CONTENTS

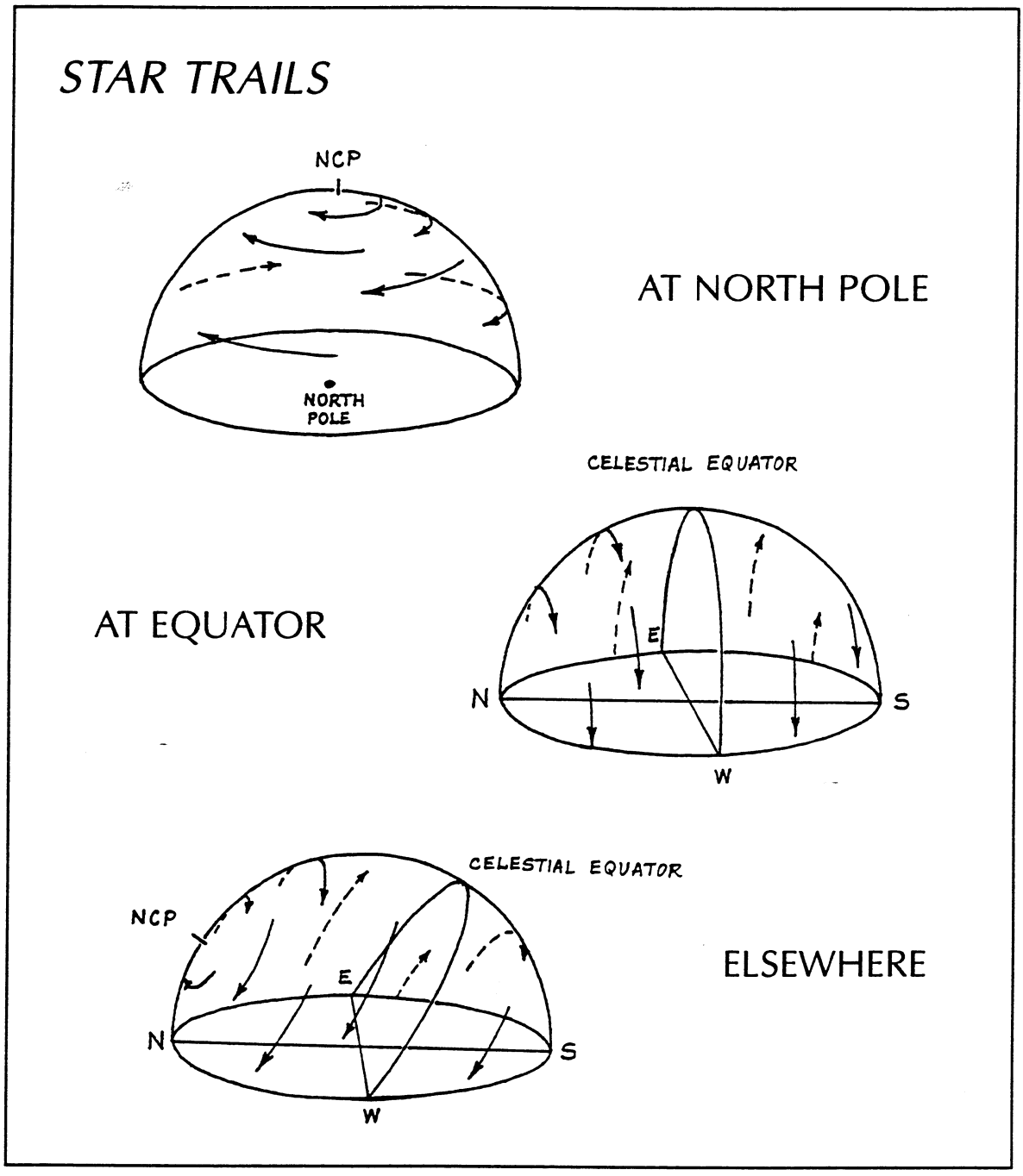
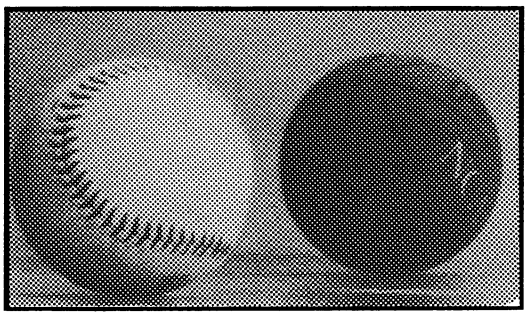


Figure 2

Stars near the celestial poles are called *circumpolar* stars because, to observers far enough away from the equator, they seem to move in circular paths around the celestial pole, i.e. they do not rise or set. If you lived at the north pole, the north celestial pole would be directly overhead and all visible stars would seem to revolve around it. Stars would not rise or set at all—all visible stars would be circumpolar (see figure 2).

