



WEBELOS

ENGINEER



ENGINEERING RESOURCES

One good way to find out about engineering and what engineers do is to contact a training ground for engineers. Fortunately, there are many schools within the Circle Ten Council area. Some contact information is listed in the box to the right.

Another excellent source of information is a professional organization or society dedicated to the vocation in which you are interested. For instance, Texas Society of Professional Engineers is an organization of engineering professionals who help promote public appreciation of the work and achievements of engineers in industry. They also encourage participation in community and civic affairs. They help promote engineering through scholarships and several community programs

Texas Society of Professional Engineers

P.O. Box 2145
Austin, TX 78768
or
3501 Manor Road
Austin, TX 78723
Phone: (512) 472-9286
(800) 580-8973 in Texas
Fax: (512) 472-2934
<http://www.tspe.org>

THEY DO WHAT?!

At a den meeting, hand out copies of the Employment section of the local news paper. Include listings for Computer Professionals, Professional Degree Required and Engineers Technical. Have the boys go through each section and pick one of the openings, then have them explain to the rest of the den what kind of work they would be doing if they were hired for that job. It is real very interesting to see how the boys view some of the jobs and which ones hold the most interest. This activity takes about 30 minutes to complete.

Southern Methodist University
School of Engineering and Applied Science
PO Box 750335
Dallas, Texas 75275-0335
Phone: (214) 768-3050
Fax: (214) 768-3845
<http://www..smu.edu>
Office of the Dean
School of Engineering and Applied Science
<http://www.seas.smu.edu>

University of Texas at Dallas
Erik Jonsson School of Engineering and
Computer Science
2601 North Floyd Road
P.O. Box 830688 EC 32
Richardson, Texas 75083-0688
Phone: (972) 883-2974
Fax: (972) 883-2813
<http://www.utdallas.edu>
Office of the Dean
Erik Jonsson School of Engineering and
Computer Science
<http://www.utdallas.edu/dept/eecs>

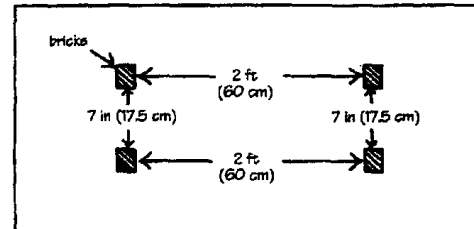
University of Texas at Arlington
College of Engineering
PO Box 19019
Arlington, Texas 76019
Phone: (817) 272-2571
Fax: (817) 272-2548
<http://www.uta.edu>
Dr J. Ronald Bailey
Dean, College of Engineering,
<http://www-eng.uta.edu>

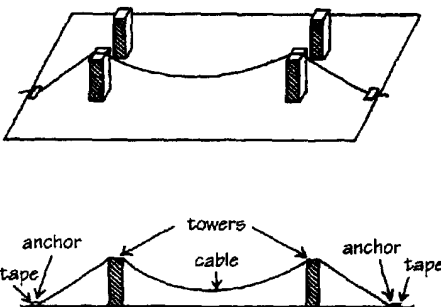
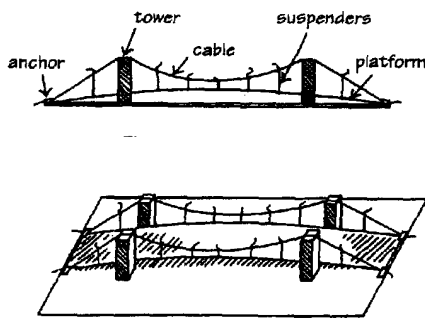
HANGING BY A THREAD

Upon completing this project, your den will have built a suspension bridge. The instruction seems long and complicated, but it isn't really. Use illustrations as a guide.

Materials needed:

heavy cardboard 2' x 4' 4 bricks or wooden blocks
large ball of strong string yardstick
duct tape (heavy tape) scissors
lightweight cardboard 6" x 5'



1. Place the heavy cardboard on a firm surface. This is the base for the bridge.
2. Place the 4 bricks on end on the cardboard base so they form the corners of a rectangle 7" wide and 2' long. These are the towers.
3. Tape one end of the string to one 2' edge of the cardboard in line with one of the bricks. This is the anchor. Drape the string over the top of the brick, straight across the space between the bricks, and over the opposite brick. Leave enough string so that it hangs down between the bricks about 3". Tape the loose end of the string to the opposite side of the cardboard. This will form the other anchor. Cut the string. The length of string hanging between the bricks is called the cable.
 
