

# ROCK STARS



## Discussion

1. Discuss the strength of wood parallel versus perpendicular to the growth rings with the children. Explain that wood is much stronger when the load is applied parallel to the growth rings than perpendicular to them. And discuss the influence of number of growth rings on the strength - more growth rings means more strength.
2. Express to the students that wood is a lot stronger than they might think. With this demonstration, the children will see how strong wood really is. It is quite a surprise!



# ROCK STARS



Testing the bending strength of a stick of wood. This can be done using sticks with many growth rings or just a few. It can be done with the load parallel or perpendicular to the growth rings. The strength of each will be different and related to the number of growth rings or direction of load.

## INSTRUCTIONS

1. Place four school books on the table, allowing approx. a third of each book to hang over the edge of the table. Place them about a foot apart. Do this for both sets of books. OR use 4 sawhorses.
2. Slide the chain onto each stick and slide it to the middle, so the chain hangs from the middle of the sticks.
3. Lay the two sticks over the books, as in making a bridge from one book to the other. OR put across 4 sawhorses - 2 per stick.
4. Place the S hook on the last loop of the hanging chain.
5. Attach the bucket handle on the S hook, and allow the bucket to hang (you may have to adjust the length of the chain if it is too long.)
6. Allow the students in each group to guess how many rocks or pounds of sand each stick will hold, write these down on paper.
7. Choose two volunteers to come up to the front to perform the experiment.
8. Put safety goggles on the volunteers
9. Allow the volunteers to slowly begin to fill up the buckets with the rocks or sand using shovels, until enough weight is there to break the sticks.
10. Place the filled buckets on the scale to determine the weight it took to break the sticks.
11. Prize goes to the student who guessed closest to the failing load.

## Materials

2 wooden sticks	4 school books	2 S hooks
2 sand shovels	scale	2 buckets
2 chains	2 volunteers	table (to work on)
2 pairs of safety goggles	small pebbles or sand or several rocks - about 70 pounds total is required	4 sawhorses