

## **HOMEWORK #6** (due start of class January 31) (copyright D. McCarthy)

### **LEARNING GOALS:**

1. Continue recording observations in your journal.
2. Understand how pinhole cameras work and observe your own pinhole images of the Sun.
3. Learn about the properties of ice haloes and how they form around Sun and Moon.

### **TO RECEIVE FULL CREDIT:**

1. If you submit multiple pages, staple them together.
2. To receive any credit on these problems, you must **show how** you derived your answer by writing all the logical steps that led you to it.
3. All sentence responses must be **typewritten and in complete sentences**. You may handwrite any arithmetic. Use good English grammar.
4. **If you work more than three hours on this assignment, you should stop, record your work here, and contact Dr. McCarthy.**

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**1. Keep observing the sky** (day & night) and record notes, pictures, and measurements in your journal.

**2. Read the following brief article about pinhole images of the Sun through trees.**

<http://nivea.psychology.univ-paris5.fr/FeelingSupplements/ExperimentsWithCameraObscura.htm>

Write an entry in your journal where you create and observe pinhole images of the Sun or Moon. You might make your own pinhole or look underneath leafy trees. Try to include a photograph of the images you see.

**3. On your computer, bookmark the following Web site.**

**Atmospheric Optics:**

<http://www.atoptics.co.uk/>

This site is an excellent reference for helping you observe and explain phenomena in the daytime sky, like the “ice halos” we can see around the Sun and Moon at this time of year.

Read the following explanations and be prepared to explain why sundogs display color.

**Formation of the 22-deg haloes around Sun and Moon:**

<https://www.atoptics.co.uk/halo/circ2.htm>

**Formation of “sundogs”:**

<https://www.atoptics.co.uk/halo/dogfm.htm>