



Cub Scout Mathematics

Academics Workbook

The work space provided for each requirement should be used by the Cub Scout to make notes for discussing the item with Akela, not for providing the full and complete answers. Each Cub Scout must do each requirement.

No one may add or subtract from the official requirements found in the Cub Scout Academics and Sports Program Guide (Pub. 34299)

This workbook was updated in May 2012.

<http://www.USScouts.Org> • <http://www.MeritBadge.Org>

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

Comments or suggestions for changes to the **requirements** for the **Belt Loop or Pin** should be sent to: Advancement.Team@Scouting.Org

Webelos Scout's Name: _____ Pack No. : _____

Webelos Scouts that earn the Mathematics Belt Loop while a Webelos Scout also satisfy requirement 7 for the Scholar Activity Badge or requirement 10 or the Engineer Activity Badge (but not both).

Cub Scout Mathematics Belt Loop (See the [Pin Requirements](#) below.)

Complete these three requirements:

1. Do five activities within your home or school that require the use of mathematics. Explain to your den how you used everyday math.

1. _____

2. _____

3. _____

4. _____

5. _____

Explain to your den how you used everyday math. _____

2. Keep track of the money you earn and spend for three weeks.
(Editor's Note: You can use the [table](#) at the end of this worksheet.)

3. Measure five items using both metric and non-metric measures. Find out about the history of the metric system of measurement.

Item	Metric size	Non-Metric Size
1. _____	_____	_____
2. _____	_____	_____
3. _____	_____	_____
4. _____	_____	_____
5. _____	_____	_____

Cub Scout Mathematics Pin

Earn the Cub Scout Mathematics belt loop, and complete one requirement from each of the five areas below of the following requirements:

- I. **Geometry** is related to measurement but also deals with objects and positions in space.
1. Many objects can be recognized by their distinctive shapes: a tree, a piece of broccoli, a violin. Collect 12 items that can be recognized, classified, and labeled by their distinctive shape or outline.

- | | |
|----------|-----------|
| 1. _____ | 7. _____ |
| 2. _____ | 8. _____ |
| 3. _____ | 9. _____ |
| 4. _____ | 10. _____ |
| 5. _____ | 11. _____ |
| 6. _____ | 12. _____ |

2. Select a single shape or figure. Observe the world around you for at least a week and keep a record of where you see this shape or figure and how it is used.

- 3. Study geometry in architecture by exploring your neighborhood or community. Look at different types of buildings-houses, places of worship, businesses, etc.-and create a presentation (a set of photographs, a collage of pictures from newspapers and magazines, a model) that you can share with your den or pack to show what you have seen and learned about shapes in architecture.

II. **Calculating** is adding, subtracting, multiplying, and dividing numbers.

- 1. Learn how an abacus or slide rule works and teach it to a friend or to your den or pack.

- 2. Go shopping with your parent or adult partner and use a calculator to add up how much the items you buy will cost. See whether your total equals the total at check out.

- 3. Visit a bank and have someone there explain to you about how interest works. Use the current interest rate and calculate how much interest different sums of money will earn.

III. **Statistics** is collecting and organizing numerical information and studying patterns.

- 1. Explain the meaning of these statistical words and tools: data, averaging, tally marks, bar graph, line graph, pie chart, and percentage.

Data _____

Averaging _____

Tally marks _____

Bar graph _____

Line graph _____

Pie chart _____

Percentage _____

- 2. Conduct an opinion survey through which you collect data to answer a question, and then show your results with a chart or graph. For instance: What is the favorite food of the Cub Scouts in your pack (chart how many like pizza, how many like hamburgers, etc.).

- 3. Study a city newspaper to find as many examples as you can of statistical information.

- 4. Learn to use a computer spreadsheet.

IV. **Probability** helps us know the chance or likelihood of something happening.

- 1. Explain to your den how a meteorologist or insurance company (or someone else) might use the mathematics of probability to predict what might happen in the future (i.e., the chance that it might rain, or the chance that someone might be in a car accident).

- 2. Conduct and keep a record of a coin toss probability experiment.

