

**Training Header Sheet with Change Log Form**

**Kentucky Academic Standards**

Science

Operational 2018

SC041619\_06

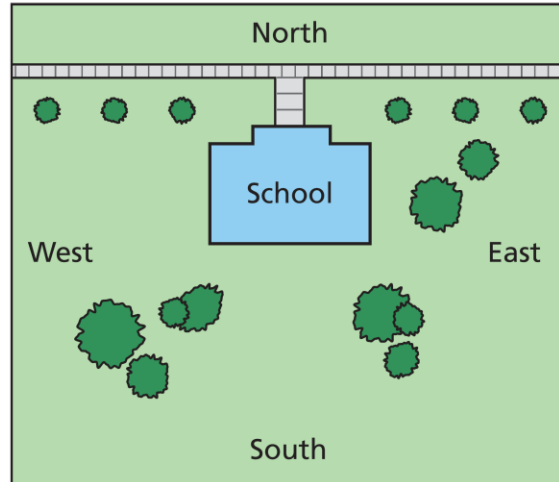
School Solar Panels

Anchor Set

Date	Comments	Version
2/2018	Initial Operational Training Set	Set A

# Stimulus

Students at the Science Academy have identified ways to make their school friendlier to the environment. They worked on science projects to improve the school.



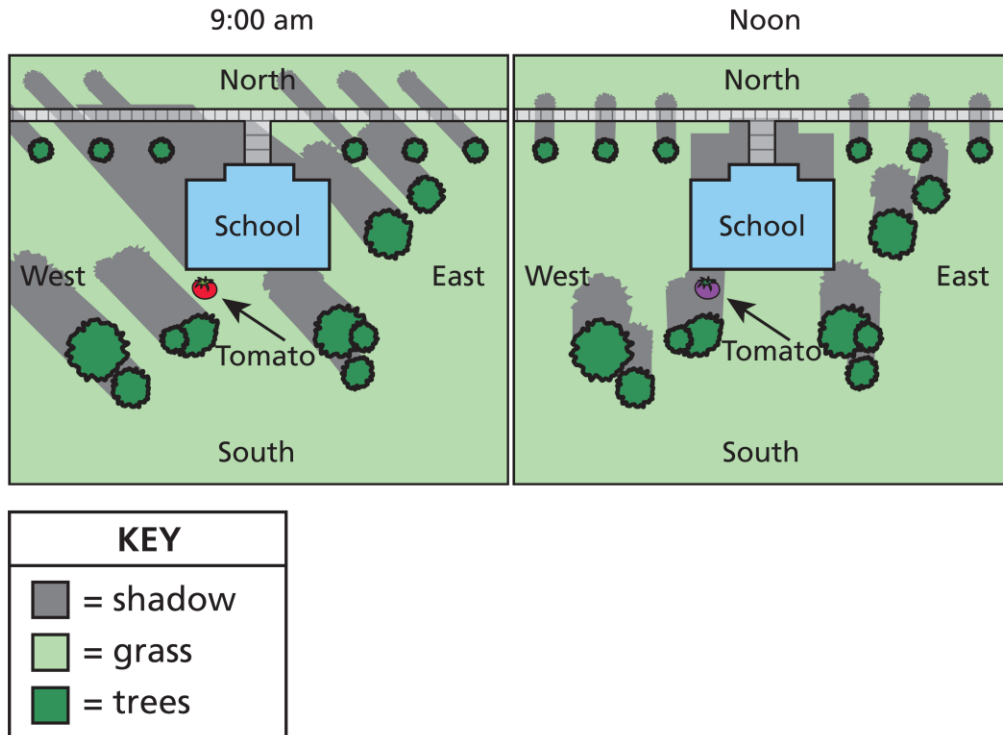
Morgan and Keaton decided to try using the school's campus to grow food that could be used by the school. The students identified some popular foods to plant.

Morgan and Keaton needed to decide where on campus to place their food gardens. "We need to mark where the plants go," said Keaton. Keaton saw a sunny area behind the school. "Tomatoes need a lot of sun, so let's plant them here." Keaton placed a tomato where he thought he would plant more. Morgan reminded Keaton that the sun may not always appear to be shining in the same place during the day. "Let's collect some data about the light and shade on our campus."

# Stimulus

Morgan and Keaton sketched what they saw that morning. They returned and made more observations during lunch. Keaton saw that his tomato was now in the shade.

## Top View of School Grounds



Both of the students agreed that the tomato didn't change from 9:00 am to noon, but it looked darker when they saw it at noon.

Discussing why they could still see the tomato at noon led them to remember a room in the school that was designed to be completely dark inside. The room had no lights or windows, and walls that were painted black.

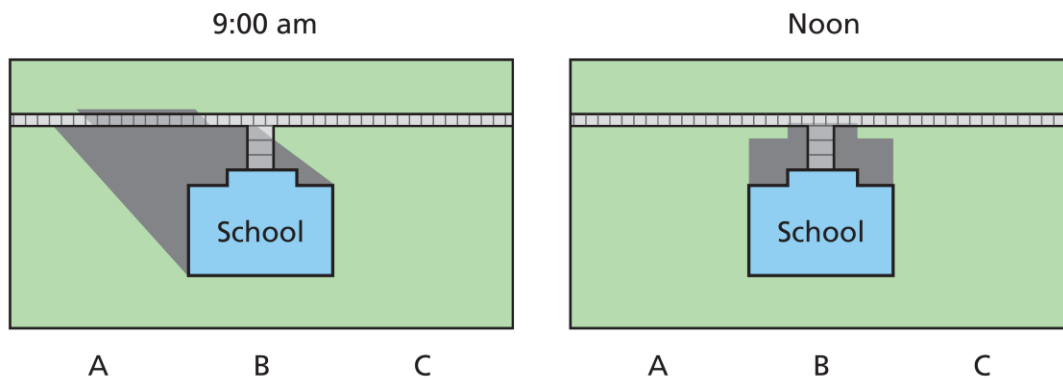
"Whoever painted that room didn't understand much about light," Keaton said. "It wouldn't matter what color the paint was."

