

1. The Mystery of the Bed of Nails

An Indian *fakir* (a Hindu magician) sets out a bed of nails in front of his audience. He inflates a balloon and drops it on the bed of nails. It pops. The fakir then lies down on the bed of nails and has several spectators stand on him. After the spectators have returned to the audience, the fakir stands and turns his back to the spectators. There are no puncture wounds from the nails. The fakir is unharmed! How can this be possible? Think of a skier crossing very deep snow. If the skier were to remove his skis and try to walk in the snow, what would happen? What do these two situations have in common?

Lab: Can You Stand the Pressure?

In this lab, we will examine the effect of surface area on how much weight can be supported.

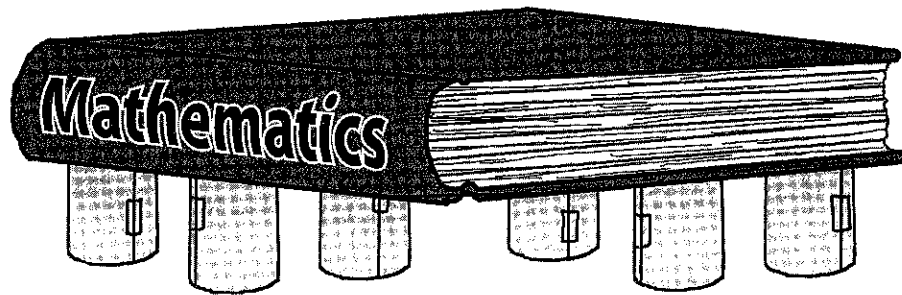
Materials

Ruler
Pencil
Sheet of 8×12 copy paper
Scissors
Cellophane tape or masking tape
Heavy textbook

What to Do

1. Using a pencil and ruler, measure and draw six 2-inch by 6-inch rectangles on the copy paper.
2. Cut out each rectangle.
3. Roll each rectangle into a tube and fasten with the tape.
4. Place the six tubes (evenly spaced) on end and on a flat surface.
5. Place the textbook on the six paper tubes. Observe.
6. Remove the book and all but one of the tubes from the flat surface. Place the center of the book onto the single tube. Observe.

Bed of Nails (Continued)



Describe Your Results

1. What happened when you placed the heavy book on the six evenly spaced paper tubes?

2. What happened when you placed the book on the single tube?

3. What is the advantage of using many paper tubes?

What's the Solution?

Now that you have completed the lab, use what you have discovered to solve "The Mystery of the Bed of Nails."

Bed of Nails *(Continued)*

Exercises

Fill in the blanks with the correct answer:

1. A fakir is a Hindu _____.
2. A fakir lies on a bed of _____.
3. The fakir asks several spectators to _____ on him.
4. The fakir does not get puncture _____ from the nails.

True or False?

1. Fakirs come from Japan. _____
2. The fakir drops a balloon on the nails, which does not pop.

3. The fakir is unharmed by the nails. _____
4. Skis prevent skiers from sinking into the snow. _____

Unscramble these words from the activity:

1. UPNCTERU _____
2. DWNULO _____
3. ILAN _____
4. RKIFA _____
5. IKS _____

Extension

How would using a surfboard be similar to what you have learned from this activity?