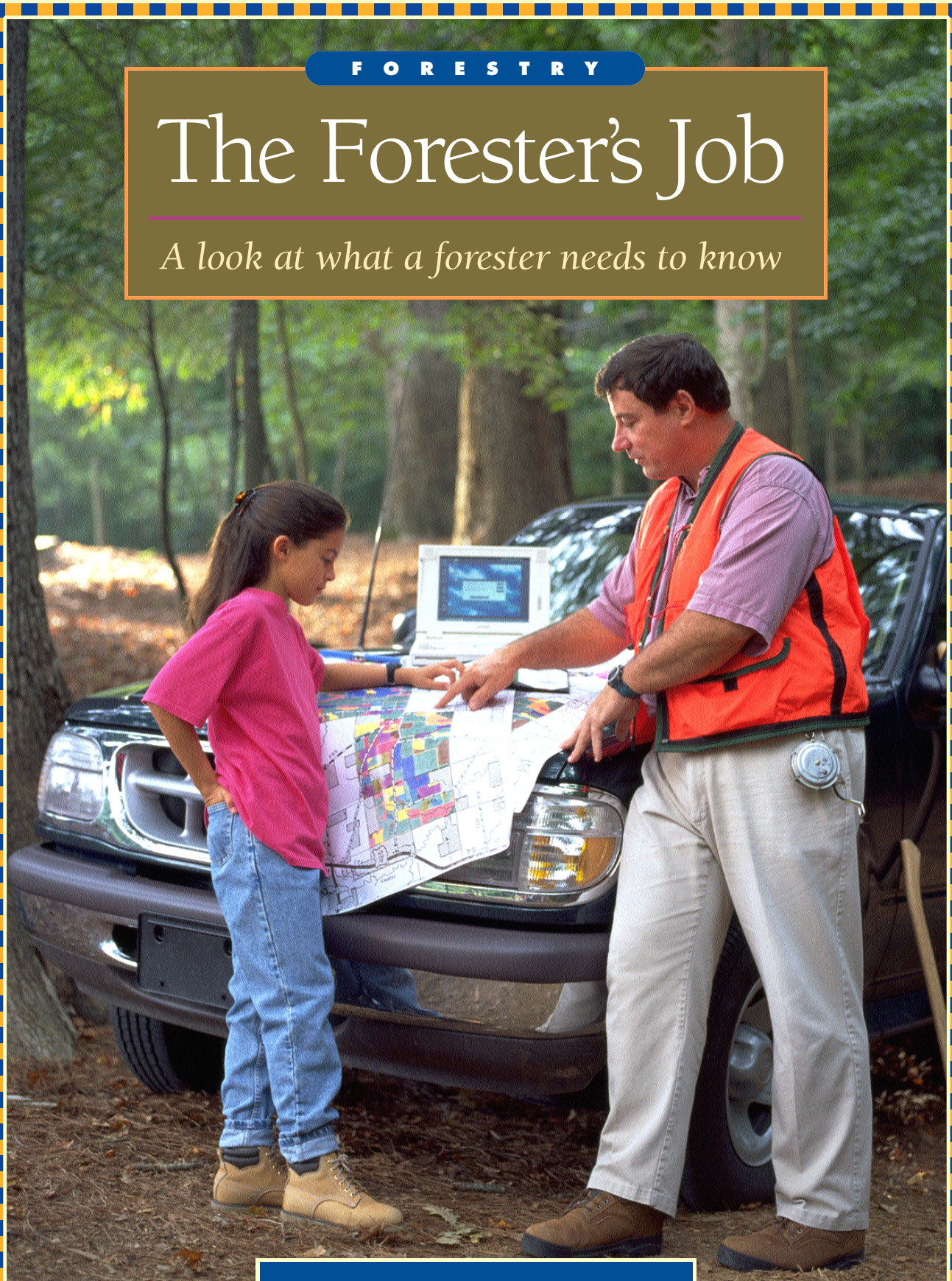
FORESTRY

The Forester's Job

A look at what a forester needs to know



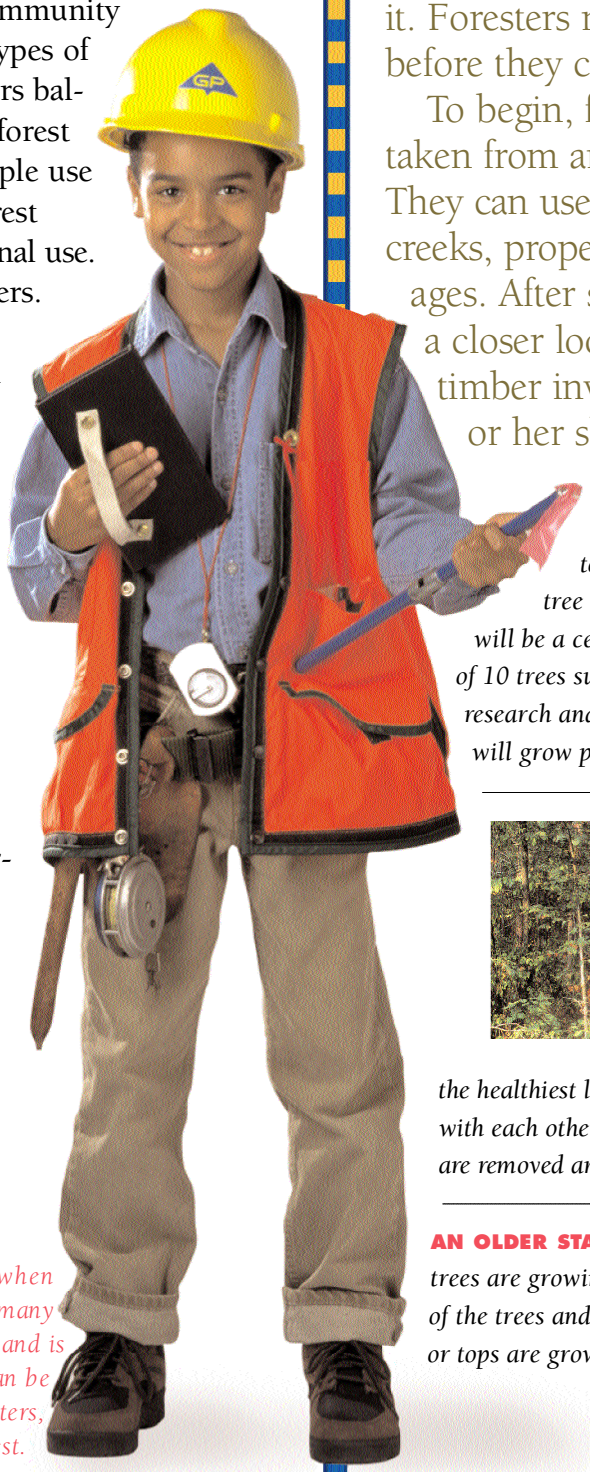
EDUCATIONAL IN NATURE®

The Forester's Job

Forestry experts, called foresters, manage the forests for many uses. A forest is a complex natural community that supports many types of plant and animal life. Foresters balance the management of the forest to produce products that people use with the need to conserve forest areas for wildlife and recreational use.

Foresters are problem-solvers. Their job responsibilities include promoting the health and well-being of the forest by helping protect it from the harmful effects of fire, disease and insects. Foresters also decide when to harvest trees, when to plant new trees and how to help the forest grow better.

To be a forester, it's important to enjoy working outdoors. But the forester must also study a lot of different subjects in college. They need to understand sciences like botany, zoology and chemistry. They also need to be good in math and know how to use computers. Of course, writing and communications skills are very important, too.



Foresters wear a cruising vest when working in the woods. It has many pockets to hold the forester's tools and is bright orange so that the forester can be easily seen by others, especially hunters, who may be in the forest.