# Stimulus

Morgan and Keaton shared their data with their friends to decide what places would be best for their garden. The friends suggested to consider what kinds of plants would be best for each location based on how much sun it gets.

Keaton forgot to show where the sun was located when they made their observations.

## Top View of the School Grounds



Morgan and Keaton also wanted to lower the school's energy use. The school has decided to install solar panels to help produce electricity.

Solar panels work by converting the energy from sunlight into electricity that can be used to power the school. The teacher asked Morgan to use a light meter to measure the strength of sunlight at different locations and different times of day. This will help Morgan figure out the best place to place the solar panels so they can capture the most sunlight.

Please refer to the diagrams on pages 30 and 31 as needed.

*These diagrams are referring to the initial picture and the Top View of School Grounds*

# Prompt

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Part A. Based on the students' observations, predict where on the school campus and at what time the light meter would record the highest strength of sunlight.

Part B. Explain why this location would be the best for the solar panels and why the information from the light meter helps you to know that.

14

Part A.

The school campus will be hit with most amount of sun during day time when the sun is out.

Part B.

The location for the solar panels should be facing in the direction of the sun. It would be best because, the sun is what makes energy.

6

Part A.

The light meter would record the highest strength of sunlight at 9:00 am at noon because when the sun is out at 9:00 am, then the sun wouldn't give no light at noon.

Part B.

The location that would be the best for the solar panels is where the sun would be at the light meter helps me know that because when the light is shining from the light meter it is giving to solar panels light.

14

Part A. The students used solar power panels to direct how strong the sunlight is. And I think the sun's strength is powerful. And so I think the sun is so strong that it can make it 1000° on earth if it gets close enough. The place I would put the solar panels is in the in front of their campus.

Part B. I think in the shade it will be a good idea, because if it's in the front, it will get more sunlight. I know this, because if it was in the shade, it will barely get any sunlight.



6

Part A. Morgan and Keaton also wanted to lower the school's energy use. The school has decided to install solar panels to help produce electricity. The text states that solar panels work by converting the energy from sunlight into electricity that can be used to power the school. I know this because it says the teacher asked Morgan to use a light meter to measure the strength of sunlight at different locations and different times of day.

Part B. The location would be the best for the solar panels and why the information from the light meter helps you to know that because this will help Morgan figure out the best place to place the solar panels so they can capture the most sunlight. I know this because the text states that solar panels and why the information from the light meter.

6

Part A.

- Cat 9:00 a.m.
- B at noon

Part B.

S. because there is no shade there or shadow

14

Part A. The best spot to put the solar panel would be on the roof of the school because there is nothing there to block the wind to getting to it.

Part B.

14

Part A. The meter will pick up The highest  
light at noon or 12:00 at the Southside.

Part B. It would be best since the sun shines  
the longest in the South side and the sun  
will be straight up in the air.

14

Part A:

I predict that the solar panels should be on top of the school in the middle.

Part B:

Because the shadow never touches the top of the school and it's always light up there.

6

Part A. I think at noon and in the middle of school campus the light meter would record the highest strength of sunlight.

Part B. This would be the best for the solar panels because the sun would be all the way up in the sky. So it would be easier for the solar panels to get light. If you take the light meter and use it to see where the best place is for the solar panels, you would get a lot of light at noon and in the middle of campus.

6

Part A. In the diagram it tells you what way the shadow is facing. It would be best to put the light meter at location C at noon because that is where light is stronger at. You will get more sunlight for your solar power.

Part B. At noon the sun will be at the front of the school not at the sides or back. So, C would get more light because there would not be any shadows. A and B would have shadows and C would not. This would be best for the solar panels because you would have more light there.

14

Part A.

It would be South at noon.

Part B.

South at noon would be the best because the shadows in front of the school because the light rays are reflecting onto the back because the school blocks light out so the solar panels would be getting the most sunlight facing South behind the school at noon.



14

Part A.

Based on the students' observations at the back of the campus at noon is where and when I think the light meter would record the highest light of strength.

Part B.

This location would be best because there is no shade shown on their diagrams. The light meter helps me know that because there is a lot of sun there.

14

Part A. Based on the students' observations the best place on the school campus is B at noon. Noon is the time the sun is at full strength. I know this because noon is when the sun is in the middle of the sky and it is very sunny outside.

Part B. This location would be the best because there is plenty of sunlight there for the plants to grow. The information from the light meter helps me know that because of where the light and shade is and how far away the shade is from the place I pick.

6

Part A. I predict that on the roof and at noon the light meter would record the highest strength of sunlight.

Part B. This location would be the best because there would no shadows to block the sunlight. The information in the light meter helps me know that because the light meter tells me how strong the light is.

6

Part A. put the solar panels on the left and right side of the roofs. Reason being those two parts get the most sunlight since no shadow appears on them. It would receive the highest strength of sunlight would be at noon since the sun is pointing straight down on the roofs.

Part B. The location I chose would be best because it gets the sun on the spots all day. The information from the light meter helps me because it tells me that the sun points down on it all day producing mass energy for the school.