4. Do the same thing on the other side of the bridge, using the other two bricks. Make sure this string hangs down the same distance as the first cable. You now have two cables.
5. Carefully slide the lightweight cardboard so it stretches the length of the bridge and lies between the bricks. This will be the platform, or roadway.
6. Cut seven 12" pieces of string. Tie one end of each piece of string every 4" along one of the cables. These are your suspenders.
7. Slide each of the suspenders under the lightweight cardboard. Tie the free end of each of the suspenders to the other cable. The suspenders closest to the towers should be longer than those in the middle of the bridge. In the middle of the bridge the platform should be suspended about 3" above the cardboard base. Trim the excess string from the suspenders.
 
8. Now that the platform is hung, gently bend the ends so that they touch the cardboard base. Tape the ends to the base. You now have a road that goes across a suspended bridge.

You have created a suspension bridge. The suspenders take the weight of the platform up to the cables. The cables then carry this weight to the towers and the anchors. The weight of the



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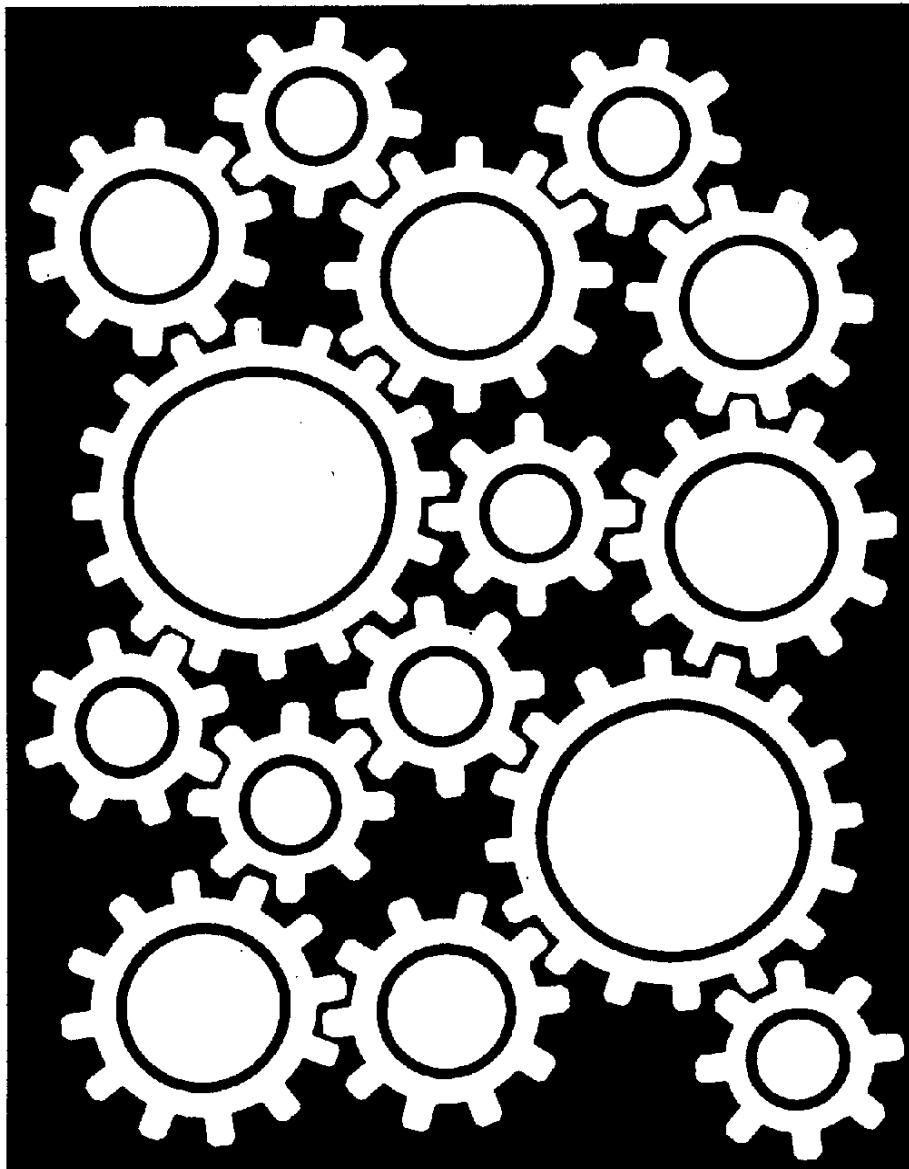


