



Engineer

Webelos Activity Workbook

This workbook is not required but can help you with this award. Belt Loops and Pins may be earned more than once.

Links to other workbooks and resources are at the end of this workbook: [Online Resources](#).

Send comments to the workbook developer: craig@craiglincoln.com. Workbook updated: May 2009.

Scout's Name: _____ Pack: _____ Activity Badge Counselor: _____

Do both of these:

1. Talk to an engineer, surveyor, or architect in your area about the different occupations in engineering. Create a list that tells what they do.

2. Draw a floor plan of your house. Include doors, windows, and stairways.

A large rectangular area filled with a light blue grid, intended for drawing a floor plan of a house. The grid consists of small squares, approximately 20 units wide and 30 units high.

And do four of these:

3. Visit a construction job. _____

Look at a set of plans used to build the facility or product. Tell your Webelos den leader about these. (Get permission before you visit.) _____

4. Visit a civil engineer or surveyor to learn how to measure the length of a property line. _____

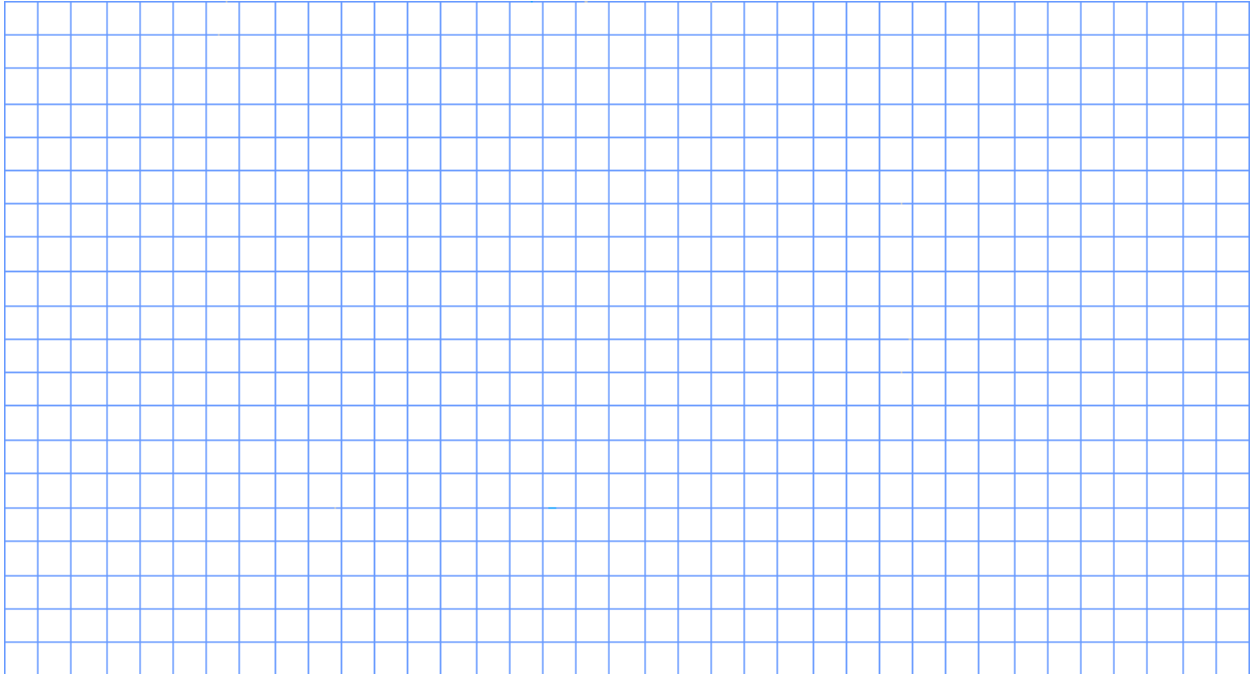
Explain how property lines are determined. _____