- 3. Guess the probability of your sneaker landing on its bottom, top, or side, and then flip it 100 times to find out which way it lands. Use this probability to predict how a friend's sneaker will land.

V. **Measuring** is using a unit to express how long or how big something is, or how much of it there is.

1. Interview four adults in different occupations to see how they use measurement in their jobs.

- 1. _____
- 2. _____
- 3. _____
- 4. _____

2. Measure how tall someone is. Have them measure you.

3. Measure how you use your time by keeping a diary or log of what you do for a week. Then make a chart or graph to display how you spend your time.

4. Measure, mix, and cook at least two recipes. Share your snacks with family, friends, or your den.

Requirement resources can be found here:
http://www.meritbadge.org/wiki/index.php/Cub_Scout_Mathematics#Requirement_resources

Important excerpts from the [‘Guide To Advancement’](#), No. 33088:

Effective January 1, 2012, the ‘Guide to Advancement’ (which replaced the publication ‘Advancement Committee Policies and Procedures’) is now the official Boy Scouts of America source on advancement policies and procedures.

- [Inside front cover, and 5.0.1.4] — **Unauthorized Changes to Advancement Program**
No council, committee, district, unit, or individual has the authority to add to, or subtract from, advancement requirements. (There are limited exceptions relating only to youth members with disabilities. For details see section 10, “Advancement for Members With Special Needs”.)
- [Inside front cover, and 7.0.1.1] — The [‘Guide to Safe Scouting’](#) Applies
Policies and procedures outlined in the ‘Guide to Safe Scouting’, No. 34416, apply to all BSA activities, including those related to advancement and Eagle Scout service projects. [Note: Always reference the online version, which is updated quarterly.]
- [4.1.0.3] — **Who Approves Cub Scout Advancement?**
A key responsibility for den leaders is to implement the core den meeting plans as outlined in the Den & Pack Meeting Resource Guide, No. 34409. For Wolf, Bear, and Webelos advancement, den leaders take the lead in approving requirements, though their assistants, and also parents who help at meetings, may be asked to play the role of “Akela” and assist. Parents sign for requirements that, according to meeting plans and instructions in the handbooks, take place at home. For the Bobcat trail and Tiger Cub achievements, parents (or adult partners) should sign in the boy’s handbook; the den leader then approves as progress is recorded in the den’s advancement record.
- [4.1.0.4] — **“Do Your Best”**
Advancement performance in Cub Scouting is centered on its motto: “Do Your Best.” When a boy has done this—his very best—then regardless of the requirements for any rank or award, it is enough; accomplishment is noted. This is why den leaders, assistants, and parents or guardians are involved in approvals. Generally they know if effort put forth is really the Cub Scout’s best.
- [4.1.2.2] — **Cub Scout Academics and Sports Program**
More than just a recognition opportunity, this program develops new skills, improves those existing, and otherwise enriches Cub Scouting. Details can be found in the Cub Scout Academics and Sports Program Guide, No. 34299. Activities include subjects like science, video games, collecting, and chess; and sports such as baseball, skateboarding, and table tennis. Each has two levels—a belt loop and a pin. Belt loops, which can be earned more than once, are awarded when each of three requirements is met. Cub Scouts may then continue with additional requirements and earn the pin. Archery and BB gun shooting are included, but can only be conducted at a council presented activity with certified supervisors.

Additional notes of interest:

- Tiger Cubs, Cub Scouts, and Webelos Scouts may complete requirements for all Academics and Sports Belt Loops and Pins (**except shooting sports**) in a family, den, pack, school, or community environment. Tiger Cubs must work with their parents or adult partners. Parents and partners do not earn loops or pins.
- **“Akela”** (Pronounced “Ah-KAY-la”) — Title of respect used in Cub Scouting—any good leader is *Akela*. *Akela* is also the leader and guide for Cub Scouts on the advancement trail. The name comes from Rudyard Kipling’s Jungle Book. (See “Law of the Pack.”)
- **“Law of the Pack”** —
The Cub Scout follows Akela.
The Cub Scout helps the pack go.
The pack helps the Cub Scout grow.
The Cub Scout gives goodwill.