

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.

And do <u>four</u> 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. _____

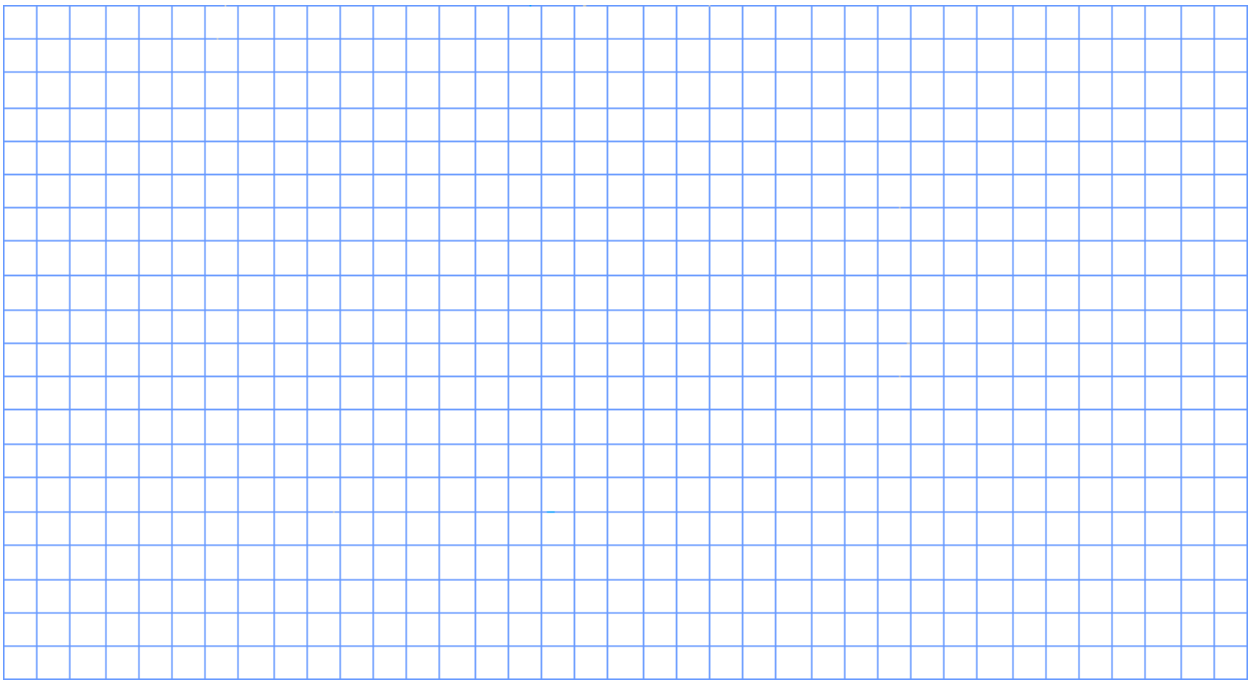
Explain how property lines are determined. _____

☐ 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.