Sizing Up Th

How do foresters even start to under the forest? It's so big and has so mar it. Foresters must know about the tr before they can decide how best to

To begin, foresters use maps and taken from an airplane) to get an ov They can use maps and photos to lo creeks, property boundaries and star ages. After studying maps and pho a closer look from the ground at a timber inventory, just like a store or her shop. This is called a tin

A YOUNG STAND *A forester will to 1,000 trees per acre depending or tree species. Based on experience, the fo will be a certain number of trees that will not of 10 trees survive during the first five years aft research and historical information to estimate will grow per acre in a forest that grows back*

IT'S TOO CROWDED! *well. It can happen wh trees. It can happen wh nutrients from the soil. farmer does for crops t They also may de you often get more spr the healthiest looking plants. The same is true of t with each other. Foresters remove a portion of the are removed are not wasted, but are used to make*

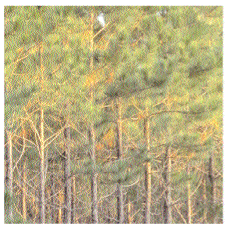
AN OLDER STAND *For an older stand of trees, a trees are growing and how healthy they are. They of the trees and check the age of the trees. They al or tops are growing together.*

The forester then may deci harvested to make paper and wo

ıe Forest

rstand how to manage
ıy different things in
ees in their forest
manage the forest.
aerial photos (a photo
erall view of the forest.
cate roads, rivers and
ıds of trees that are different
otos, the forester needs to get
areas of the forest and take a
ekeeper takes inventory of his
nber cruise.

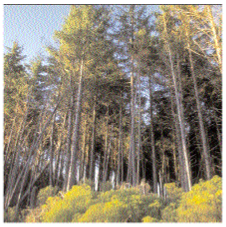
plant anywhere from 300
n the particular area and
orester knows that there
survive. Usually, nine out
ter planting. Foresters use
e the number of trees that
naturally.



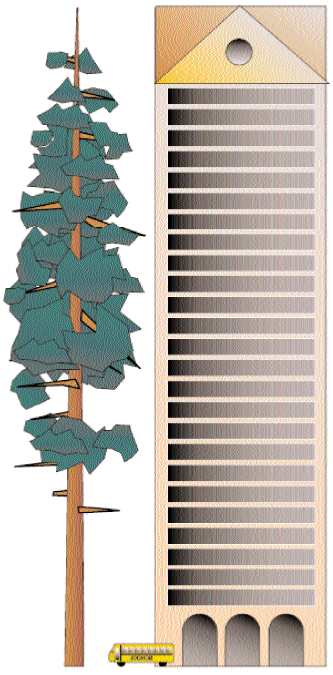
Sometimes the forest gets too crowded and the trees do not grow
ıen the trees are first planted, and grass and weeds crowd the new
hen the trees get larger and compete with each other for water and
. Foresters may decide to plow the ground before planting just as a
to help the trees grow better.
ecide to thin the trees. When you plant flower or vegetable seeds,
outs than will be able to survive, so you weed them out and keep
trees, but it usually takes several years for them to start competing
trees so the remaining trees will grow faster. Usually the trees that
paper.

forester will need to know how well the
will measure the diameter and height
lso look to see how closely the crowns

ide that this stand is ready to be
ood products.



Notable Trees



THE OLDEST TREE

The oldest recorded living tree is a bristlecone pine on Wheeler Peak in eastern Nevada. It is 4,900 years old!

THE TALLEST TREE

The tallest tree is named "National Geographic Tree" in Redwood National Park, California. It is 364.3 feet tall, or as tall as a 30-story building!

How Do You

This loblolly pine usually grows to be 40 feet tall in 20 years. How tall are the trees in your area?

Foresters use many different tools to help them measure trees

Forests are very big. A forester could not possibly measure every tree in the forest, but by learning about parts of the forest and measuring select trees, it helps them understand the entire forest. In the early days of forestry, they had to calculate all the information by hand. As they measured a tree, foresters would record information about t in a tally book. Using math skills they learne college, foresters would tally all the inform the trees they sampled.

Today, foresters still use those basic math s they also use computers to help store and an information about the entire forest, based on information they have about single trees. The uses a computer to summarize all the inform collected out in the woods. They even u puters to: make maps of the forest, es how fast a forest will grow, plan when t vest the trees for products and mark certa areas for environmental protection.

Measure A Tree?

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TALLY BOOK

DATA RECORDER

KEEPING TRACK OF THE FOREST

After collecting information about the forest, the forester uses a computer to summarize it. Computers are used for the storage, retrieval and analysis of information required to manage the forest and its resources. New hand-held computers called data recorders are used by many foresters instead of a tally book.

SOIL SAMPLER

HOW GOOD IS THE SOIL?

