NAME_____ Email_____ Group_____
NAME_____ Email_____ Date_____
NAME_____ Email_____ DueDate _____
Grade_____

Lab 1: Star Maps and Constellations

NAME_____ NAME_____ _____
NAME_____ NAME_____ _____

Part A: Star Map Coordinate Activities

1. Consider the imaginary constellation "Pezaglis"
which has the 4 stars shown the table to the right.

(a) Plot these points on the Mercator Map

(b) Connect the stars with lines, in order given including a line from delta back to alpha.

(c) Label the stars with the correct *Greek symbol*
[Hint: lookup Greek letter table in handouts]

Stars of Pezaglis

Name	Dec	RA
alpha	40°	23^h
beta	40°	1^h
gamma	70°	1^h
delta	70°	23^h

(d) Plot these same points on the Polar Map, again connect the stars.

(e) Now, use a "Celestial Sphere" to see what shape it would be in the sky.

2. Discussion: You will probably find that the "shape" of the constellation is different on the two maps. Briefly, which map do you thin more closely represents how it would appear in the sky (equivalently on a celestial sphere) to you eye? Explain your reasoning.

3. Consider two more stars: epsilon at (70°, 4^h) and zeta at (70°, 16^h).

(a) Plot them on the Mercator Map. Label with correct Greek symbols.

(b) Using a ruler, connect them with a straight line (i.e. the shortest path).

(c) How many degrees apart are they (on the Mercator Map)? _____

[Hint: 1 hour is equivalent to 15°]

(d) Explain how you arrived at your answer to part (c)

4. Plot these same stars on the Polar Map.

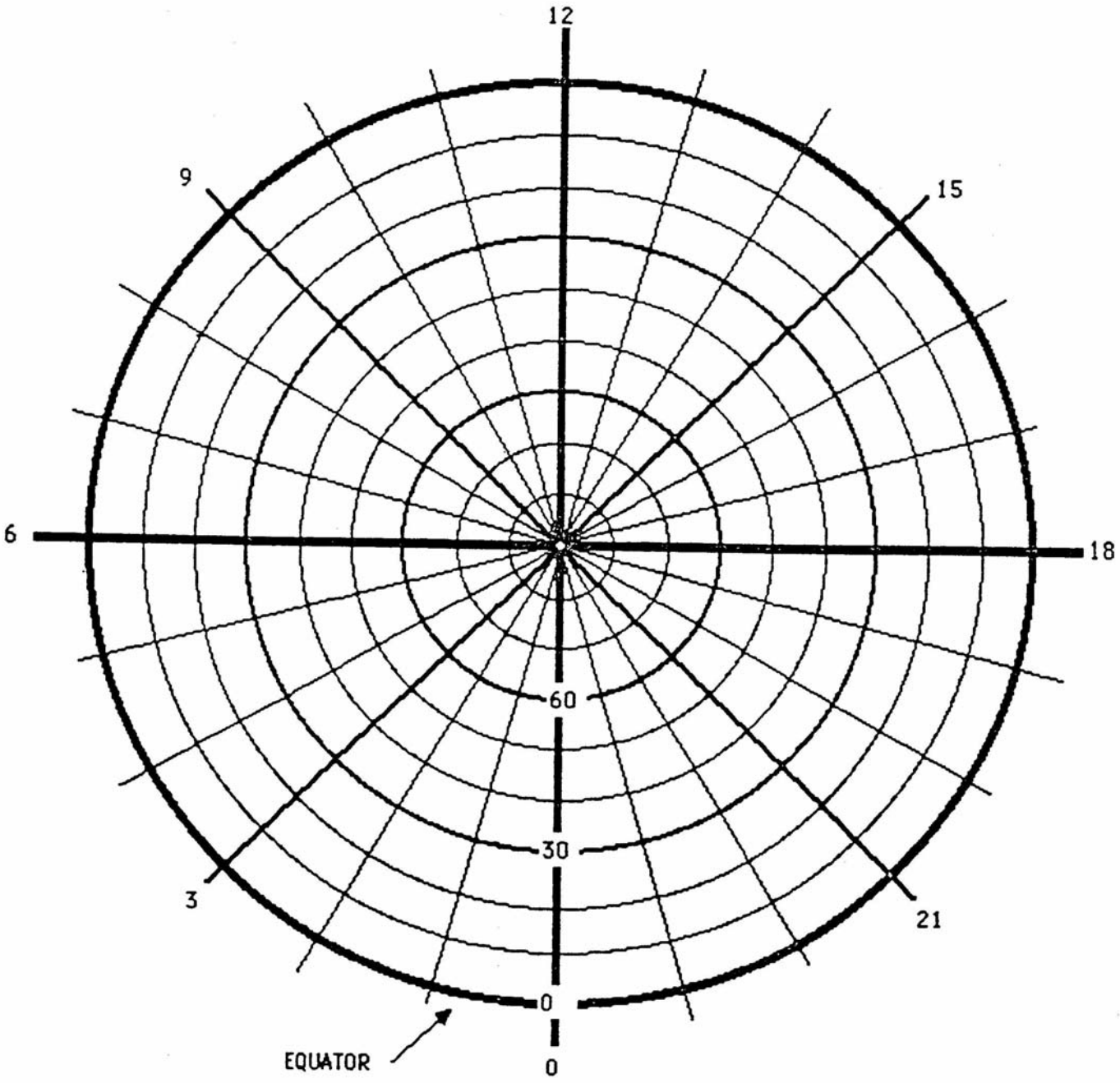
(a) Using a ruler, connect them with a straight line. Label with correct Greek symbols

