

# MERIT BADGE SERIES



# INVENTING



BOY SCOUTS OF AMERICA®



BOY SCOUTS OF AMERICA  
MERIT BADGE SERIES

# INVENTING



LEMELSON-MIT PROGRAM

*celebrating innovation, inspiring youth*

**The Inventing merit badge and pamphlet were made possible in part by the Lemelson-MIT Program.**

*"Enhancing our youths' competitive edge through merit badges"*



BOY SCOUTS OF AMERICA®

# Requirements

1. In your own words, define *inventing*. Then do the following:
  - a. Explain to your merit badge counselor the role of inventors and their inventions in the economic development of the United States.
  - b. List three inventions and state how they have helped humankind.
2. Do ONE of the following:
  - a. Identify and interview with a buddy (and with your parent's permission and merit badge counselor's approval) an individual in your community who has invented a useful item. Report what you learned to your counselor.
  - b. Read about three inventors. Select the one you find most interesting and tell your counselor what you learned.
3. Do EACH of the following:
  - a. Define the term *intellectual property*. Explain which government agencies oversee the protection of intellectual property, the types of intellectual property that can be protected, how such property is protected, and why protection is necessary.
  - b. Explain the components of a patent and the different types of patents available.
  - c. Examine your Scouting gear and find a patent number on a camping item you have used. With your parent's permission, use the Internet to find out more about that patent. Compare the finished item with the claims and drawings in the patent. Report what you learned to your counselor.
  - d. Explain to your counselor the term *patent infringement*.
4. Discuss with your counselor the types of inventions that are appropriate to share with others, and explain why. Tell your counselor about one unpatented invention and its impact on society.

5. Choose a commercially available product that you have used on an overnight camping trip with your troop. Make recommendations for improving the product, and make a sketch that shows your recommendations. Discuss your recommendations with your counselor.
6. Think of an item you would like to invent that would solve a problem for your family, troop, chartered organization, community, or a special-interest group. Then do EACH of the following, while keeping a notebook to record your progress.
  - a. Talk to potential users of your invention and determine their needs. Then, based on what you have learned, write a statement describing the invention and how it would help solve a problem. This statement should include a detailed sketch of the invention.
  - b. Create a model of the invention using clay, cardboard, or any other readily available material. List the materials necessary to build a prototype of the invention.
  - c. Share the idea and the model with your counselor and potential users of your invention. Record their feedback in your notebook.
7. Build a working prototype of the item you invented for requirement 6\*. Test and evaluate the invention. Among the aspects to consider in your evaluation are cost, usefulness, marketability, appearance, and function. Describe how your original vision and expectations for your invention are similar or dissimilar to the prototype you built. Have your counselor evaluate and critique your prototype.

\*Before you begin building the prototype, you must have your counselor's approval, based on the design and building plans you have already shared.
8. Do ONE of the following:
  - a. Participate with a club or team (robotics team, science club, or engineering club) that builds a useful item. Share your experience with your counselor.
  - b. Visit a museum or exhibit dedicated to an inventor or invention, and create a presentation of your visit to share with a group such as your troop or patrol.
9. Discuss with your counselor the diverse skills, education, training, and experience it takes to be an inventor. Discuss how you can prepare yourself to be creative and inventive to solve problems at home, in school, and in your community. Discuss three career fields that might utilize the skills of an inventor.

# Inventing Resources

## Scouting Literature

*American Business, American Labor, Architecture and Landscape Architecture, Composite Materials, Digital Technology, Drafting, Electronics, Engineering, Entrepreneurship, Game Design, Home Repairs, Metalwork, Model Design and Building, Programming, Robotics, Textiles,* and *Woodwork* merit badge pamphlets

Visit the Boy Scouts of America's official retail website (with your parent's permission) at <http://www.scoutstuff.org> for a complete listing of all merit badge pamphlets and other helpful Scouting materials and supplies.