The quality of the soil tells the forester how well the tree will grow. A forester may use a soil auger or a soil sampler to pull up soil samples and send to a laboratory where it is analyzed.

COMPASS

GETTING AROUND THE FOREST

When the forester is in the woods, he or she needs to know how to get around. Using a compass, foresters determine their location in a forest.

20 ft.

15 ft.

10 ft.

5 ft.

TREE RINGS

One of the best ways to lear annual rings. As a tree gro Each growth season, a tr trunk. Looking at these borer, a forester can tell the tree's life and chang Each ring has two narrow, dark part (late spring growing season. and winter, growth slow The rings provide cl They are thick in years o Drought, frost, fire or

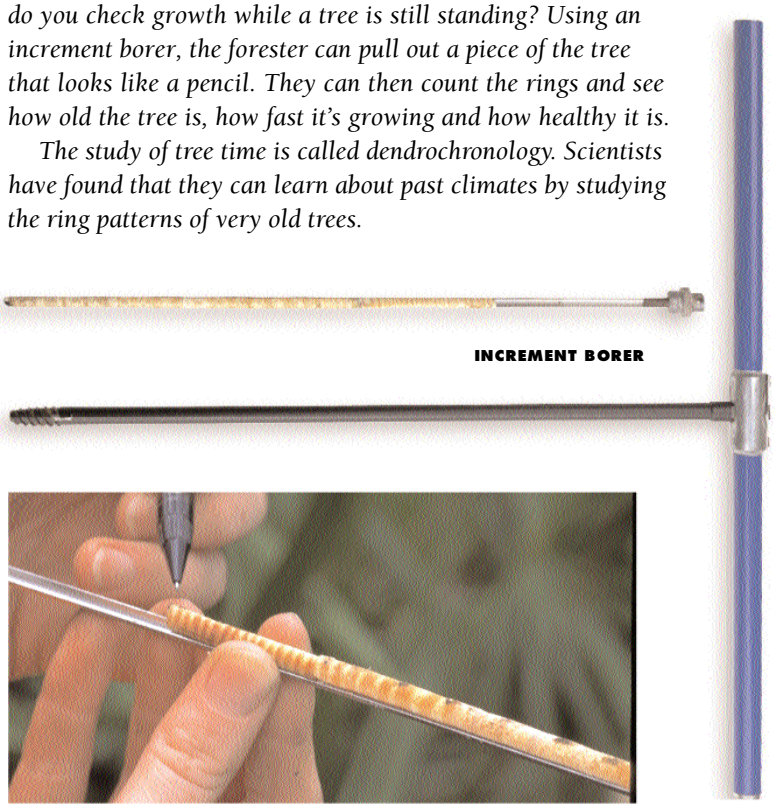
HOW

Some while Most feet tall. A loblol tall are the trees

SAMPLING A TREE

It's easy to look at rings after a tree has been cut, but how do you check growth while a tree is still standing? Using an increment borer, the forester can pull out a piece of the tree that looks like a pencil. They can then count the rings and see how old the tree is, how fast it's growing and how healthy it is.

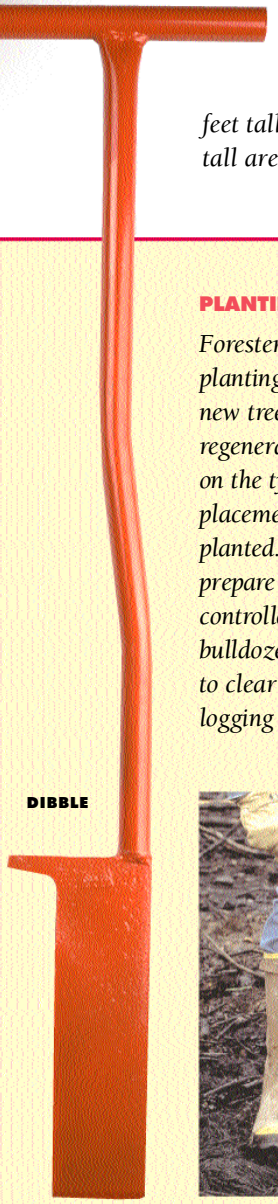
The study of tree time is called dendrochronology. Scientists have found that they can learn about past climates by studying the ring patterns of very old trees.



