Routes Under Pressure

Choose location tools for a changing emergency.

WG.1.4 "Evaluate the applications of geographic tools (locational technologies) and supporting technologies to serve particular purposes."

NAME _____ DATE _____

1 READ AND MARK

Read it twice

YOUR JOB Underline each tool or supporting technology in the passage. Circle a condition that limits each one, then number the tools you would use first, second, and third to plan the oxygen delivery.

Finding a Route in Bellport

1. In the fictional coastal city of Bellport, a storm has flooded streets near a hospital. Emergency crews need to choose a route for a van delivering oxygen tanks before dark. A GPS receiver can estimate the van's position from satellite signals, even when mobile data service is down. But a position alone does not show which streets are flooded. The city also has a geographic information system, or GIS, that combines street locations, hospital entrances, and reports of road closures. Its closure layer depends on crews sending updates, so an old report could make an unsafe street appear open.

2. A visible-light satellite image can show flooding across many neighborhoods, but thick clouds hide the ground. Even after skies clear, the image may be hours old when it reaches the team. A drone can photograph a single intersection in greater detail and closer to real time, yet strong winds can keep it on the ground. Neither image proves that a bridge is safe for a heavy vehicle. Dispatchers can ask ground crews to inspect a route and send observations by two-way radio. Radio reports can still reach dispatch when the city's mobile data network fails, although their reach varies by location.

3. At the emergency center, a dispatcher views the GIS layers on a computer powered by a backup generator. She notes when each road report was filed and checks whether a recent ground report agrees with the image. If the computer or network fails, a printed street list and radio calls can help crews coordinate, but the list cannot update itself. An evacuation bus and an oxygen van may need different routes: a narrow, dry street might fit the van but not the bus. Choosing a tool means weighing coverage, detail, freshness, and the conditions under which it works.

2 ANSWER WITH EVIDENCE

Use the passage

1. The van has no mobile data, but dispatch can still receive road reports. Which tools should the driver and dispatcher use to plan the delivery, and what does each tool contribute?

2. Clouds cover Bellport, and strong winds prevent flights. Should crews use a new visible-light satellite image or a drone image to confirm that a street is open? Explain a better way to check.

3. A neighborhood has sent no closure reports since morning. How should the age of those reports affect a dispatcher's decision to route the van through it?

4. After the clouds clear, the city wants to compare flooding across many neighborhoods rather than inspect one intersection. Which imaging tool better fits that purpose, and what limitation remains?

3 YOUR TURN

Your own words

A wildfire threatens a mountain town. A rescue team must locate stranded hikers and choose a safe pickup point, but mobile data is unreliable and steep slopes limit radio range. In four or five sentences, recommend one locational tool and one supporting technology, explain what each contributes, and give one limitation with a practical backup.

Routes Under Pressure

PART 1 · READ AND MARK

Underline each tool or supporting technology in the passage. Circle a condition that limits each one, then number the tools you would use first, second, and third to plan the oxygen delivery. Accept any marking that follows this job and points at the right text.

PART 2 · ANSWERS

#	QUESTION	ANSWER
1	The van has no mobile data, but dispatch can still receive road reports. Which tools should the driver and dispatcher use to plan the delivery, and what does each tool contribute?	**The driver can use GPS to track the van's position. Dispatch can use GIS with recent road reports to plan a route and relay updates by two-way radio.**
2	Clouds cover Bellport, and strong winds prevent flights. Should crews use a new visible-light satellite image or a drone image to confirm that a street is open? Explain a better way to check.	**Neither image is dependable in those conditions. Crews can inspect the street on the ground and radio an updated report to dispatch.**
3	A neighborhood has sent no closure reports since morning. How should the age of those reports affect a dispatcher's decision to route the van through it?	**The dispatcher should treat the route as uncertain, not assume it is open, and seek a recent ground report before sending the van.**
4	After the clouds clear, the city wants to compare flooding across many neighborhoods rather than inspect one intersection. Which imaging tool better fits that purpose, and what limitation remains?	**A visible-light satellite image covers many neighborhoods, but it may be hours old when the city receives it.**

PART 3 · YOUR TURN (SAMPLE ANSWER)

A GPS receiver can record the rescue team's location as it searches for the hikers. A two-way radio can relay the hikers' last known location and help crews coordinate a pickup. Steep slopes may block radio signals. If calls fail, crews can follow a printed trail map to a prearranged meeting point. They must check the pickup site on the ground before directing anyone there.

Accept other tool choices when students connect each tool to its purpose and give a limitation that fits the conditions. A GPS position alone does not establish that a route or pickup point is safe.