

The BSA **NOVA** Awards Program

*Delivering the Wonders of Science,
Technology, Engineering and Mathematics to
The Scouting Program*



1-2-3 GO!

This module is designed to help you explore how math affects your life each day.

Math and physics are used in almost every kind of invention, including cars, airplanes, and telescopes. Math also includes cryptography, the use of secret codes.

1. Choose A or B or C and complete ALL the requirements.
 - A. Watch an episode or episodes (about one hour total) of a show that involves math or physics. Then do the following:
 1. Make a list of at least two questions or ideas from what you watched.
 2. Discuss two of the questions or ideas with your counselor.
 - B. Read (about one hour total) about anything that involves math or physics. Then do the following:
 1. Make a list of at least two questions or ideas from what you read.
 2. Discuss two of the questions or ideas with your counselor.

Some examples include - but are not limited to - shows found on PBS ("NOVA"), Discovery Channel, Science Channel, National Geographic Channel, TED Talks (online videos), and the History Channel. You may choose to watch a live performance or movie at a planetarium or science museum instead of watching a media production. You may watch online productions with your counselor's approval and under your parent's supervision.

Books on many topics may be found at your local library. Examples of magazines include but are not limited to Odyssey, KIDS DISCOVER, National Geographic Kids, Highlights, and OWL or owlkids.com.

- C. Do a combination of reading and watching (about one hour total) about anything that involves math or physics. Then do the following:
1. Make a list of at least two questions or ideas from what you read and watched.
 2. Discuss two of the questions or ideas with your counselor.
2. Complete the Mathematics OR Computers pin.
3. Choose TWO options from A or B or C and complete ALL the requirements for those options. Keep your work to share with your counselor. The necessary information to make your calculations can be found in a book or on the Internet. (See the Helpful Links box for ideas.) You may work with a parent or your counselor on these calculations.
- A. Choose TWO of the following places and calculate how much you would weigh there.
1. On the sun or the moon.
 2. on Jupiter or Pluto.
 3. On a planet that you choose.
- B. Choose ONE of the following and calculate its height:
1. A tree.
 2. Your house.
 3. A building of your choice.
- C. Calculate the volume of air in your bedroom. Make sure your measurements have the same units - all feet or all inches - and show your work.

$$\text{Volume} = \text{Length} \times \text{Width} \times \text{Height}$$

4. Secret Codes.
- A. Look up, then discuss with your counselor each of the following:
1. Cryptography.
 2. At least three ways secret codes or ciphers are made.
 3. How secret codes and ciphers relate to mathematics.
- B. Design a secret code or cipher. Then do the following:
1. Write a message in your code or cipher.
 2. Share your code or cipher with your counselor.
5. Discuss with your counselor how math affects your everyday life.