INCREMENT BORER

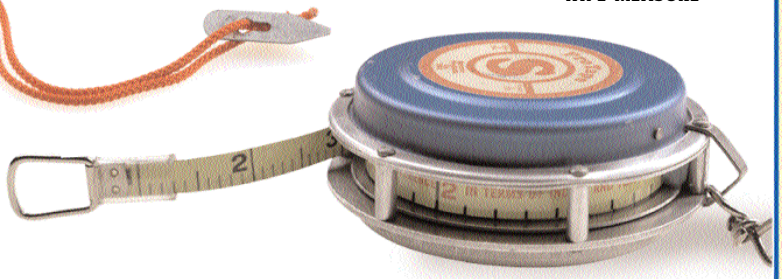
PLANTING THE F

Foresters supervis planting and grov new trees, a proce regeneration. The on the type, numb placement of trees planted. They cho prepare the site us controlled burning bulldozers, or her to clear weeds, br logging debris.



DIBBLE

TAPE MEASURE



n about a tree is to look at its
ows, it adds height and diameter.
ee adds a new layer of wood to its
rings with the help of an increment
! how old the tree is, patterns of change in
ges in the area where it grows.
parts: a wide, light part (early wood) and a
wood). The early wood grows during the wet
During the transition from the drier summer to fall
ws and the late wood forms.
lues about the climate or weather of the area over time.
f good rainfall and thin in poor years.
disease can cause a missing or partial ring.

HOW WIDE IS THE TREE?

Foresters use tapes to measure the diameter of a tree. They always measure the diameter at 4.5 feet above the ground. This measurement is called "Diameter at Breast Height."

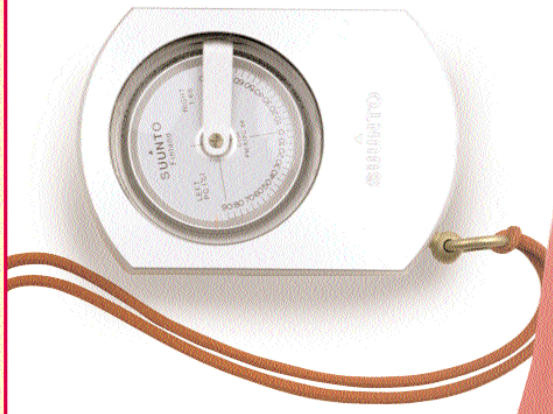
TALL DO TREES GROW?

trees, like redwoods and sequoias, grow to be over 300 feet tall,
some types of junipers may only be 20 feet when full grown.
trees are not that tall or short; the average tree is 40 to 100
ly pine usually grows to be 40 feet tall in 20 years. How
in your area?

HOW TALL IS THE TREE?

Foresters need to know the height of the tree to understand the volume of wood in the tree. There are many different types of instruments that a forester can use to gauge the height of the tree. One of these tools is a clinometer. It uses geometry to help a forester quickly measure height. Tree diameter and height are used to determine how much usable wood is in a tree.

CLINOMETER



FOREST

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The Forester's Job

FORESTRY

ACTIVITIES & Extras

How Big Is Your Tree?

Did you ever wonder how to measure something as big as a tree? While foresters today have special tools to help them measure the height of the tree, there are other ways to make these measurements. You'll need to know your math!

ON A SUNNY DAY: 1. Measure the length of the tree's shadow.

