

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. _____

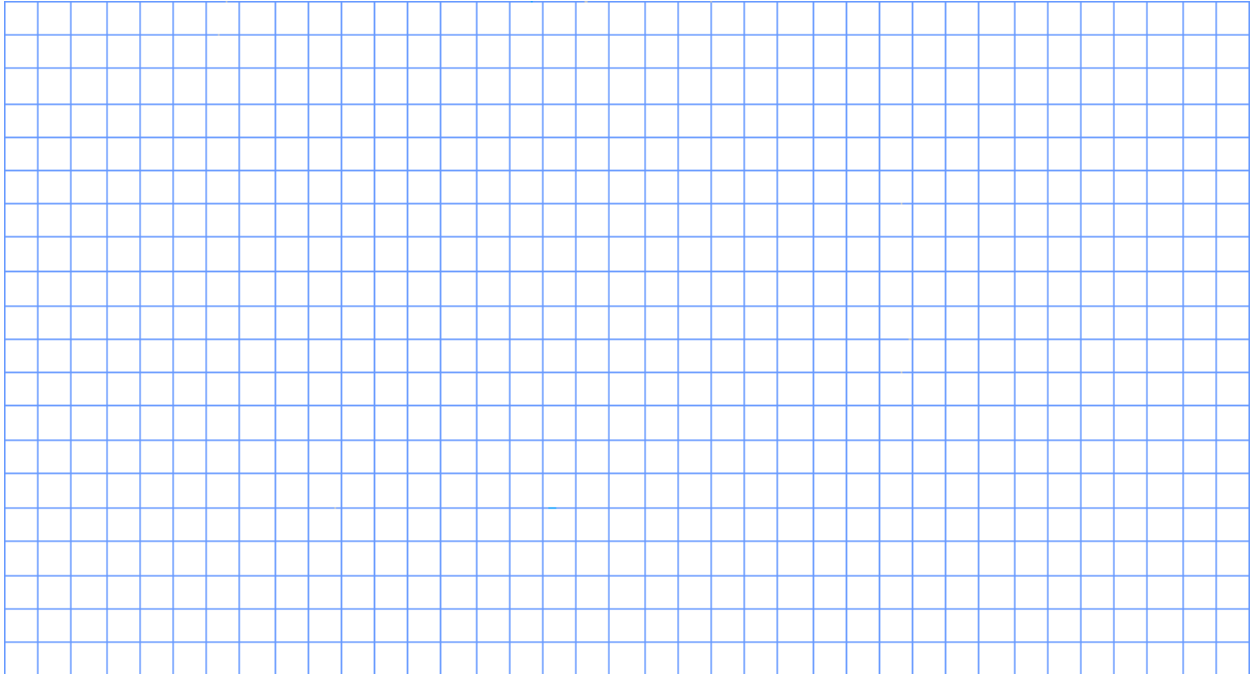
Explain how property lines are determined. _____

