

## Watershed Connections

### Student Activity (Part one)

### Floods, Floodplains, and Flood Probabilities

Read the following explanation of floodplains and flood probabilities, then answer the questions.

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Rivers flood: they always have and always will. When heavy rains come, rivers cannot hold all the water and they flow outside their banks onto normally dry lands adjacent to the stream, known as floodplains. In the Midwest chances are good that you live within a few miles of a floodplain.

While floods may occur at any time of the year, the majority of floods occur during the period from January through June. There's no way to predict when the next flood will happen, or how severe it will be. However, we can use statistical data (what has happened in the past) to estimate the *probability* or chance that floods of a certain size will occur in the future. For example:

- A fairly common small flood might occur on the average 50 times over a 100-year period. This flood would be expected to occur on an average of once every 2 years, or have a 50% chance of happening in a particular year. A flood of this magnitude is called the 2-year flood, and the area that is flooded is called the 2-year floodplain. In most cases the river or stream channel itself can contain the 2-year flood.
- A larger (more unusual) flood might occur on the average 10 times in 100 years. This is called the 10-year flood, and the area that is flooded is the 10-year floodplain.
- Occasionally a flood so large and unusual that it only occurs on the average 1 time in 100 years. These floods are called a 100-year flood. It has a 1% chance of occurring in any year, and it floods a much larger area called the 100-year floodplain.

The chance of a flood of a certain size occurring and then re-occurring is like flipping a coin or spinning a wheel. Just because heads comes up doesn't mean the next try has to be tails. One 100-year flood doesn't reduce the chance (which is always 1%) of a 100-year flood occurring during the next 365 days.

Because flooding is such a common and expensive natural disaster, floodplain maps have been developed for most communities. People who live a floodplain should have flood insurance to protect their property from this risk. More information on the National Flood Insurance program is available on the Internet at [www.fema.gov/business/nfip/](http://www.fema.gov/business/nfip/).



## Watershed Connections

Name \_\_\_\_\_

### Flood Questions:

1. Use one of the following methods to locate floodplains in your area. Identify the rivers, streams, or lakes that could be a source of flooding in the area you identified.
  - a. Flooding history
    - [www.fema.gov/](http://www.fema.gov/)
    - Choose “Flood” under the Get Disaster Information
    - Choose “What is the History of Flooding where I live?”
    - Enter your town, state, and zip code
  - b. Floodplains
    - [www.fema.gov/](http://www.fema.gov/)
    - Enter “floodplain” in the search box in the upper right hand corner
    - Choose “FEMA Flood Maps”
    - Choose “Enter the Map Service Center”
    - Enter your street address, town, state, and zip code
    - Choose “view map”
2. Identify the land use of the floodplain area (i.e., is the floodplain used for agriculture, urban development, parkland, forest, etc?)
3. Talk to your parents or others that live near the floodplain. Ask them, “When is flooding most likely?”
4. Why do many people like to live near rivers?
5. What should people consider when buying or building a house near a river?

**Student Activity:**  
**(Part two)**

Name \_\_\_\_\_

**Floods, Floodplains, and Flood Probabilities**

**Directions:**

Use the “Wheel of Flooding” to study why events with higher probabilities occur more frequently. The areas on the wheel are roughly equivalent to the chances of having a 2, 5, 10, and 100-year storm. Make a pointer to spin the wheel or drop a penny from 5 feet to randomize your data. Take 100 tries and tally your results.

1. Tally the number of times each area of the wheel was selected.

2 year, or less	5 year	10 year	100 year

Question: Calculate the percentage you got for each storm.

2 year, or less	5 year	10 year	100 year

2. Would you expect to get the same results the next time you play?

1. If your local news reporter said that flooding in your area was caused by a 50-year storm, how old would you be when you would expect to see such a flood again?

Could this size flood occur the next year?