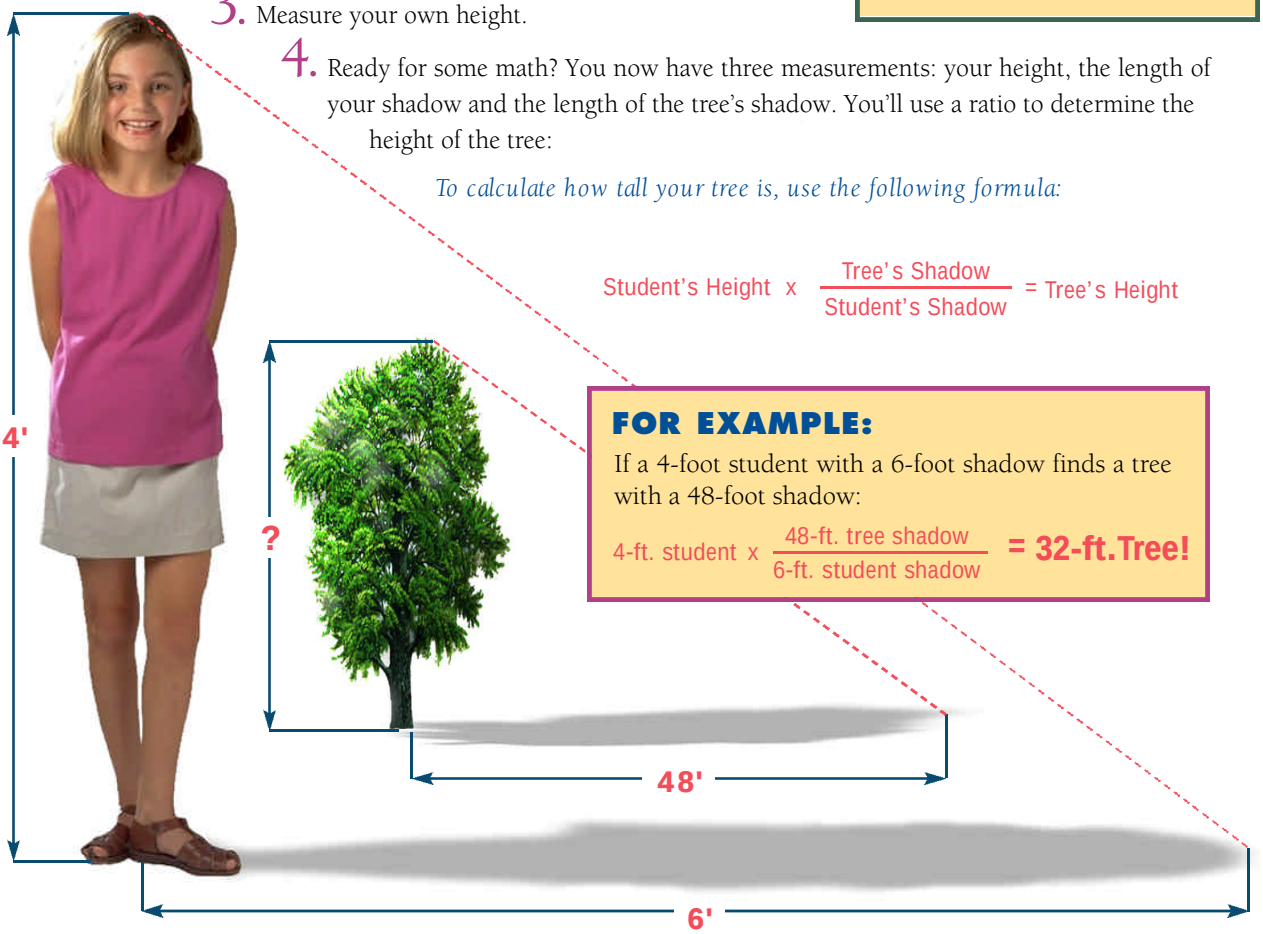
2. Stand right next to the tree and have someone measure the length of your shadow. Be sure you take these measurements at the same time of day!!

3. Measure your own height.

4. Ready for some math? You now have three measurements: your height, the length of your shadow and the length of the tree's shadow. You'll use a ratio to determine the height of the tree:

To calculate how tall your tree is, use the following formula:

$$\text{Student's Height} \times \frac{\text{Tree's Shadow}}{\text{Student's Shadow}} = \text{Tree's Height}$$



WORDS TO KNOW

crown- the distance the tree's branches spread away from its trunk

regeneration- the planting and growing of new trees

tally - to add up for a total sum

timber cruise- taking measurements of a sample of the trees in a stand

tree stand- a group of trees that have similar characteristics

wood volume the amount of usable wood in a tree determined by measuring a tree's height and diameter

FOR EXAMPLE:

If a 4-foot student with a 6-foot shadow finds a tree with a 48-foot shadow:

$$\text{4-ft. student} \times \frac{\text{48-ft. tree shadow}}{\text{6-ft. student shadow}} = \textbf{32-ft. Tree!}$$

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