## Books

- Anderson, Maxine. *Amazing Leonardo da Vinci Inventions You Can Build Yourself*. Nomad Press, 2006.
- Boy Scouts of America. *Boy Scouts Handbook, The First Edition, 1911*, reprint. Dover Publications, 2005.
- Brown, David E. *Inventing Modern America: From the Microwave to the Mouse*. MIT Press, 2002.
- Brown, Travis. *Popular Patents America's First Inventions From the Airplane to the Zipper*. The Scarecrow Press, 2000.

Carson, Mary Kay. *The Wright Brothers for Kids*. Chicago Review Press, 2003.

Griffith, Saul, Nick Dragotta, and Joost Bonsen. *Howtoons: The Possibilities are Endless*. HarperCollins Publishers, 2007.

Macaulay, David, and Neil Ardley. *The New Way Things Work*. Houghton Mifflin Company, 1998.

Robinson, James. *Inventions*. Kingfisher, 2006.

Sobel, Dava, and William J. H. Andrewes. *The Illustrated Longitude*. Walker and Company, 1998.

Woodford, Chris, James Flint, Ben Morgan, Clint Witchalls, and Luke Collins. *Cool Stuff and How It Works*. DK Publishing Inc., 2005.

## Periodicals

### **Make**

Website: <http://makezine.com>

### **Inventors Digest**

Website: <http://www.inventorsdigest.com>

## Organizations and Websites

### **CreativeFuture**

Website: <http://www.creativefuture.org>

### **Design Squad**

Website: <http://pbskids.org/designsquad>

### **FreePatentsOnline**

Website: <http://www.freepatentsonline.com>

**Howtoons**

Website: <http://www.howtoons.com>  
 This do-it-yourself comic website with tools of mass construction includes fun projects.

**Lemelson-MIT Program  
Massachusetts Institute  
of Technology**

Website: <http://lemelson.mit.edu/>  
 The program recognizes outstanding inventors, encourages sustainable new solutions to real-world problems, and enables and inspires young people to pursue creative lives and careers through invention. The program is funded by the Lemelson Foundation and administered by the Massachusetts Institute of Technology.

**OpenCourseWare**

Website: <http://ocw.mit.edu/index.htm>  
 A special section, “Highlights for High School,” features materials useful for students and their teachers.

**SolidWorks®**

Website: <http://www.solidworks.com>  
 Free trial software is available for Boy Scouts.

**U.S. Patent and Trademark Office**

Website: <http://www.uspto.gov>

**Acknowledgments**

The Boy Scouts of America thanks the Lemelson-MIT Program and Dassault Systèmes SolidWorks Corporation for

their support in the development of the new Inventing merit badge and production of the inaugural edition of the *Inventing* merit badge pamphlet.



**LEMELSON-MIT PROGRAM**  
*celebrating innovation, inspiring youth*

Special thanks to patent attorney Mike Brown for his guidance on legal issues and terminology and for providing much of the material for the revisions in this edition of the *Inventing* merit badge pamphlet.

The Boy Scouts of America is grateful to the men and women serving on the Merit Badge Maintenance Task Force for the improvements made in updating this pamphlet.

**Photo and Illustration Credits**

Gihan Amarasiriwardena, courtesy—pages 66 and 67

Jared Berrett, courtesy—cover (*power-assisted litter*); pages 60, 61, 62 (*water bottle clip*), 72 (*drawing, litter*), and 73 (*drawing, model*)

Edward Byrnes, courtesy—page 74

The Coleman Company, courtesy—pages 42 (*lantern, logo*) and 50 (*mess kit*)

Greg Crenshaw—page 48 (*Scout*)

Dassault Systèmes SolidWorks Corporation, courtesy—cover (*iPod docking station*); pages 25, 62 (*robotic arm*), and 93

Sara DeSalvo, courtesy—pages 68 and 69 (*Scouts, chess piece*)

The vision for this merit badge and much of the content for the *Inventing* merit badge pamphlet was provided by Boy Scouts from across the country, many of whom are young inventors. In addition to Boy Scouts, many people from university laboratories, high schools, museums, and corporations gave freely of their time and resources to make this merit badge a reality because they believe in the inventive spirit.