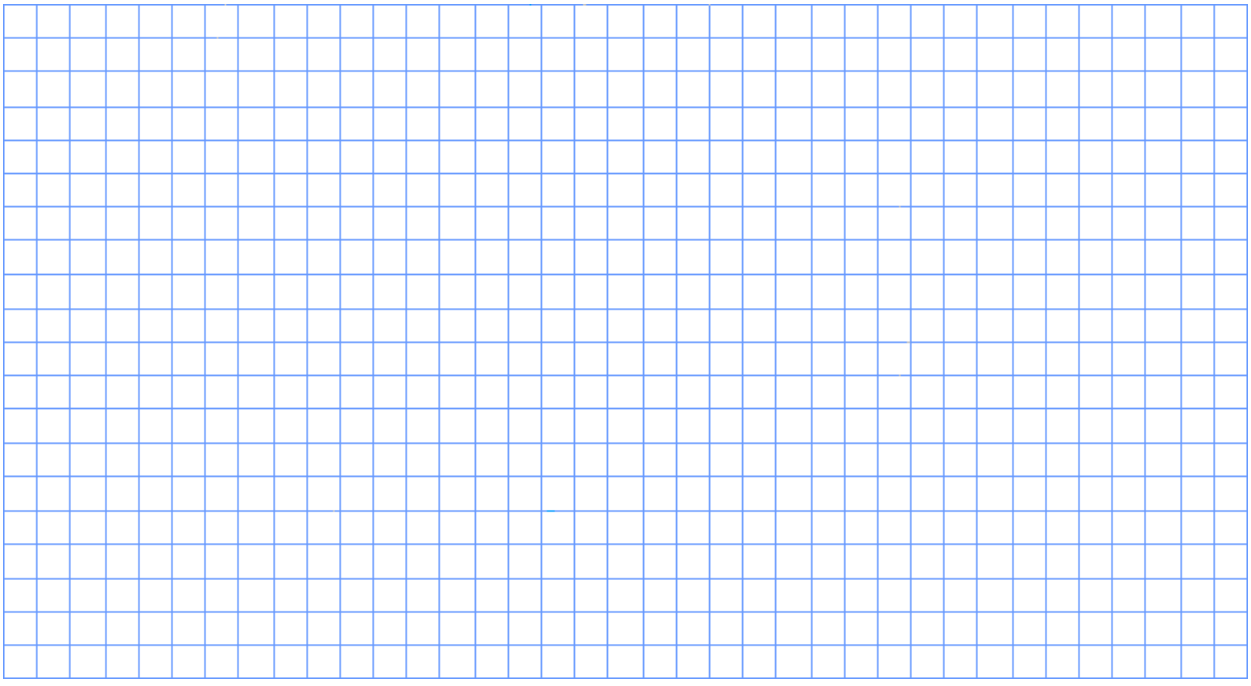


Bridge Type: _____

Differences_____

_____

_____

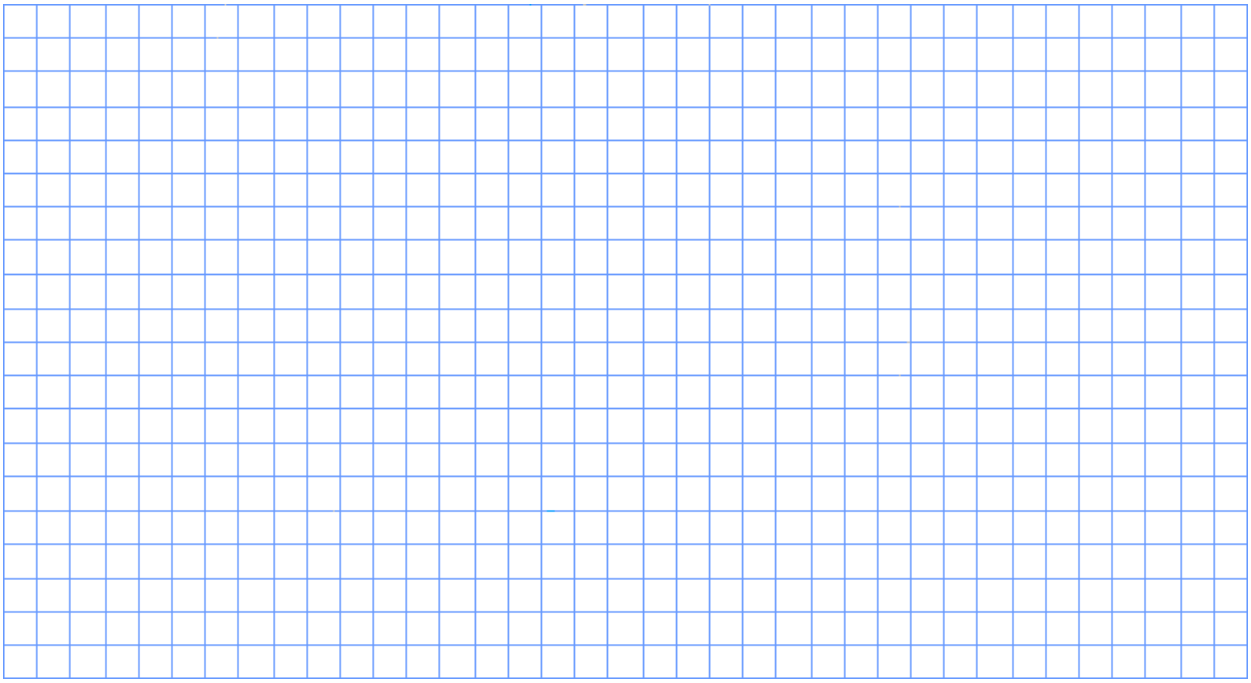


Bridge Type: _____

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 Electicity?

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