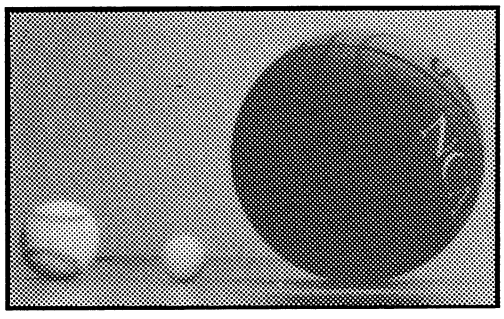
ANGLES, SIZE, AND DISTANCE
Worksheet 1A

A 

1. Use a ruler to measure the diameters of the two circles in the photo above. How do the diameters compare?

2. Are the two balls in the photo really the same size?

3. How do you explain the fact that they appear the same size in the photograph but are really not the same size at all?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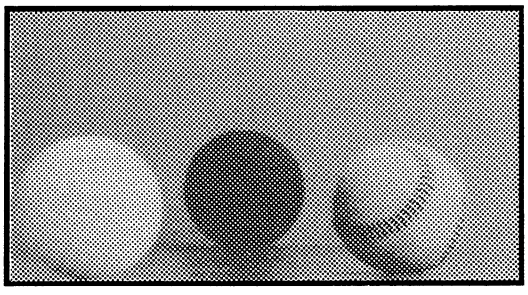
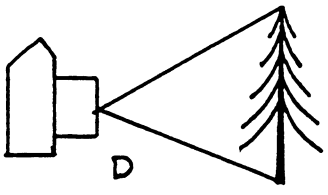
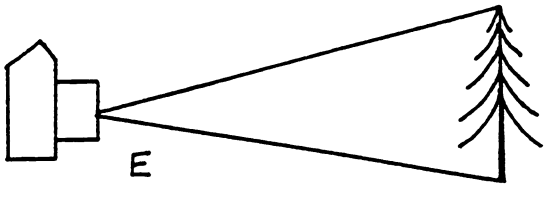

C

4. Can you tell which balls are closest and which are furthest away from the camera in photos B and C above?

5. Is your thumb bigger than your friend's head? Hold out your thumb at arm's length and line it up on another student's head. Have the other student walk away until his head is just covered up by your thumb. Obviously, his head did not really get smaller as he walked away; so what, exactly, did get smaller?





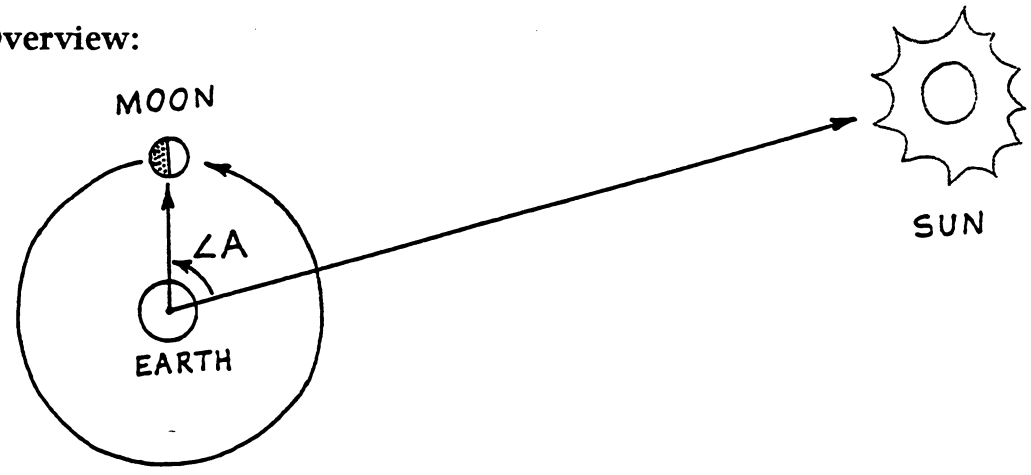
6. In which drawing, D or E, will the tree appear bigger? Why?

HOW FAR AWAY IS THE SUN?
Worksheet 4A

Materials:

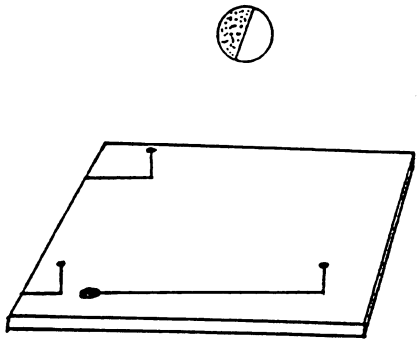
Flat piece of cardboard
Four straight pins
Protractor
Straightedge

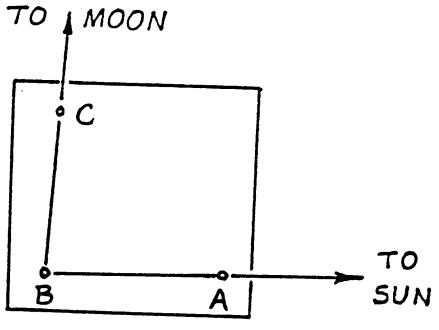
Overview:



To help find the distance to the sun, measure the angle between the sun and the moon, angle A, as seen from Earth.

Procedure:





1. Set up your apparatus by placing two of the pins into the cardboard near one edge. Call these pins A and B. Take your materials outside to a place where you can see both the sun and the moon. **NEVER LOOK DIRECTLY AT THE SUN!**