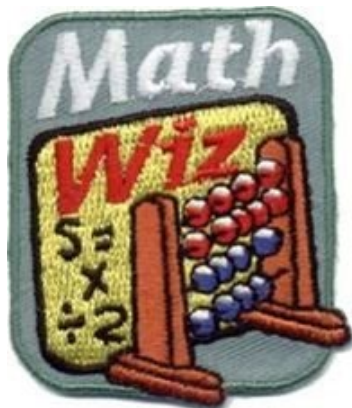# Math Genius
Council Patch Program

We need math, use math, and must understand math in so many various areas of life. You don't have to be brilliant in math to earn this patch – just start where you are! Math is everywhere around us.

If the requirement is starred (*) then it is a mandatory activity for all age levels.

Discover:

Daisies complete 2; Brownies complete 3; Juniors complete 4; Cadettes, Seniors and Ambassadors complete 5

A. Interview parents, older siblings, relatives, or adult friends to identify 10 ways that math is used in everyday life.

B. Mathematics is called the "language of science." Research how math is used in science and learn at least 5 math terms used in science.

C. Look through magazines, online newspapers, or other journals and find how graphs are used as a visual representation of complex topics. What are the different kinds of graphs? What data is represented best by different graphs? Make at least one graph of your own with some data you collect from a questionnaire you created. Ideas: Graph the favorite ice cream flavors, pizza toppings, pets of Girl Scouts in your troop. Be sure to use the best type of graph for the data you collect.

D. Learn about magic squares byjus.com/maths/magic-square/ and make one for friends, family, or Girl Scouts.

E. A tessellation is a beautiful artwork using repeating patterns. Learn about them here bit.ly/3Xp7Lld. Make a piece of artwork with tessellations.

F. It is said that a person's arm span (fingertip to fingertip) is the same as their height. Measure your arm span and height, then measure at least 8 other people to see if this idea is correct. What did you find?

G. Understanding money can help you understand fractions. For example, a quarter is ¼ of a dollar. 5 nickels equal a quarter, so a nickel is a 1/5 of a quarter, or 1/5 of ¼ dollar or 1/20th of a dollar. Come up with at least 10 more of these comparisons between money and fractions.

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Connect:

Daisies complete 1; Brownies complete 2; Juniors complete 3; Cadettes, Seniors and Ambassadors complete 4

A. Most countries use metric system or SI (International System) for measuring. Find out at least one country which does not and make a list comparing their measuring systems.

B. Mathematical connections can be found in many places, including art. One such connection is that some individuals known as artists have used math to help them create their art. Research one of the following and determine how what their math/art connection was. Leonardo da Vinci, Albrecht Dürer, Luca Pacioli, or M.C. Escher. Teach friends, family, or fellow Girl Scouts about what you learned.

C. We don't often hear about women in mathematics history. Investigate at least 3 of the following women in math: Euphemia Lofton Haynes, Hypatia of Alexandria, Elena Cornaro Piscopia, Sofia Kovalevskaya, Maria Gaetana Agnesi, Sophie Germain, Gloria Hewitt, Lesley Sibner. Create a presentation about one of the women you investigate to share.

D. A mandala is a Sanskrit word meaning circle or magic circle. Create a mandala and learn about various cultures and religions that use mandalas. See 100mandalas.com/what-is-a-mandala/ for more information.

E. The connection between sports and math is unmistakable. Football fans know how many yards were thrown by their favorite quarterback. Baseball statistics include RBI numbers and mph of the fastballs. The Olympic Games are filled with numbers, speeds, medal counts, and world records. Study your favorite sport and see how math plays a vital role.

Take Action:

Daisies complete 1; Brownies complete 1; Juniors complete 2; Cadettes, Seniors and Ambassadors complete 2

A. Find a younger sibling, Girl Scout, or friend and create a math game for them to play. Be sure that it can be completed by someone younger and play it at least twice.

B. Often, it is surprising to see which careers use math daily. Interview someone with a career outside of the mathematics field and find out how math plays a vital role in their work.

C. April is Mathematics Awareness Month. Find out if any activities are happening around Mathematics Awareness Month, and join in. If there are no activities already planned, gather some friends, and bring some ideas to your math teacher at school.

D. Galileo Galilei observed in 1623 that the entire universe "is written in the language of mathematics." Even music is based upon mathematical relationships. The ideas of octaves, chords, scales, keys, tempo, frequency, pitch, and musical notation (half notes, quarter notes, etc.) are all mathematically connected. Create a musical (and thus mathematical) instrument and teach someone else how to make it. Explain to them how math and music are related.

girl scouts
of utah