Pan Water Cycle
Student Guide – Answer Sheet
Section I

Q1: **Which components of the pan water cycle would be represented by stocks?**

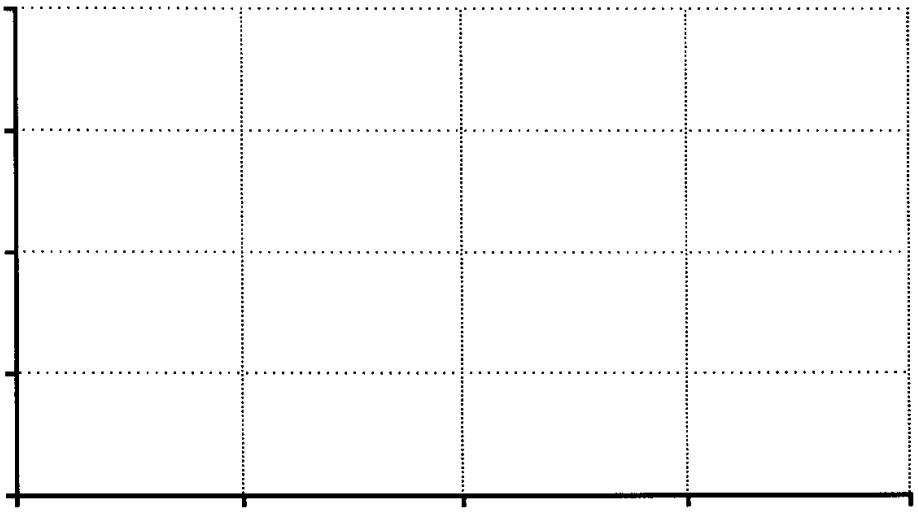
Q2: **Which processes of the pan water cycle would be represented by a flow?**

Q3: **What effect did turning up the temperature of the hot plate have on how much evaporation occurred in our pan model? How does this relate to the real ocean-atmosphere system?**

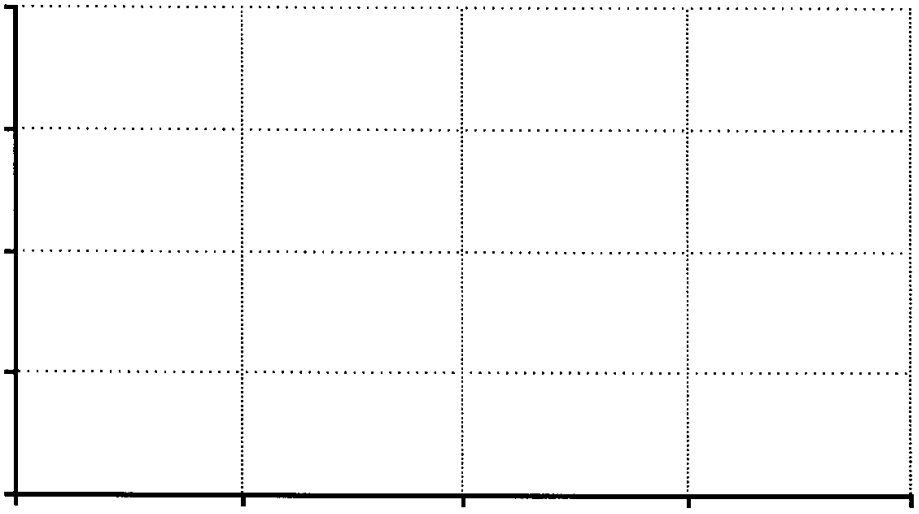
Q4: **What effect would moving the earth closer to the sun have on the real ocean-atmosphere system?**

Q5: **The model represents a situation in which 100 ml of water would evaporate into the air at the rate of 100 {degrees Celsius} * 1/20 {ml/min/degree Celsius}. How many minutes should it take for the water in the pan to completely evaporate?**

Q6: **On the axes provided, sketch a graph that represents the number of ml of water in the pan during 20 minutes of evaporation. Label your graph according to the Level I Generic Graph Questions.**



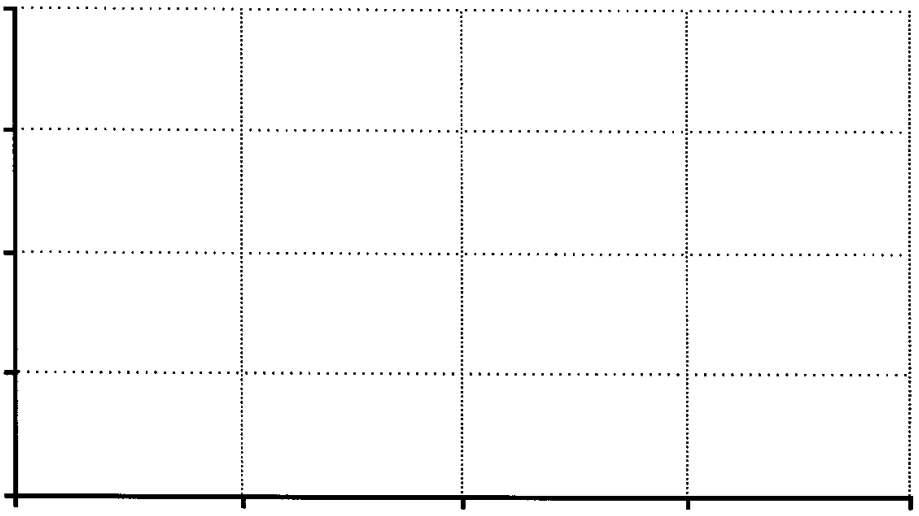
Q7: **Referring to the Level I Generic Graph Questions, sketch the Water in Pan graph on the axes provided.**



Q8: **Referring back to your copy of the Graph Interpretation Guidelines, describe the graph in the context of the situation being modeled.**

Q9: **If the water in the pan is decreasing from 100 ml to 1 ml over a 20 minute time period of evaporation at 100 degrees Celsius, describe what should be happening to the water in the air during the same time period.**

Q10: Referring to the Level I Generic Graph Questions, sketch the Water in Air graph on the axes provided.



