

Names: _____

1: In the Lab Room; Getting Ready To Observe

(1) Read through the lab so you know what you will be doing when you get up to the roof. (2) Make sure you have a calibrated strip so you can measure angles in degrees when we go up to the roof. (3) Put red cellophane over your flashlight. (4) Set your rotating star chart for tonight's date and time. (5) Review the procedure/checklist for setting up and using the 8" telescope; take your checklist with you! (6) As a group, check out a telescope and record it's # here: _____

2: In the Lab Room; Determining "Direction" in the Eyepiece

The eyepiece inverts the image (i.e. rotates it by 180 degrees), and the diagonal does a mirror image (flips right and left). However, the direction the diagonal is rotated in the mount determines which way the mirror flip works. **There is no way to tell from one night to the next or from one telescope to the other which direction is which in the eyepiece.** You must complete the following procedure to determine direction in your eyepiece:

1. Rotate the declination slow motion knob to the right (**clockwise**) and watch the *telescope*. Is it moving North (up) or SOUTH? _____
2. Rotate the right ascension slow motion knob to the right (**clockwise**) and watch the *telescope*. Is it moving WEST (to the right) or EAST? _____
3. When you locate an object in the eyepiece and then move the telescope, the star will appear to move in the OPPOSITE direction.
4. After locating an object, move the declination slow motion to the right and note which way the star moves. That will be south or north, the opposite of your result from (1).
5. Then rotate your ra slow motion knob a little bit to the right. The star will move east or west, opposite of your result from (2).
6. **Every time you make an observation** go through this procedure and record the position of North, South, East, and West (or at least North and East).

3: Setting Up Your 8" Telescope – USE THE CHECKLIST!!!

- Use **Vega** (RA = 18^h 37^m; DEC=+38.75°) -- for the final step in your setup.
- Once you find it, record the declination offset _____
- Set the RA circle to 18^h 37^m

4: Practice Pointing Your 8" Telescope

We all need PRACTICE pointing the telescope. We'll never find anything faint and interesting if we can't find the things that are very bright but sort of dull (i.e. bright stars). Below you will find a table of stars to observe.

- Everyone should find *at least* one of these *by themselves*. The instructor or TA will confirm that you found the right star the first time. After the first one, you should be able to check each other, but ask us if you're not sure.
- Put the star in the exact center of the eyepiece. Then confirm that the star is still in the crosshairs of the finder. If not, adjust the finder before moving to the next star. Make sure you don't leave any loose collimation screws.
- Once you've found the star, adjust the focus knob 3 full turns clockwise and **sketch** what you see (on the next page). Then turn it 6 turns counterclockwise and make another **sketch**. Finally, return it to the "best" focus and make a 3rd **sketch**. Each of you should do this only once, for the first star you find.
- Record the declination of the telescope and calculate the true declination using the offset you found from Vega. Once you've done a few of these, you should see how the declination circle will help you find stars.
- Record the Right Ascension of your star.

Star Name	RA	Dec reading	Dec offset	True Dec	Who found it?	Instructor or TA
Vega	18 ^h 37 ^m			+38.75°		
Deneb						
Altair						
Fomalhaut						

Three sketches each: 2 out of focus, one perfect focus...

Initials _____

Initials _____

Initials _____

6: In the Remaining Time

We will all return to the lab room together, so if you finish early, use the time to practice with your rotating star charts or to find other interesting targets for the telescope. If you observe other targets, fill out an observation log and turn it in. If you identify constellations/stars with your rotating star charts, point them out to your instructor or TA and have them initial below...

Constellation, Star, or Object	Initials
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____