5. Tell about how electricity is generated _____

and then gets to your home. _____

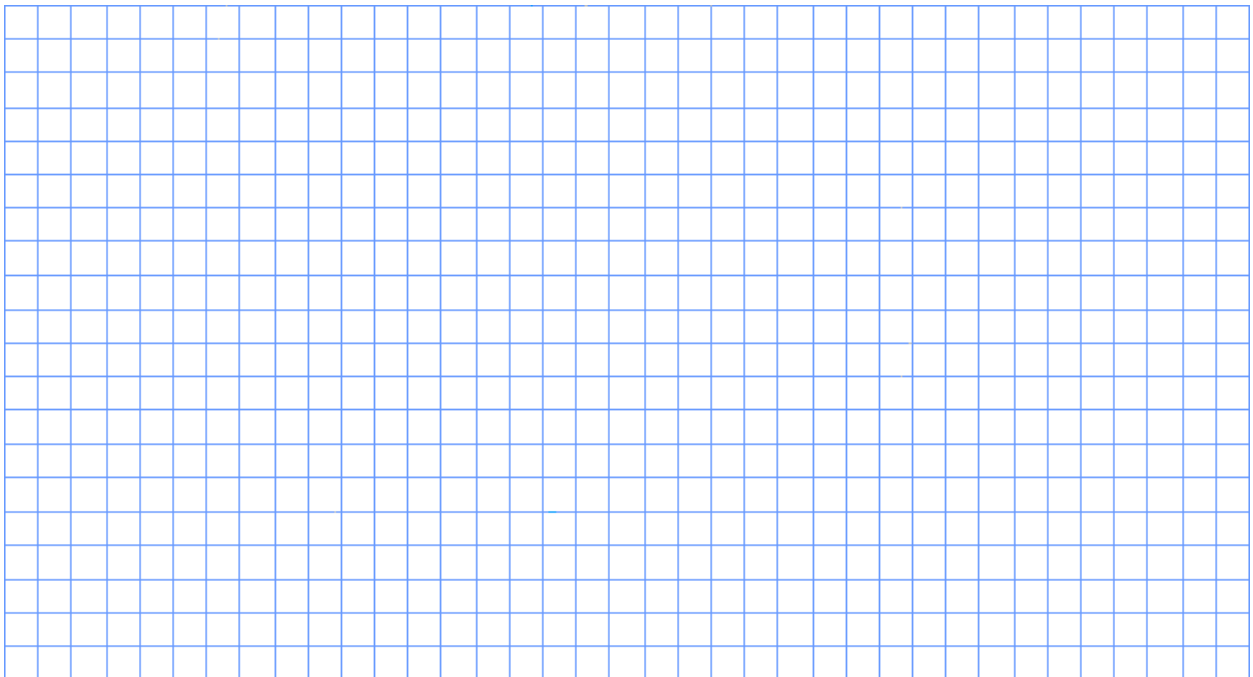
6. Construct a simple working electrical circuit using a flashlight battery, a switch, and a light. _____

7. Make drawings of three kinds of bridges and explain their differences. Construct a model bridge of your choice.



Bridge Type: _____

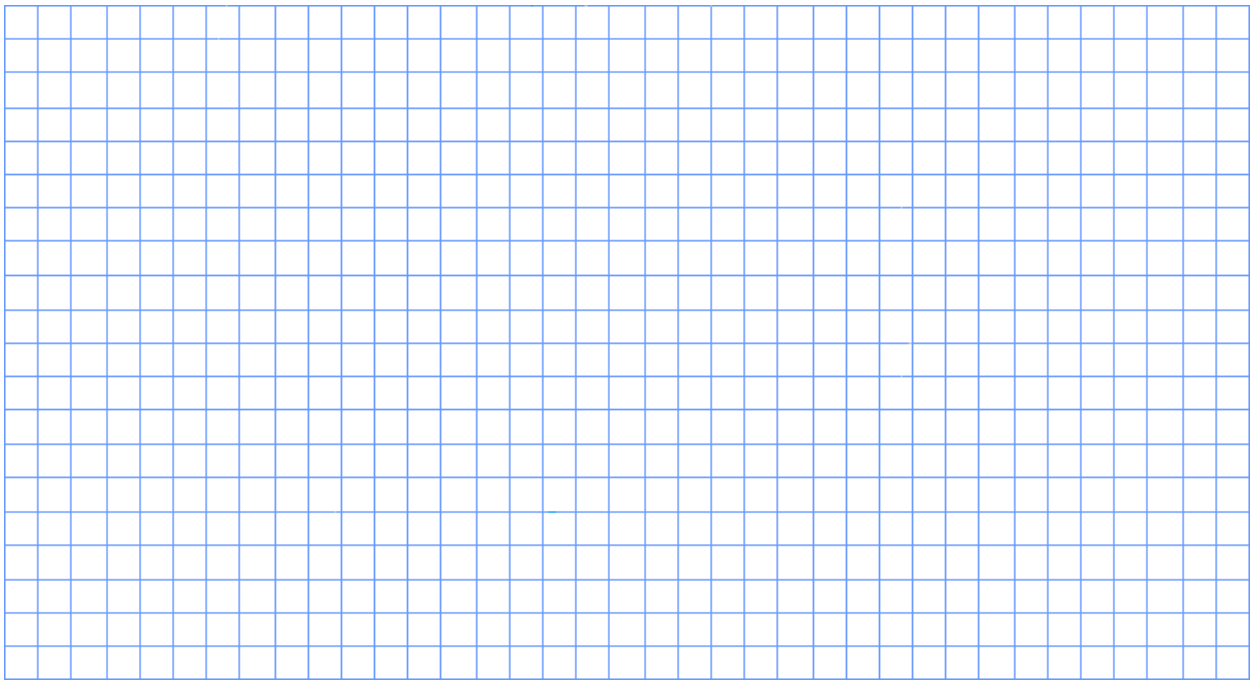
Differences _____



Bridge Type: _____

Differences _____





Bridge Type: _____

Differences _____

8. Make a simple crane using a block and tackle and explain how the block and tackle is used in everyday life. _____

9. Build a catapult and show how it works. _____

10. While you are a Webelos Scout, earn the Cub Scout Academics belt loop for Mathematics. *(All boys may earn belt loops and pins more than once...Cub Scout Academics and Sports Program Guide p. 4)* _____