(b) How many degrees apart are they (on the Polar Map)? _____

(c) Explain how you arrived at your answer to part (b).

5. Discussion: Are the distances you measured on the two maps the same? Which map probably represents what you would see in the sky? Again, use a "Celestial Sphere" to resolve any interpretation issue of the correct "line" to draw between the two stars. [Are the lines you drew on the two maps representing the same thing?]

POLAR MAP



MERCATOR MAP

DATA SHEET #2
Practical Astronomy
© W. Pezzaglia 1986

STAR MAPS & CONSTELLATIONS

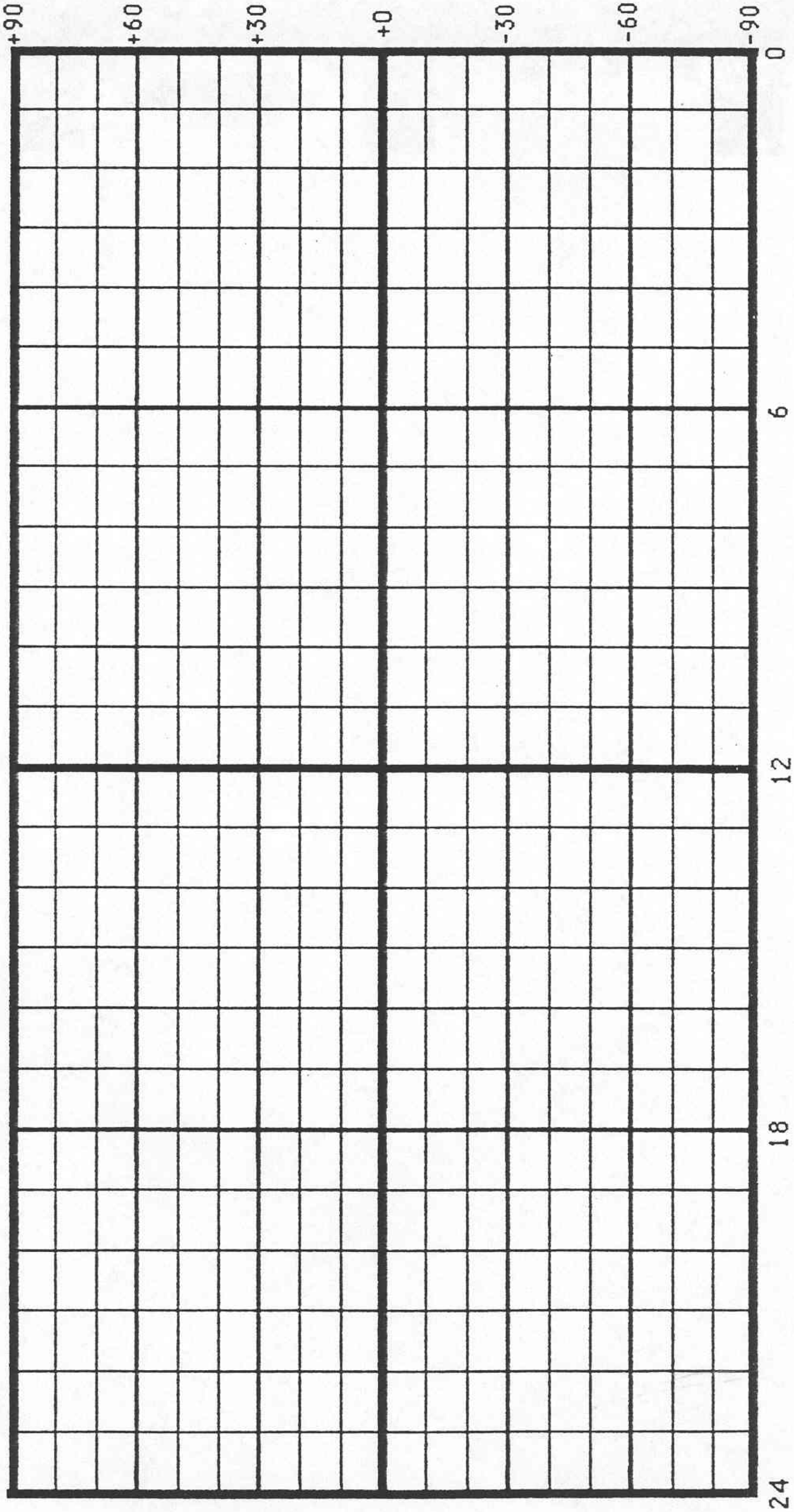
NAMES________________

Group/Station#__________

Date__________ Section______

MERCATOR MAP GRID (Equatorial Cylindrical Projection)

SCALE= ________ (Degrees per cm) [at equator]

