2021 Innovative Science Sample Student Work and Scoring Guide

Grade 5
Question 9: Constructed-Response

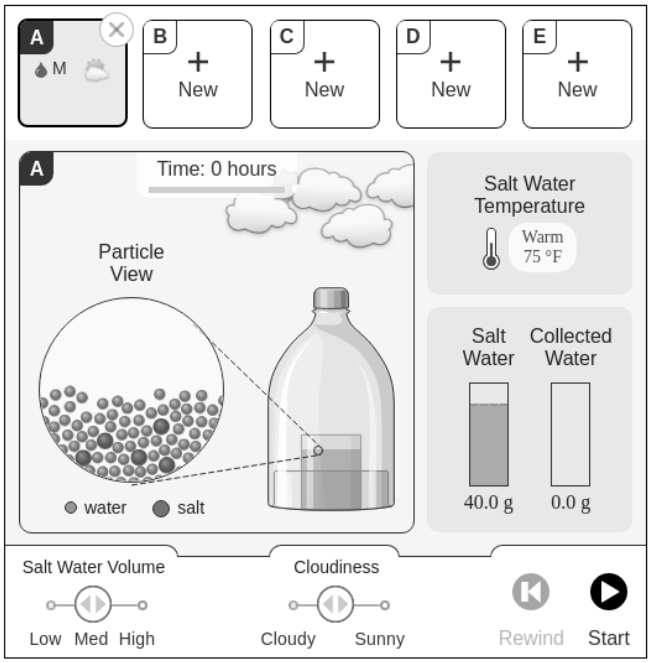
Reporting Category: Physical Science
Practice Category: Evidence, Reasoning, and Modeling: Evaluate claims and evidence to argue the best scientific explanation or engineering design solution, including developing and analyzing models to represent scientific phenomena and engineering concepts.
Standard: 5.PS.1.1 Use a particle model of matter to explain common phenomena involving gases, and phase changes between gas and liquid and between liquid and solid.
Item Description: Use climate data to explain where moisture collectors would be most useful and explain how the moisture collector works.

Scoring Guide

Select a score point in the table to view the sample student response.

Score	Description
4	The response demonstrates a thorough understanding of using evidence and scientific reasoning to explain phase changes. The response correctly identifies two locations where the collecting of fresh water would be similar and clearly explains the reasoning. The response also correctly identifies the location where a moisture collector would be most helpful and clearly explains the reasoning using data and knowledge of how moisture collectors work.
3	The response demonstrates a general understanding of using evidence and scientific reasoning to explain phase changes.
2	The response demonstrates a limited understanding of using evidence and scientific reasoning to explain phase changes.
1	The response demonstrates a minimal understanding of using evidence and scientific reasoning to explain phase changes.
0	The response is incorrect or contains some correct work that is irrelevant to the skill or concept being measured.

Score Point 4



This question has two parts.

The students want to give moisture collectors to people living in locations where there is little fresh water available. The students need to decide where to send the moisture collectors. The table shows the climate data from four locations: W, X, Y, and Z. Each location is near an ocean.

Location	Average Number of Sunny Days per Year	Average Amount of Precipitation per Year (inches)
W	266	11.7
X	262	32.5
Y	127	41.0
Z	124	92.3

Part A

Identify **two** locations from the table where the moisture collector would collect similar amounts of fresh water in 8 hours. Explain your reasoning.

Two locations to send that would get similar results would be location W and X. Location's W and X get the most amount of sun per year, with W having 266 sunny days per year and X having 262 sunny days per year. This means the moisture collector would get about the same results because the number sunny days are close and W only has 4 more than X.™

Part B

The students decide to send moisture collectors to where they would be most helpful.

Identify the location from the table the students should send moisture collectors to. Explain your reasoning using data from the table and your knowledge of how moisture collectors work.

The best place to send the moisture collector would be to location W. I think this because location W has the least amount of rain, coming in with 11.7 inches of rain per year, so the residents clearly need more water than other locations. Location W also has more sunny days, coming in at 266 sunny days per year, which means the moisture collector would work better because the3 water would evaporate faster.

