Mapping the Flood

How location tools help a city respond

6-9.WG.2.2 "Describe the uses of technology, such as Global Positioning Systems (GPS) Geographic Information Systems (GIS), and satellite and aerial imaging."

NAME _____ DATE _____

1 READ AND MARK

Read it twice

YOUR JOB Circle GPS, GIS, satellite images, and aerial images when they first appear. Underline one use of each tool to show how it helps the city respond to flooding.

When the River Rises

1. After a week of heavy rain, the Cedar River rises over a trail and several streets. A city crew needs to tell neighbors which places are safe to travel. Crew members carry GPS receivers that use signals from satellites to find their locations on Earth. At each flooded crossing, a worker records a position with GPS. These positions let the city mark where travel is blocked instead of relying on a report that says only "near the river." GPS gives the crew a location, but it does not show why the crossing is unsafe.

2. At city hall, a planner opens a Geographic Information System, or GIS. This computer tool displays different kinds of location data in layers. One layer shows streets, another shows schools, and a third shows the GPS positions of flooded crossings. The planner can compare the layers to find which school bus routes meet blocked streets. She can then plan a different route and share it with drivers. Unlike a single GPS reading, GIS helps people see how places and patterns connect across an area.

3. Satellite images add another view of the same flood. A satellite orbiting Earth can collect images of a wide area, so city workers can compare images from different days to see where floodwater has spread. Clouds can hide ground details in ordinary satellite pictures, however. A small aircraft can take aerial images over one neighborhood. Those closer views may help workers spot debris near a bridge before sending an inspection crew. Images show what an area looks like, but workers still need to check conditions on the ground before reopening a road.

2 ANSWER WITH EVIDENCE

Use the passage

1. How does the crew use GPS to give the city more useful information than a report that says only “near the river”?

2. How does the planner use GIS to choose a different school bus route?

3. What can workers learn by comparing satellite images from different days?

4. How might aerial images help workers before they inspect the bridge?

3 YOUR TURN

Your own words

A town wants to choose a place for a new skate park. In four sentences, explain how workers could use GPS, GIS, and aerial images to choose a site, then state a decision they could make using that information.

ANSWER KEY

Mapping the Flood

GRADES 6-9 · 6-9.WG.2.2

PART 1 · READ AND MARK

Circle GPS, GIS, satellite images, and aerial images when they first appear. Underline one use of each tool to show how it helps the city respond to flooding. Accept any marking that follows this job and points at the right text.

PART 2 · ANSWERS

#	QUESTION	ANSWER
1	How does the crew use GPS to give the city more useful information than a report that says only “near the river”?	**Workers record the positions of flooded crossings, so the city can mark where travel is blocked.**
2	How does the planner use GIS to choose a different school bus route?	**She compares layers showing streets, schools, and flooded crossings to find routes that meet blocked streets.**
3	What can workers learn by comparing satellite images from different days?	**They can see where floodwater has spread across a wide area.**
4	How might aerial images help workers before they inspect the bridge?	**Closer aerial views may help them spot debris near the bridge before sending an inspection crew.**

PART 3 · YOUR TURN (SAMPLE ANSWER)

Workers could use GPS to record the locations of possible skate park sites. In GIS, they could compare those locations with layers showing city-owned land and bus stops. Aerial images could show whether each site has trees or pavement. The town could choose a city-owned site near a bus stop that already has an open paved area.

Accept other accurate uses of each tool that fit the situation. The final decision should follow from information the student says the workers collected.