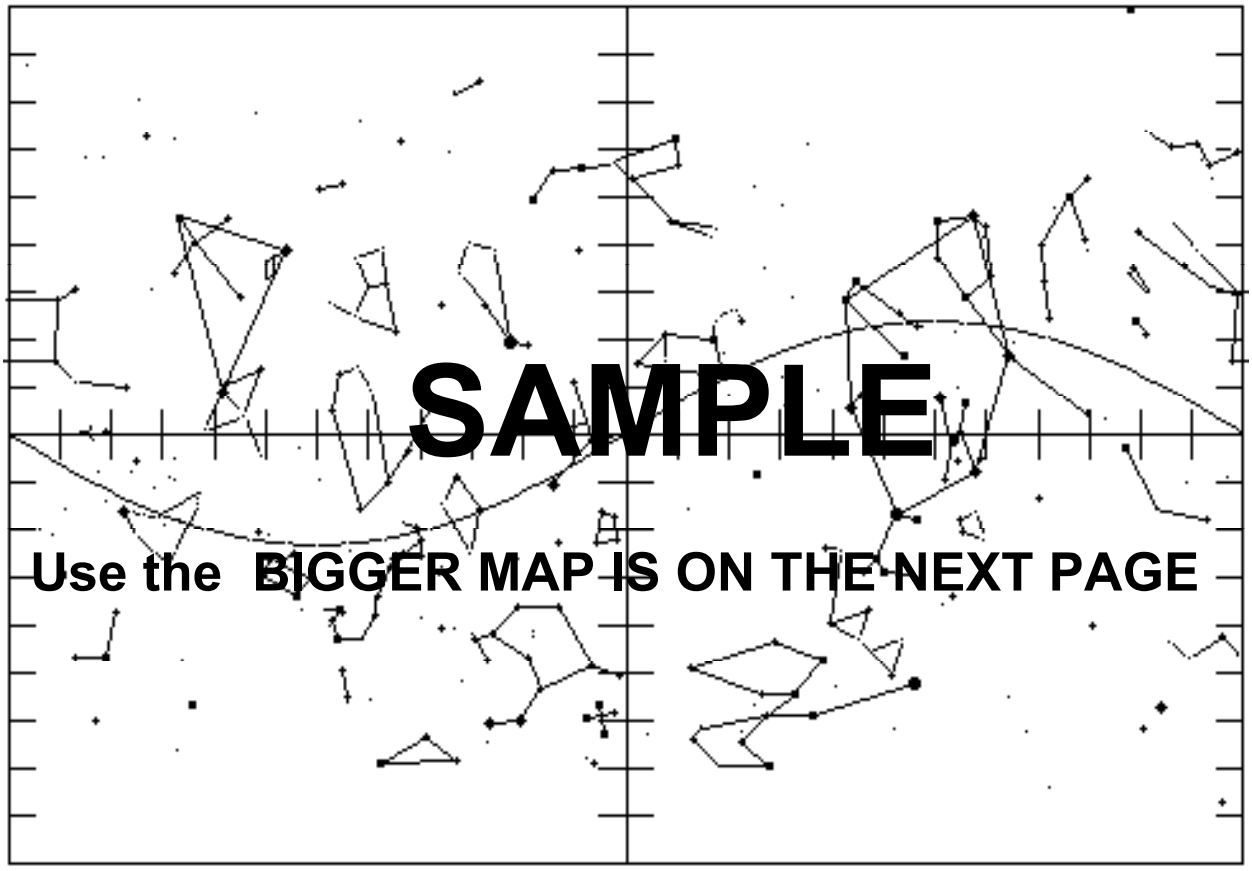


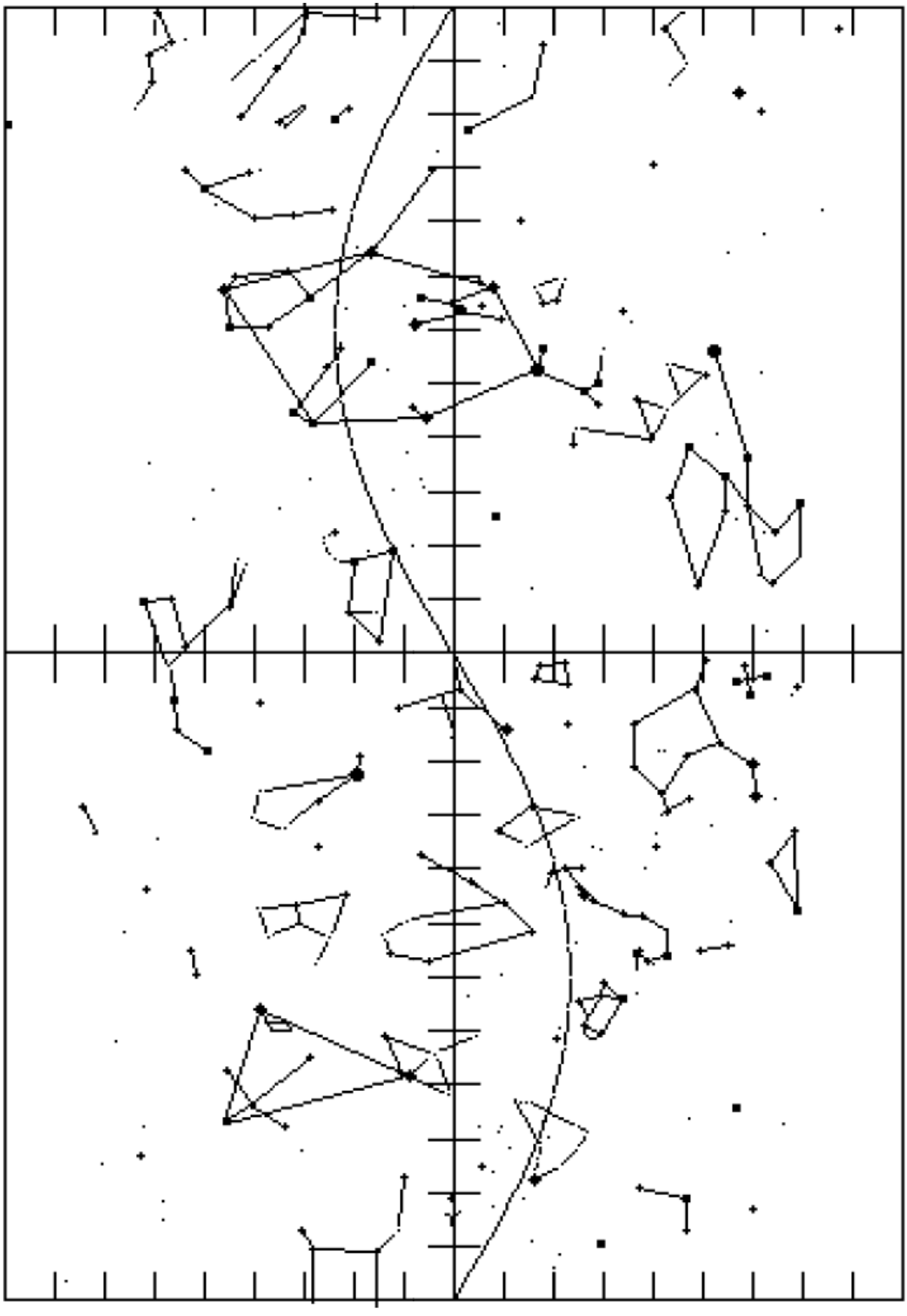
Part B: Polar to Mercator

1. Find the Constellations

Below is a **Mercator** map projection of the sky (as opposed to your Starwheel, which is a **polar** projection). Your task it to translate information from the polar map to the Mercator map below.

(a) Label North, South, East and West
(b) Label the axis of declination, and fill in the degrees (remember the minus numbers!)
(c) Label the axis of Right Ascension, and fill in the scale with the correct "hours".
(d) Label the celestial equator, if it exists on the map
(e) Label the celestial north and south poles if they exist on the map.
(f) Label each constellation (ALL of them!)
(g) Label at least one star in each constellation if you can (all the ones on your starwheel).





Part C: Computer Program

- Run the "Starry Night" program on the computer (version 4 or 5 or 6 ?)
- Set the "Home" location for nearest city (San Jose)
- Set the "date" for today
- Set the "time" for early evening, when it is dark.

1. Setup:

(a) Computer program used (include version) _____

(b) Date & Time you are using _____

2. The Moon: Bring up the information window on it and determine the following:

(a) Is the moon visible tonight? _____

(b) What constellation is the moon in? _____

(c) What % of the moon is illuminated? _____ %

(d) What is the "phase" of the moon? _____

3. Find Planets (Winter 2013)

For planets listed below determine the following:

- Constellation that they are in
- Time of event (rise or set as indicated in table)
- Magnitude (apparent)
- Size (in either arcmin or arcseconds)

Planet	Constellation	Event	Time	Magnitude	Size (arcsec)
Mars		Set			
Jupiter		Set			
Uranus		Set			
Neptune		Set			

Part D: Find the Constellations

(a) Sketch in the constellations
(b) Label constellations
(c) Label the major stars