Online Resources (Use any Internet resource with caution and only with your parent's or guardian's permission.)

Engineer is helping to prepare you for [Engineering](#), [Architecture](#), [Electricity](#), and [Surveying](#) Merit Badges.

Webelos Activity Badge Workbooks: [meritbadge.org](#) -or- [usscouts.org](#)

Cub Scout Academics and Sports Workbooks: [meritbadge.org](#) -or- [Academics](#) / [Sports](#)

Resources: ► [scouting.org](#) ► [Guide to Safe Scouting](#) ► [Age-Appropriate Guidelines](#) ► [Safe Swim Defense](#)

Boy Scout Merit Badge Workbooks: [meritbadge.org](#) -or- [usscouts.org](#) **Merit Badge Books:** [www.scoutstuff.org](#)

Requirement Resources

These resources and much more are at: <http://meritbadge.org/wiki/index.php/Engineer>

1. [Careers in Engineering](#) - [Discover Engineering](#) - [About.com Engineering Careers](#) - [Fields \(Type\) of Engineering](#) - p. 213

2. Graph paper to draw your floor plan is in the [Engineer Worksheet](#) - [How to draw a Scale Floor Plan](#) - p. 214

3. Visit a construction job. Look at a set of plans - p. 215

[How to Read Blueprints \(with symbols\)](#) - [How to Read Blueprints One-Page PDF](#) - [Video: How to Read Blueprints](#)

4. Visit a civil engineer or surveyor to learn how to measure the length of a property line - p. 215

[Video: How to Identify Property Lines](#) - [How to Determine your Property Lines \(with sample land plats\)](#) - [eHow: Understand Your Home's Property Survey \[http://www.wsls.org/water_files/PLATSOFSURVEYS/plat-of-survey-john-doe.jpg Sample Plat of Survey](#) -

See [Surveying](#) merit badge for more.

5. Electricity generation & transmission - p. 216

[How Electricity Works](#) - [What is Electricity?](#)

6. Construct a simple working electrical circuit using a flashlight battery, a switch, and a light - p. 216

[How to Make a Simple Electrical Circuit](#) - [Electrical Circuit Lesson Plan](#) -

7. Graph paper to draw your bridges is in the [Engineer Worksheet](#) - p. 218-20

[Nova: What Bridge To Build?](#) - [File Card Bridges](#) - [Bridge Building Links](#)

8. Crane using a block and tackle - pp. 221-3

[How Stuff Works](#) - [How a Block and Tackle Works \(animated\)](#)

9. Build a catapult and show how it works - pp. 224-5

[Simple Lego & Dowel Catapults](#) - [Video: How to Build a Catapult](#) - [How to Build a Simple Catapult](#)
- [How does a catapult work?](#)

10. [Cub Scout Academics belt loop for Mathematics](#)

“ Many Webelos Scouts may earn belt loops and pins a second time to qualify for [Webelos Activity Badges](#). All boys may earn belt loops more than once; however, leaders should encourage boys to try different requirements and earn the pin. Packs should have a clear policy in place to determine whether the pack or the boy's family will be responsible for the cost of awards that are earned more than once. ”

— [Cub Scout Academics and Sports Program Guide #34299B](#), p.4 and [Cub Scout Leader Book](#), p. 31-1.

General Resources

[CubRoundtable: Engineer 24 page reference guide- 302KB\)](#)

[KISMIF: Engineer Links](#)

[Bill Smith's Webelos Leader Resources: Engineer](#)

[Webelos Roundtable Packet: Engineer](#)

Amer. Institute of Chemical Eng.: <http://www.aiche.org>

Amer. Soc. of Civil Eng.: <http://www.asce.org>

ASME (Amer. Soc. of Mechanical Eng.): <http://www.asme.org>

Institute of Electrical and Electronics Eng: <http://www.ieee.org>

Jet Propulsion Laboratory: <http://www.jpl.nasa.gov>

Junior Engineering Technical Soc.: <http://www.jets.org>

Kennedy Space Center: <http://www.ksc.nasa.gov>

NASA: <http://www.nasa.gov>

Smithsonian National Air and Space Museum: <http://www.nasm.si.edu>