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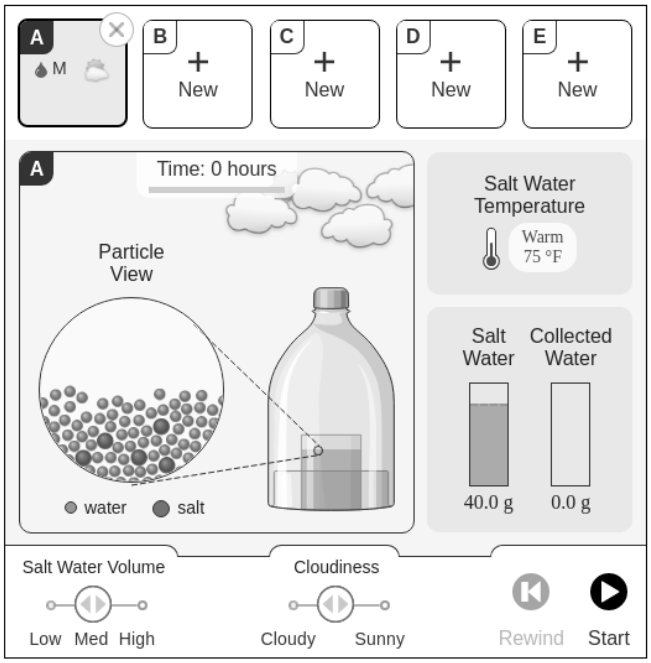
Score Point 3



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Part A

Identify **two** locations from the table where the moisture collector would collect similar amounts of fresh water in 8 hours. Explain your reasoning.

two locations from the table were the moisture collecter would collect similar amounts of fresh water in 8 hours is Y and Z because they both have similar amounts of sunny days per year.

Part B

The students decide to send moisture collectors to where they would be most helpful.

Identify the location from the table the students should send moisture collectors to. Explain your reasoning using data from the table and your knowledge of how moisture collectors work.

the students should send the moisture collecters to locations W and X because those loxations have the most sunny days, and the more sunny days there are the more evaperationj there is, and the more evaporation there is, the more salt water is turned into fresh water.

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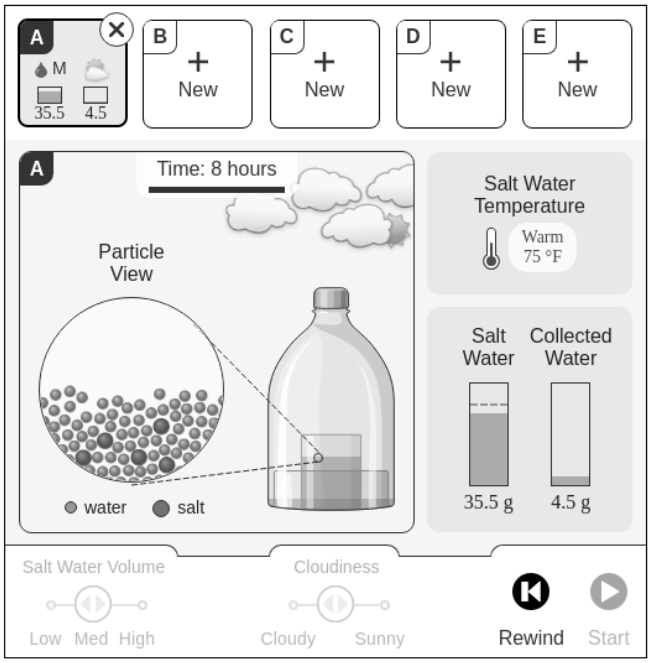
Score Point 2



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Part A

Identify **two** locations from the table where the moisture collector would collect similar amounts of fresh water in 8 hours. Explain your reasoning.

Y and Z because they have a close number of sunny days per year.

Part B

The students decide to send moisture collectors to where they would be most helpful.

Identify the location from the table the students should send moisture collectors to. Explain your reasoning using data from the table and your knowledge of how moisture collectors work.

