



Drone Exploring: Career Spotlights

Surveying — Club

Overview: Surveyors measure land to figure out exactly where property lines, roads, and buildings should go, and drones have made that job much faster. In this session, youth compare old-fashioned measuring methods to drone-based surveying, and practice measuring and mapping a small area using simple tools, just like surveyors did before drones existed.

OBJECTIVES

- Introduce youth to the career of surveying and how drones have changed the job.
- Compare traditional measuring tools to drone-based surveying methods.
- Practice measuring and mapping a small area through a hands-on activity.
- Build an appreciation for accuracy and careful measurement.

SUPPLIES

- Flip chart or whiteboard and markers
- Measuring tape, string, or a trundle wheel
- Stakes, cones, or chalk to mark boundary points
- Graph paper and pencils
- Printed handouts: Surveying Then and Now and Measure and Map

ADVISOR NOTES

- Emphasize that accuracy matters a lot in surveying. A small mistake in measuring a property line can cause big problems later (like a fence in the wrong place).
- If time is limited, mark a smaller area or use fewer boundary points.
- Explain that surveyors are still legally responsible for the accuracy of a survey, even when a drone collects the data.
- Consider inviting a guest speaker (a licensed surveyor or a drone survey technician) to share how their job has changed with drone technology. See Optional Extensions.
- If no guest speaker is available, Advisors can run the entire session using this outline and the resource links below.

SESSION OUTLINE

- **Welcome and Icebreaker** (10 min)
 - “Measure This:” Ask youth to guess the distance across the room, then measure it together to see how close their guesses were.
- **Safety Moment (Careful, Accurate Work)** (10 min)
 - Surveyors must double-check their measurements, since mistakes can affect where buildings, roads, or fences get built.
 - Working outdoors near roads or equipment requires paying attention to surroundings.
 - Ask: “What could go wrong if a survey measurement was off by even a few feet?”
- **Mini-Lesson: Surveying Then and Now** (15 min)
 - Explain how surveyors used to measure land by hand with tape measures, poles, and specialized tools, which could take days for a large property.
 - Discuss how drones can now capture the same measurements in a fraction of the time by flying over an area and using photos and GPS.
- **Activity: Measure and Map Challenge** (25 min)

- Mark 4–6 boundary points around a small outdoor or indoor area using stakes or cones.
 - Teams measure the distance between each point using measuring tape or string, recording results on the Measure and Map handout.
 - Teams draw a scaled sketch of the area on graph paper based on their measurements.
- **Discussion: How Would a Drone Do This Differently?** (10 min)
- Discuss how a drone survey could capture the same area's measurements much faster, and where hand-measuring might still be more precise for small details.
- **Wrap-Up Share-Out** (10 min)
- Groups compare their maps and discuss any differences in their measurements.

REFLECTION SECTION

Advisor Note: Some sample questions are below. They are designed to help the participants apply what they have learned to their own interests. You are welcome to use these questions or develop your own.

Focusing Questions

- What was the hardest part of measuring and mapping your area accurately?
- What surprised you about how surveying used to be done before drones?

Analysis Questions

- Why does accuracy matter so much in surveying?
- How could a drone survey a large property faster than a team measuring by hand?

Generalization Questions

- Where else in life does small, careful measurement matter, even when it's slow?
- What's one thing you'd like to learn next about maps or measuring land?

Challenge: This week, measure something at home (a room, a yard, a driveway) and compare your guess to the actual measurement.

OPTIONAL EXTENSIONS

Guest Speaker: Invite a licensed surveyor or a drone survey technician to share how their job has changed with drone technology, in person or by video call.

Advisor-Led Option: If a guest speaker isn't available, Advisors can run this session using the outline above and the resource links below. No outside expert is required.

Resource Links: Search "how drone land surveying works" on a video platform for kid-friendly explainer videos.

Group Extension: Create a scaled map of your own bedroom or a room at home, including furniture, using a tape measure and graph paper.

Handout: Surveying Then and Now

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Read through the comparison below before starting the Measure and Map Challenge.

Surveying Before Drones

Surveyors used tape measures, marked poles, and specialized tools to measure land point by point, which could take hours or days.

Surveying With Drones

A drone can fly over a property and capture thousands of accurate measurement points in a fraction of the time.

What Stays the Same

A licensed surveyor still reviews and verifies the data, since they are legally responsible for its accuracy.

Why It Matters

Accurate surveys make sure property lines, roads, and buildings all end up exactly where they're supposed to be.

Handout: Measure and Map

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Record the distance between each pair of boundary points your team measures.

From Point	To Point	Distance
1	2	
2	3	
3	4	
4	1	