5. Tell about how electricity is generated _____

and then gets to your home. _____

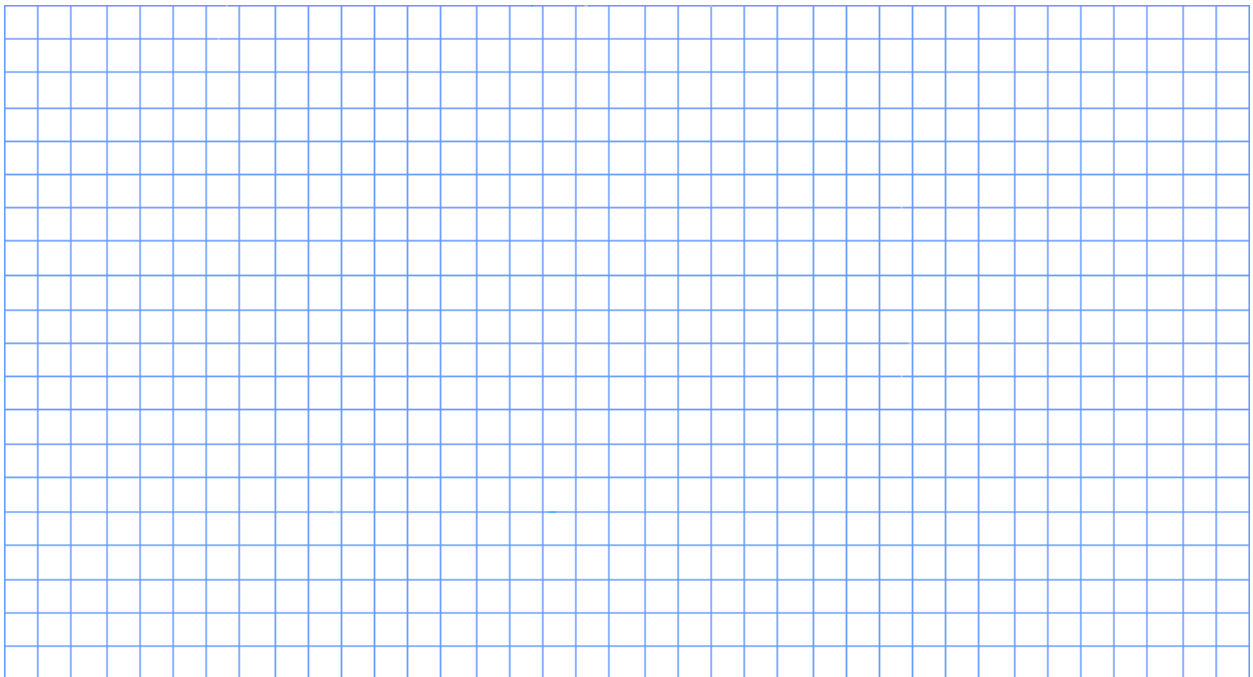
6. Construct a simple working electrical circuit using a flashlight battery, a switch, and a light. _____

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



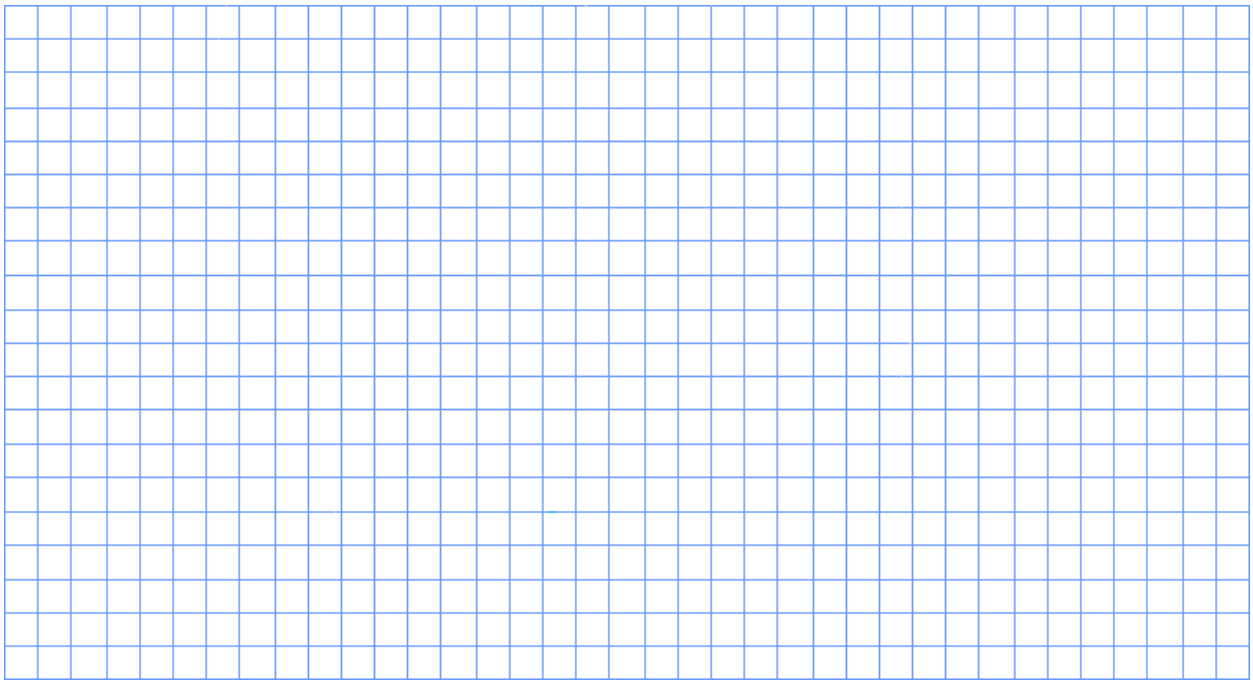
Bridge Type: _____

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>