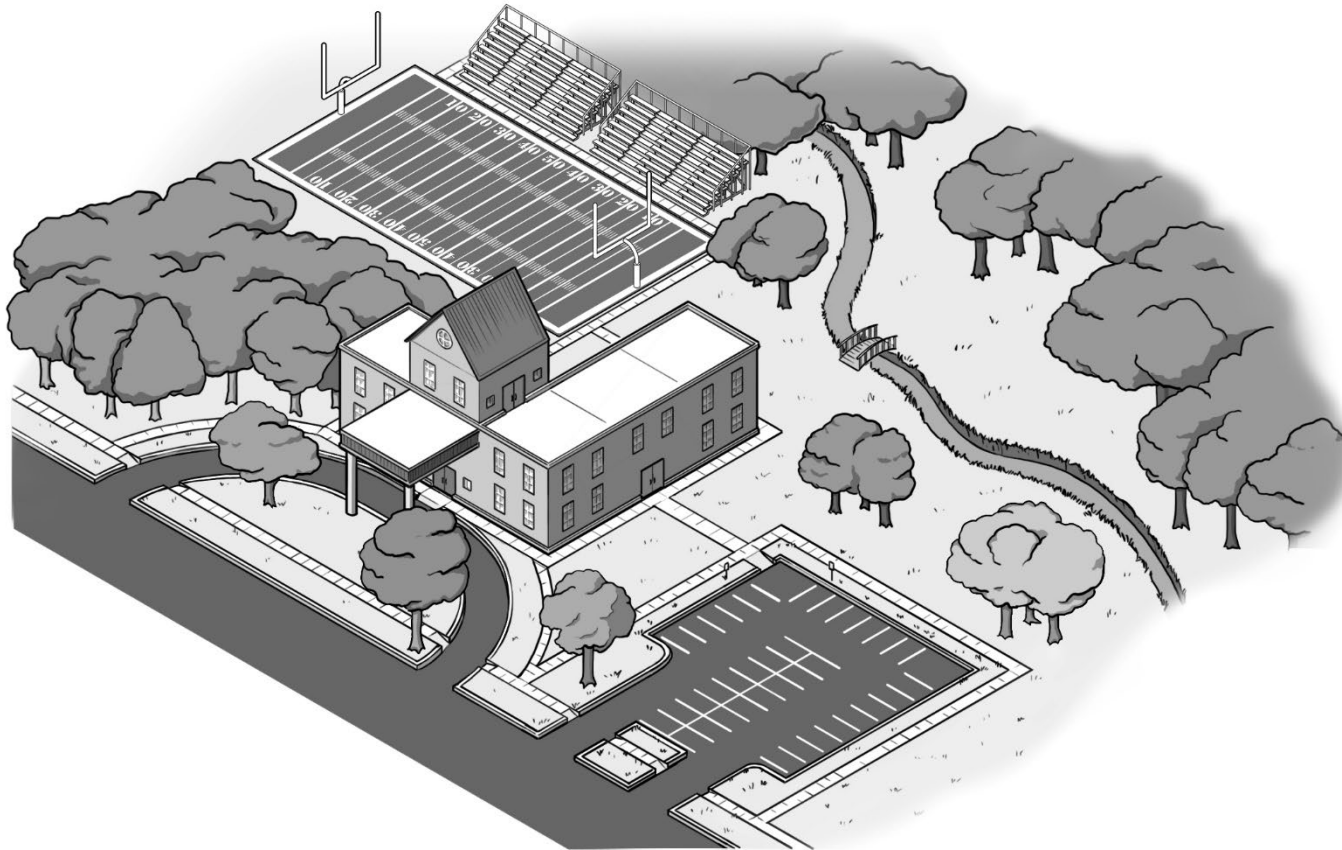
“The school decided to add solar panels. Solar panels work most efficiently in an area with a lot of sunlight. The school is concerned that solar panels may harm the environment by reducing available green space.”

Present the student with Science 7 E Map of School Campus.

3. “Use the map to determine where the solar panels will work **most efficiently** with the **least amount of impact** on the school and the environment.”

Response Option	<i>Response Rationale</i>
a. On top of the roof (Correct)	<i>The student demonstrates an understanding of successful outcomes and constraints by identifying on top of the school will provide the most sunlight with the least impact.</i>
b. On the football field	<i>The student recognizes the football field would provide a lot of sunlight but does not understand the impact the placement of solar panels on the field would have on the school.</i>
c. In the creek	<i>The student recognizes that there is a lot of sunlight in part of the creek but again does not understand the impact of placement in the creek.</i>
Depth of Knowledge (DOK) 1	

Science 7 E Map of School Campus



Science 7 E Attainment Task Questions for Student Use

3. Use the map to determine where the solar panels will work **most efficiently** with the **least amount of impact** on the school and the environment.

Kentucky Academic Standard: Define the criteria and constraints of a design problem with sufficient precision to ensure a successful solution, taking into account relevant scientific principles and potential impacts on people and the natural environment that may limit possible solutions. MS-ETS1-1

Alternate Assessment Target: *Define the criteria and constraints of a design problem to ensure a successful solution, and potential impacts on people and the environment that may limit possible solutions.*

Student Group	Number of Students	Percent Correct
All Students	526	50.00%
Gender		
Female	181	48.62%
Male	345	50.72%
Ethnicity		
African American	70	47.14%
American Indian or Alaska Native	<10	Not Reported
Asian	<10	Not Reported
Hispanic of Latino	<10	Not Reported
Native Hawaiian of Pacific Islander	<10	Not Reported
White (Non-Hispanic)	396	50.25%
Two or More Races	50	52.00%
English Learner	29	31.03%
Economically Disadvantaged	392	49.74%

*Number of students that attempted the item