W because it doesnt get that much rain.

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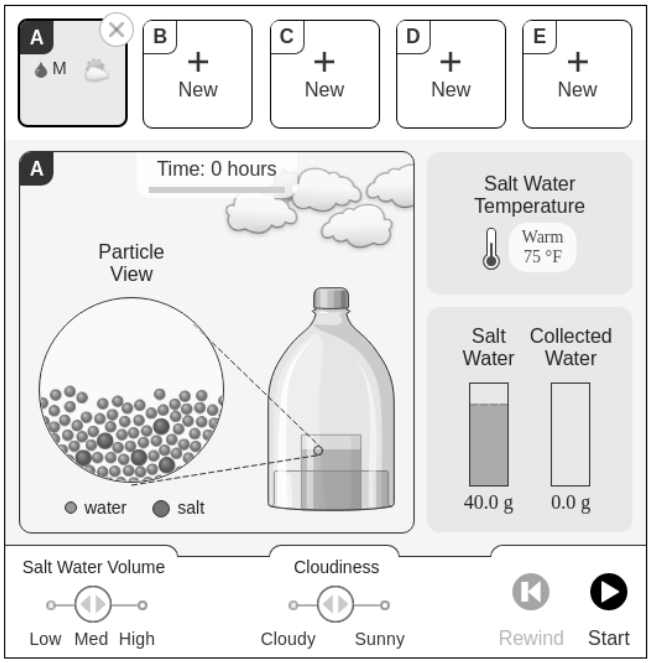
Score Point 1



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Part A

Identify **two** locations from the table where the moisture collector would collect similar amounts of fresh water in 8 hours. Explain your reasoning.

X, and Y have similar amounts of fresh water in 8 hours. The numbers are only 9 apart.

Part B

The students decide to send moisture collectors to where they would be most helpful.

Identify the location from the table the students should send moisture collectors to. Explain your reasoning using data from the table and your knowledge of how moisture collectors work.

The students send the water to W becuase they only get 11.7 inches of rain a year.

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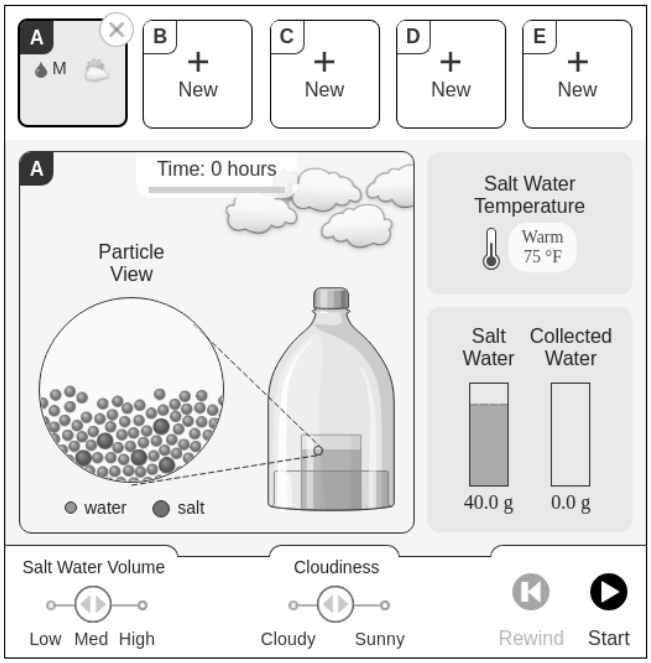
Score Point 0



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Part A

Identify **two** locations from the table where the moisture collector would collect similar amounts of fresh water in 8 hours. Explain your reasoning.

I think Y and X would have similar amounts of fresh water in 8 hours because they have the closest amount of precipitation per year.

Part B

The students decide to send moisture collectors to where they would be most helpful.

Identify the location from the table the students should send moisture collectors to. Explain your reasoning using data from the table and your knowledge of how moisture collectors work.

The students should send the moisture collectors to Z because they get 92.3 precipitation per year. That is good because then they would have lots of water to make fresh water from.

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