Q11: Referring back to your copy of the Graph Interpretation Guidelines, describe the graph in the context of the situation being modeled.

Q12: If the water temperature were lowered to 0 degrees Celsius, how would the evaporation change?

Q13: If the water temperature were lowered to 0 degrees Celsius, how would the lines for the Water in Pan and Water in Air graphs be different from the lines drawn for a water temperature of 100 degrees C?

Q14: Sketch the new lines on the axes already used in Q7 and Q10. Label each line with the water temperature setting used when the line was drawn.

Q15: Pick two temperatures between 0 degrees Celsius and 100 degrees Celsius. Write a description of where the lines for Water in Pan and Water in Air should be for those temperatures in relation to the two existing lines on each of those graphs.

Q16: Sketch the new lines of the axes already use in Q7 and Q10. Label each line with the water temperature setting used when the line was drawn.

Q17: On the Water in Air graph, what does the slope of each line tell you about evaporation?

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Section II

Q1: **How should the model be changed to represent a closed container system?**

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_____

Q2: **What should you name the flow that transforms evaporated water in the air to liquid water on the cover?**

_____

Q3: **What should you name the flow that moves liquid water on the cover to water in the pan?**

_____

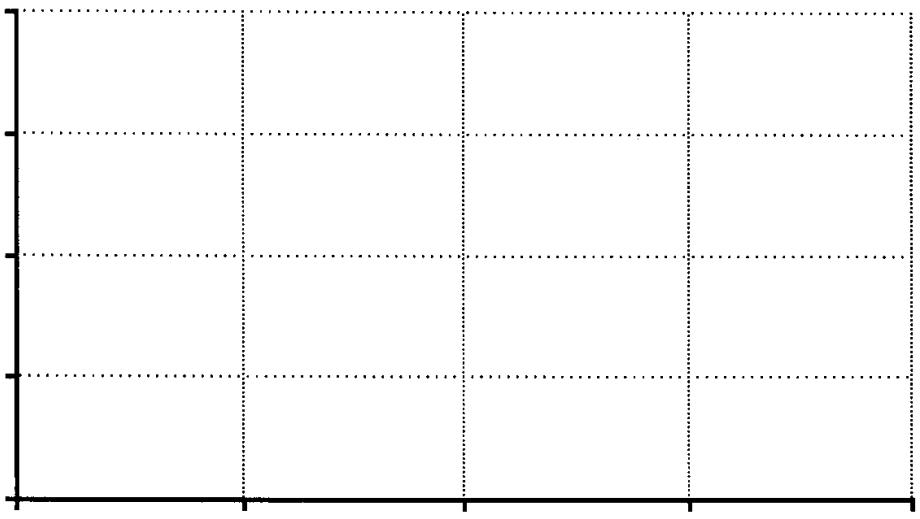
Q4: **From the graphs, estimate the value of each stock after 20 minutes.**

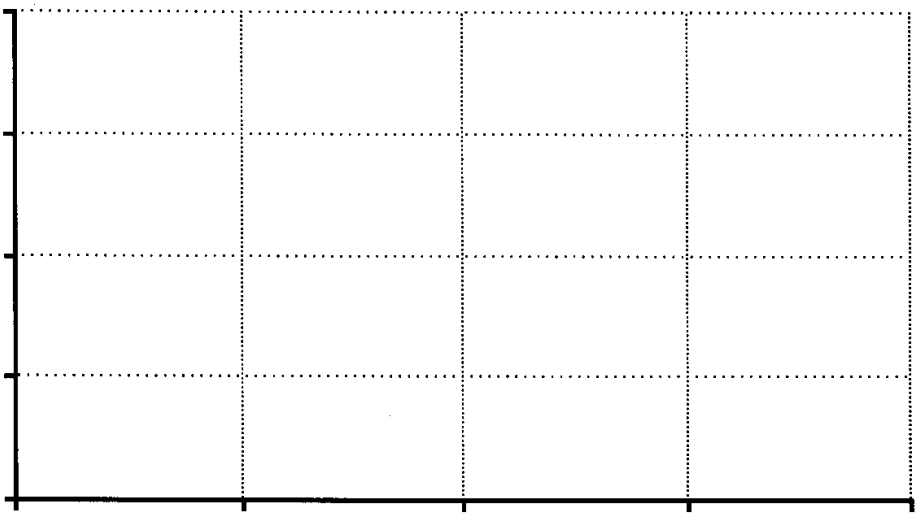
a) **Water in Pan** _____
b) **Water in Air** _____
c) **Water on Cover** _____

Q5: **What is your prediction for the value of each stock after 20 more minutes?**

a) **Water in Pan** _____
b) **Water in Air** _____
c) **Water on Cover** _____

Q6: **Referring to the Level I Generic Graph Questions, sketch each curve on the axes provided.**





Q7: **Referring back to your copy of the Graph Interpretation Guidelines, describe the curves in the context of the situation being modeled.**

Q8: **What does it mean to say that our model of the closed pan water cycle is in equilibrium?**

Q9: **How is our computer model of the pan water cycle unlike the actual covered pan system?**

Q10: **How is the pan water cycle like the water cycle in the real world?**

Q11: **How is the pan water cycle different from the water cycle in the real world?**