

The BSA **NOVA** Awards Program

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



Swing!

This module is designed to help you explore how engineering and simple machines called levers affects your life each day.

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 about anything related to motion or machines. 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.

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.

- B. Read (about one hour total) about anything related to motion or machines. 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.

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 related to motion or machines. 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 ONE belt loop or pin from the following list. (Choose one that you have not already earned.)

Badminton
Baseball
BB-gun Shooting
Fishing

Golf
Hockey
Mathematics
Softball

Table Tennis
Tennis
Ultimate

3. Levers:

- A. Make a list or drawing of the three types of levers. (A lever is one kind of simple machine.)

- B. Be able to tell your counselor:

1. The class of each lever.
2. How each lever works.

- C. With your counselor, discuss:

1. The type of lever that is involved with the motion for the belt loop or pin you chose for requirement 2.
2. What you learned about levers and motion from earning your belt loop or pin.
3. Why we use levers.

4. Do the following:

- A. Visit a place that uses levers, such as a playground, carpentry shop, construction site, restaurant kitchen, or any other location that uses levers.
- B. Discuss with your counselor the equipment or tools that use levers in the place you visited.

Visitations to places like carpentry shops, construction sites, restaurant kitchens, etc., will require advance planning by the counselor. The counselor should call ahead to make arrangements, and make plans to have appropriate supervision of all Scouts.

The site will very likely have rules and instructions that must be followed. The counselor should help ensure that all the participants are aware of and follow those rules. This may include safety procedures and other instructions.

5. Do EACH of the following:

- A. On your own, design, including a drawing, sketch, or model, ONE of the following:

1. A playground fixture that uses a lever
2. A game or sport that uses a lever
3. An invention that uses a lever

- B. Discuss with your counselor the equipment or tools that use levers in the place you visited.

6. Discuss with your counselor how levers affect your everyday life.