



Activity 3

Preparing an axis holder for *The Shadow Shows*

Materials:

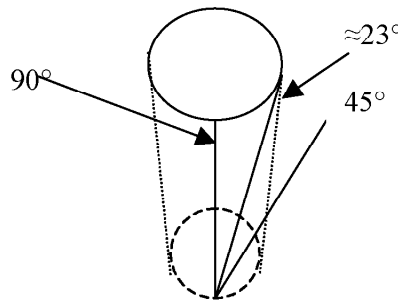
9 oz paper cups
plaster of paris
8" skewers (2 each)
about 1/3 cup water

straight edge
pencil
stir stick

**Make one holder for each globe (foam ball) to be used in Activities 4 & 5.

Procedure:

1. Mark a straight line down the side of the paper cup that is perpendicular to both the top and bottom edges, making a 90° angle.
2. Divide the 90° angle in half and mark a 45° angle along the side of the cup. (Roll the straight edge as you turn the cup to keep the line as straight as possible.)
3. Divide the 45° angle toward the top of the cup approximately in half. You will be marking about a 22 or 23 degree angle.



4. Fill the cup about full of plaster of paris.
5. Add about of the water and stir. If it's too thick, add some more water. Continue to stir until it's smooth and lump-free.
6. Add more plaster of paris to fill the cup about full. Add more water and stir.
7. Stir to a smooth pudding-like consistency. If it's too thick, add water. If it's too runny, add powder. The goal is to fill the cup about full.
8. Let the mixture set for a few minutes, testing it frequently to find out when it is ready to mold around the skewer.
9. Place the skewers into the mixture, one at each angle, 90° and 23° . Only push the skewer in about ", using the pointed end. As you look at it from

the side, the skewer should follow the angle that you drew on the side of the cup.

10. Gently turn the skewer frequently so it does not get stuck in the hardened mixture. Be careful to not make the hole too big. It should be just big enough for the skewer to turn slowly.
11. Feel the sides of the cup while you are waiting for it to set. Do you feel the warmth it is generating? Do you know why? One indication that a chemical reaction has taken place is energy being produced by the combination of substances. Heat is energy. You have just made a chemical reaction happen!