Project Report Outline

- **Abstract**
    - The mass and radius of transiting exoplanets can be determined from the light curve of the host star.
    - The mass and radius of these planets can provide insight into how typical Earth and other planets in the Sun's system are.
    - The typical mass and radius relationship of the exoplanets to other planets in the solar system will be reported here (ie all larger or all smaller or most larger etc).
    - Speculation on why this mass and radius relationship might be the case.
- **Introduction to Topic**
    - Exoplanet transits occur when a star system is so aligned that a planet passes in front of its host star such that some of the light is blocked out when it's observed it on Earth.
    - From the distinctive light curves an exoplanet system produces, the mass and radius of the planet can be determined helping further understanding of the typicality of the Earth and other local planets.
    - [A figure showing how an exoplanet transits and the type of curve that can be expected will be included here]
- **Targets**
    - [A table of the transits I observed with the specifications of each transit (start-mid-end transit times, start-mid-end elevation, RA/DEC, brightness, delta-magnitude, etc) will be included here]
    - Reasons why I chose each target (location in the sky, brightness, time of transit, etc) will be elaborated on here.
    - [a table including my comparison stars and the specifications (magnitude, RA/DEC, etc) will be included here]
    - Discussion of why I chose these particular comparison stars (brightness, location, etc)
- **Methods of Observation**
    - [Table of the specifications for the 16in and p3 telescopes]

    - Discuss the capabilities of Wallace (location-wise) and why the 16in and p3 were important for my own data collection
    - Discuss and support my exposure times and filter choice here.
- **Data**
    - [Show a figure of good data and identify the transit dip]
    - Discuss the reasons the data was desirable and what made it useful.
    - [show a figure of bad data]
    - Talk about why this data was bad in particular and what lead to it being poor data.
    - Discuss overall whether my data were good or bad and things that made it good/bad (clouds, too few days, etc).
- **Data Reduction and Preliminary Analysis**
    - All reduction of data was done in astroimageJ, which makes use of dark and bias subtraction as well as flat division.
    - Plots were of the relative flux between the target transit candidate and an on chip standard star to see if the transit was visible.
    - [Provide an example of a plot]
- **Results and Analysis**
    - The calculations for the mass and radius for all exoplanets that had data sets displaying a transit dip will be shown here.
    - [Figure of the relevant parts of a transit dip for calculation]
    - [Table of the calculated mass and radii of the observed exoplanets]
    - I'll compare the masses and radii of the exoplanets to planets in our own solar system and comment on the typicality of earth.
    - If data was rejected, explain why and what the causes were here (possibly clouds or no noticeable transit dip.
- **Conclusion**s
    - Not all exoplanets can be detected with the transit method, only large planets close to their host stars can be detected, so more ways of reliably detecting exoplanets need to be furthered in order to fully understand the Earth and other planets in our solar system.
    - Comment on what this means about this data set and how it compares to Earth. I'd expect that all of the planets I took data on will be much much larger than

Earth, and I don’t really expect anything different simply because of the method I’m using.

- If there were any problems with my data, or if relevant conclusions couldn’t be drawn from my data, explain what could have been done differently (different transit candidates, different equipment, etc).
- Elaborate on any future work that might need to be done (essentially more research in exoplanets)