



Surveying

Merit Badge Workbook



This workbook can help you but you still need to read the merit badge pamphlet.
This Workbook can help you organize your thoughts as you prepare to meet with your merit badge counselor

Merit Badge Counselors may not require the use of this or any similar workbooks.

You still must satisfy your counselor that you can demonstrate each skill and have learned the information.
You should use the work space provided for each requirement to keep track of which requirements have been completed, and to make notes for discussing the item with your counselor, not for providing full and complete answers.

If a requirement says that you must take an action using words such as "discuss", "show", "tell", "explain", "demonstrate", "identify", etc, that is what you must do.

No one may add or subtract from the official requirements found on [Scouting.org/meritbadges/](https://www.scouting.org/meritbadges/).
The requirements were last revised on January 1, 2024 • This workbook was updated in February 2024.

Scout's Name: _____ Unit _____ Date Started _____

Counselor's Name: _____ Phone No.: _____ Email: _____

Please submit errors, omissions, comments or suggestions about this **workbook** to: Workbooks@USScouts.Org

Comments or suggestions for changes to the **requirements** for the **merit badge** should be sent to: Merit.Badge@Scouting.Org

1. Show that you know first aid for the types of injuries that could occur while surveying, including cuts, scratches, snakebite, insect stings, tick bites, heat and cold reactions, and dehydration.

Cuts:

Scratches:

Snakebite:

Insect stings:

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Tick bites:

Heat reactions:

Cold reactions:

Dehydration:

Explain to your counselor why a surveyor should be able to identify the poisonous plants and poisonous animals that are found in your area.

☐ 2. Do the following:

- ☐ a. Set an instrument over one of the corners of a five-sided lot laid out by your counselor and sighting one of the other corners for reference and, using radial measurement methods, record the angle turned and the distance measured to each of the remaining corners, as directed by your counselor. Record the angle and distance to five topographic features (trees, shrubs, rocks, etc.) near your work area..

Corner 1 Angle:

Corner 1 to Corner 2 Distance:

Corner 2 Angle:

Corner 2 to Corner 3 Distance:

Corner 3 Angle:

Corner 3 to Corner 4 Distance:

Corner 4 Angle:

Corner 4 to Corner 5 Distance:

Corner 5 Angle:

Corner 5 to Corner 1 Distance:

- ☐ Record the angle and distance to five topographic features (trees, shrubs, rocks, etc.) near your work area..

Feature 1		Angle		Corner 1 to Feature Distance:	
Feature 2		Angle		Corner 1 to Feature Distance:	
Feature 3		Angle		Corner 1 to Feature Distance:	
Feature 4		Angle		Corner 1 to Feature Distance:	
Feature 5		Angle		Corner 1 to Feature Distance:	

- ☐ b. Measure to three of the same points with GPS measurement and compare the distances between the points measured.

From	To	GPS Distance	Difference

- ☐ 3. From the field notes gathered for requirement 2, and using a protractor and scale, plot the points you measured and draw to scale a map of your survey which includes a north arrow, scale bar, title, date and a diagram of the lot you measured. Submit a neatly drawn copy.
- ☐ 4. Use one of the corner markers from requirement 2 as a benchmark with an assumed elevation of 100 feet. Using a level and rod, determine the elevation of the other four corner markers.

Corner 1 assumed elevation: 100 feet

Corner 2 elevation: _____ feet

Corner 3 elevation: _____ feet

Corner 4 elevation: _____ feet

Corner 5 elevation: _____ feet

- ☐ 5. Get a copy of the deed to a piece of property assigned by your counselor, from the local courthouse or title agency. Discuss with your counselor the different parts of the deed and their importance

- ☐ 6. Discuss emerging surveying technology such as drones and laser scanning and the strengths and weaknesses of each.

7. Tell what GPS is; discuss with your counselor the importance of GPS and how it is changing the field of surveying.

8. Discuss the importance of surveying with a licensed surveyor.

Also discuss the various types of surveying and mapping, and applications of surveying technology to other fields.

Discuss career opportunities in surveying and related fields.

Discuss the qualifications and preparation for such a career.

When working on merit badges, Scouts and Scouters should be aware of some vital information in the current edition of the *Guide to Advancement* (BSA publication 33088). Important excerpts from that publication can be downloaded from <http://usscouts.org/advance/docs/GTA-Excerpts-meritbadges.pdf>.

You can download a complete copy of the *Guide to Advancement* from <http://www.scouting.org/filestore/pdf/33088.pdf>.