

Sunballs [Experiment]

Beauty is not only seeing the world with wide open eyes, but knowing what to look for. Your students have all seen splotches of light beneath the trees. But now you can point out what nearly all haven't seen, and that is that the splotches are circular – or if the sun is low in the sky, elliptical. For they are images of the sun. They occur because the holes between the leaves above are small compared to the distance to the ground, and act as pinholes (recall the activity, "Pinhole Camera"). It's nice to point out the really intriguing things around us!

Answers to the Questions

1. The shape of the hole has no bearing as long as its size is small compared to the distance to the image.
2. Measure the short diameter, for this is the undistorted diameter needed for the calculation. The long diameter is this same diameter stretched out because of the angle of sunbeams with the ground. Or position the viewing screen perpendicular to the sunbeams and get a circle.
3. The sunball will be the same shape as the eclipsed sun. And in line with pinhole images, it will be reversed. So if the bottom half of the sun is eclipsed, the image will show the top half eclipsed.