HANGING BY A THREAD, continued

platform pulls upward on the anchors and downward on the towers. The towers are strong rigid structures, like your bricks, so they can support a lot of weight. The anchors need to be well secured to a firm object (usually land). Suspension bridges use much less material than traditional bridges and can span large distances.

GEARS

Which gear must be removed so that all the rest will turn together? If you turn one of the gears one way, which directions do the rest of the gears turn (except one)?



BASKETBALL CATAPULT

Materials needed:

1" x 4" board (base, backboard, hoop)

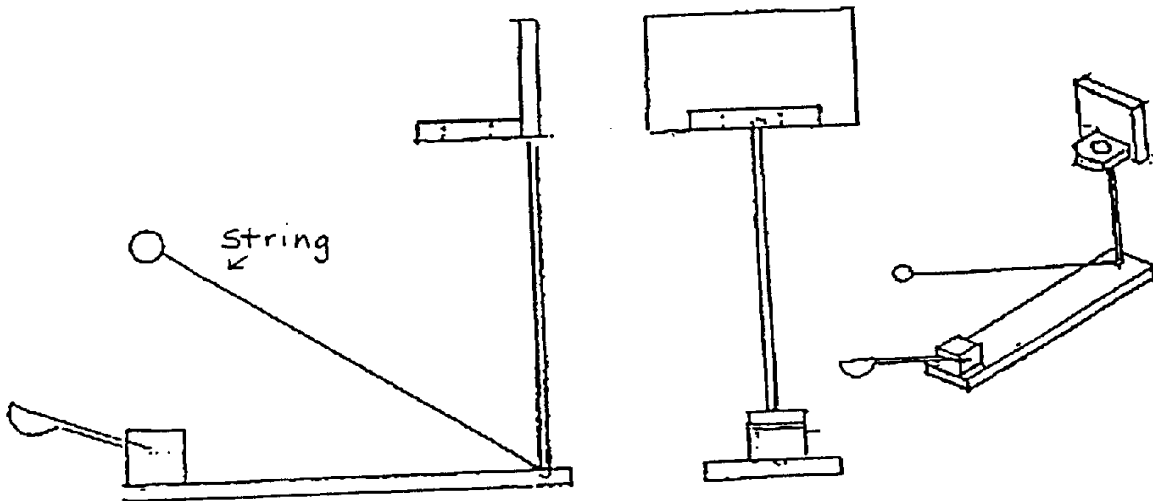
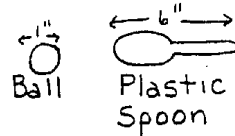
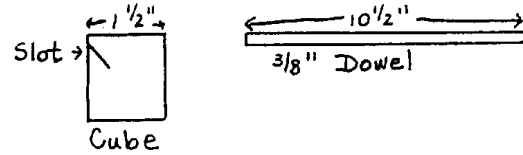
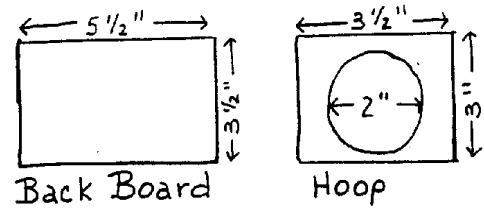
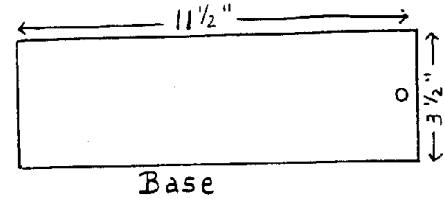
wooden block (approx. 2" x 2")

3/8" diameter wooden dowel

plastic spoon heavy string

ping pong ball

Cut base to 11 1/2" length and backboard to 5 1/2" length. Drill holes 3/8" in diameter and 1/2" deep in backboard and base for dowel. Cut a slot at a 15° angle in a cube block large enough for the handle of a plastic spoon. Cut hole for the hoop first, then finish cutting the hoop piece. If preferred, you can substitute a short length of 2" PVC pipe for the wooden hoop. Glue the hoop to the backboard (if using PVC, screw in to backboard), then glue the dowel into the pre-drilled holes in the backboard and base. Glue the cube block to the base and insert the spoon into the slot. Cut string and attach one end to the base of the dowel rod and the other end to the ping pong ball. Let 'er rip!





