Name _____ Date _____

Effects of Climate Change *on the Water Cycle*

DIRECTIONS

Please follow the rules below to play a round of Streams and Steam with your group, and answer the questions.

RULES OF PLAY

1. Roll the die to determine who starts the game.
2. Player who rolls the highest number plays first.
3. Players follow in turn from left to right.
4. All players begin with their coin on the start space.
5. Roll die and move the coin the number of spaces indicated.
6. When a player lands on a square at the TOP of a stream, the player will "raft" down the stream by moving their coin down to the square at the bottom of the stream.
7. When a player lands on a square at the BOTTOM of a column of steam, the player will rise up the steam column by moving their coin up to the square at the top of the steam column.
8. The squares without pictures are regular squares and do not require any further action.
9. Two or more players may stop at the same square together.
10. The first player to cross into the finish space wins the game; an exact roll of the die is not required to win.

QUESTIONS

1. List all of the causes and effects that you and your group members land on when you go down a stream and/or up a column of steam while playing Streams and Steam. Only write each pair of causes and effects **once** if it is landed on multiple times. For each cause and effect pair, choose one or more action types (from the Key of Action Types) that could be taken in response.

   Write the corresponding letter for your chosen action type(s).You may choose more than one action type.

Key of Action Types

A) Water Conservation: use methods to decrease water use
B) Mitigating Climate Change: use methods to reduce greenhouse gas emissions
C) Risk Management Planning: follow procedures to avoid or minimize the impact of climate change

Cause	Effect	Action Type(s)
Example: Increased evaporation	More severe drought in some areas	A, B, C

2. Choose one of the effects from the table above. Explain how this change to the water cycle affects humans.

3. Choose three of the effects and actions from the game table. Fill out the table below and explain, more specifically, what actions could be taken to respond to each effect.

	Effect	Action Type	Example Action
	Example: More severe drought in some areas	A) Water Conservation	Xeriscaping (landscaping to minimize water use)
1			
2			
3			

ANSWER KEY

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Key of Action Types

A) Water Conservation: use methods to decrease water use
B) Mitigating Climate Change: use methods to reduce
C) Risk Management Planning: follow procedures to a
of climate change

Student answers will vary but may include any or all of these answers

CAUSE	EFFECT	ACTION TYPES
Example: Increased evaporation	*More severe drought in some areas*	*A, B, C*
Increased evapotranspiration	*More water in the atmosphere*	*A, B*
Increased ocean temperatures	*More severe storms*	*B, C*
Reduced precipitation and decreased soil moisture in some areas	*Reduced groundwater availability*	*A, B, C*
More intense precipitation in some areas	*Flooding in some areas*	*B, C*
Decreased precipitation in spring	*More severe drought in some areas*	*A, B, C*
Increased temperatures	*Decreased soil moisture because of evaporation*	*A, B*
Increased evaporation	*More water in the atmosphere*	*B*
Melting glaciers and ice	*Sea level rise*	*B, C*
More water in the atmosphere	*More severe storms*	*B, C*
Increased ocean temperatures	*Sea level rise*	*B, C*
In winter, more precipitation falls as rain	*Less snow and reduced snowpack*	*A, B, C*

2. Choose one of the effects from question #1. Explain how this change to the water cycle affects humans.

- *More severe drought in some areas: less water available for crops, livestock, and general public use*
- *More water in the atmosphere: will lead to increased precipitation and flooding in some areas, which could result in property damage and human health effects; also, water vapor is a greenhouse gas, so more water in the atmosphere further enhances the greenhouse effect and changes the climate*
- *More severe storms: property damage, human health effects, loss of life*
- *Reduced groundwater availability: less water available for crops, livestock, and general public use*
- *Flooding in some areas: property damage, human health effects, loss of life*
- *Decreased soil moisture because of evaporation: less water available for crops, increased soil erosion, which could result in fewer nutrients available for crops*
- *Sea level rise: erosion of beach sand and reduction of recreation opportunities and impact to the tourism economy, property damage, displacement of waterfront and island property owners, loss of life*
- *Less snow and reduced snowpack: less water stored in snow to supply watersheds (so less water available for crops, livestock, and general public use), reduction of recreational opportunities and impact to the tourism economy*

3. Choose three of the effects and actions from the game table. Fill out the table below and explain, more specifically, what actions could be taken to respond to each effect.

Student answers will vary but may include any or all of these answers

	Effect	Action Type	Example Action
	Example: More severe drought in some areas	*A) Water Conservation*	*Xeriscaping (landscaping to minimize water use)*
1	*More severe storms*	*C*	*Outline emergency plans for response in vulnerable areas*
2	*Flooding in some areas*	*B*	*Install energy efficient appliances to reduce greenhouse gas emissions and reduce likelihood of future flooding*
3	*Reduced groundwater availability*	*A*	*Install water efficient appliances at home*