

Streams and Steam

Answer Key

Directions

Follow the rules below to play a round of Streams and Steam with your group, record your results in the table, and answer the questions below.

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.

Game Table

List all of the causes and effects that you and your group members land on when you roll the die or move up a column of steam while playing. Only record causes and effects **once** if it is landed on multiple times. For each cause and effect pair, choose a possible action or actions that could be taken in response. Choose from the Key of Possible Actions, and write the corresponding letter for your chosen action(s) in the action column. You may choose more than one possible action.

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

Key of Possible Actions

- A. Water Conservation**
- B. Mitigating Climate Change**
- C. Risk Management Planning**

Cause	Effect	Action
<i>Example:</i> 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

Conclusion

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

Student answers may include one of the following:

- ***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***

ANSWER KEY

2. 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	More Specific Actions
1	<i>More severe drought in some areas</i>	A	<i>Plant native, drought-tolerant plants at home</i>
2	<i>More severe storms</i>	C	<i>Outline emergency plans for response in vulnerable areas</i>
3	<i>Reduced groundwater availability</i>	A	<i>Install water efficient appliances at home</i>
4	<i>Flooding in some areas</i>	B	<i>Install energy efficient appliances at home to reduce greenhouse gas emissions and reduce likelihood of future flooding</i>
5	<i>Sea level rise</i>	C	<i>Revise building codes to discourage new development in vulnerable areas</i>
6	<i>Decreased soil moisture because of evaporation</i>	B	<i>Use renewable forms of energy to stop enhancing the greenhouse effect</i>

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