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THE TEXAS UTILITIES TREASURE TROVE

Texas Utilities

Phone: (800) 421-2489

Email: ecodev@tue.e-mail.com

Web: <http://www.tu.com>

Texas Utilities operates 24 power plants in north Texas and covers most of the Circle Ten Council area. These plants serve 1.25 million customers and can produce 22457 megawatts of power. Nineteen of the power plants are fueled by natural gas, four by lignite coal, and one by nuclear fuel. Some of the community service and education/outreach programs sponsored by Texas Utilities are listed below.

Arcing demonstrations

Your Local TU Office

Appearances dependent upon availability of volunteers and equipment

This is a safety program children will never forget. They'll see what happens when a kite flies too close to a power line or a conductor touches an outdoor transformer. The 10-minute demonstration by two trained volunteers underscores the power of electricity and gives credibility to warnings about avoiding outdoor electrical equipment. The arcing program cannot be performed without easy access to a transformer.

Comanche Peak Power Plant

Visitors Information Center

TU Electric

PO Box 2300

Glen Rose, TX 76043

Monday through Saturday, 9 a.m. to 4 p.m.

(254) 897-5554, information & reservations

Comanche Peak power plant, located in Glen Rose, is the only nuclear power plant operated in Texas. A visit is fun, interesting, and educational. At the Comanche Peak Visitors Information Center, exhibits and displays tell the story of the generation of electricity by nuclear power. The center is located about one mile inside Comanche Peak's front gate on FM 56 north of Glen Rose. This will be one trip that the boys will really enjoy. Not far from the power plant is Dinosaur Valley State Park. At the park you can view real dinosaur tracks, wade through a river, and climb a mountain. A great place for a den or pack outing.

Energy Park

Near DFW International Airport

Email: energypark@tu.com

The TU Electric complex for renewable energy, energy efficiency, and environmentally responsible consumer technologies is located on a 42 acre site less than 3 miles east of the Dallas/Fort Worth International Airport. Energy Park provides TU Electric vital, hands-on



WEBELOS ENGINEER



Energy Park, continued

experience in renewable and advanced energy technologies. This will help the company plan future power supplies and advise customers on new technology. The purpose of Energy Park is to work with customers, manufacturers, other utilities, educators, regulatory and energy officials in testing, demonstrating, and applying new and emerging technologies. Group tours and school tours are provided at Energy Park throughout the year. To schedule a tour, e-mail to the address listed above.

Louie the Lightning Bug

Your Local TU Office

Appearances dependent upon availability of volunteers and equipment

The TU Electric safety spokesbug, Louie the Lightning Bug, teaches children how to play it safe around electrical equipment. A trained TU Electric volunteer inside a Louie body puppet will make appearances at safety fairs, community events and service area schools.

Online Resource

http://www.tu.com/aboutus/education_services

This web site is wonderful education resource. It contains a wealth of information on jobs in the industry, which include engineers and their duties. There is an extensive section on the generation of electricity by almost every conceivable method. This section can come in handy when working on requirement 4, which asks the boys to describe how electricity gets to your home.

Speakers Bureau

Phil Roth, (214) 812-3206

If you would like to have a guest speaker at your pack meeting to discuss how electricity is made and distributed, TU Electric offers a program called "Speakers bureau" where guest speakers come out to your organization. Below is the ad copy for this service:

"Interested in how we make electricity and get it to you? Want to know about our customer programs and services? Need tips on how to use electricity more efficiently? Ever questioned how we provide you with electricity and protect the environment? Want the shocking truth about playing it safe around electricity? Curious about electricity as an energy solution? Wonder what the future holds for electricity generation? If your organization is interested in these or other electric energy topics, give the TU Speakers Bureau a call to schedule a day or evening program.

