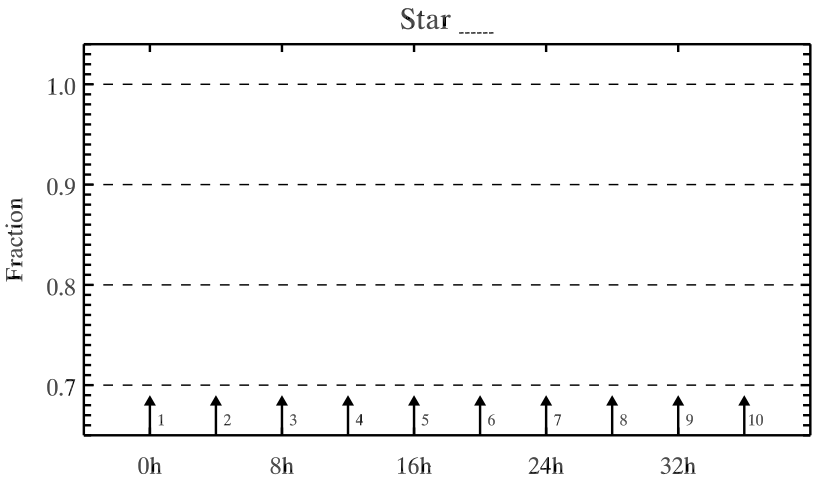
Transiting Planet Experiment Worksksheet

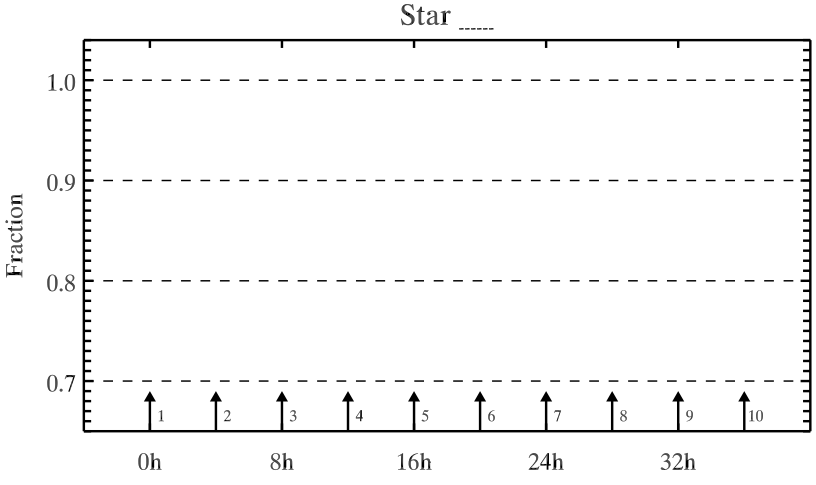
ASTR/PHYS 1060, The Universe, Dan Wik, Sept. 21, 2018

For each of the five observations presented in class:
1) Write the light meter value of the unobstructed star in the "Value" column in the first row.
2) Record data at each time step in the units from the light meter under "Value".
3) Calculate the fraction of the total light of the star seen at each time step and record in second column.
4) Plot the second column in the plot to the right.
5) Work with your group to answer the questions at the end of this worksheet.

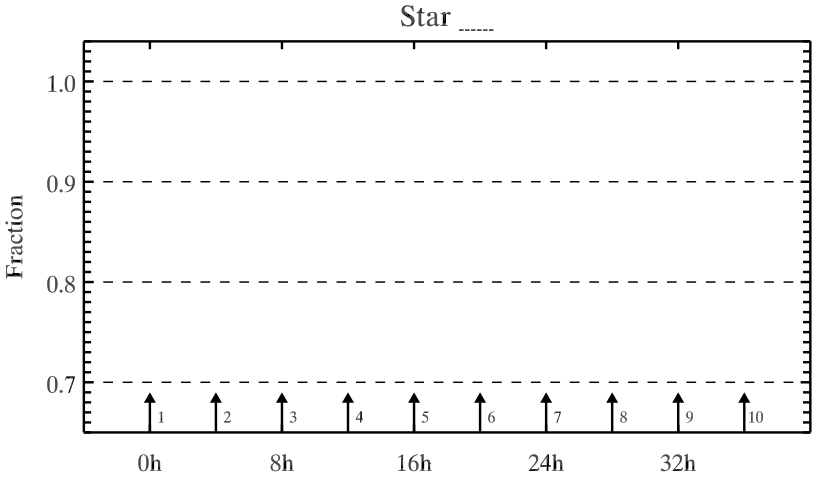
Obs. #	Value	Fraction
Star		1.00
1.	32	
2.	31.6	
3.	20.4	
4.	18.4	
5.	19	
6.	10	
7.	19	
8.	23.2	
9.	25.2	
10.	25	



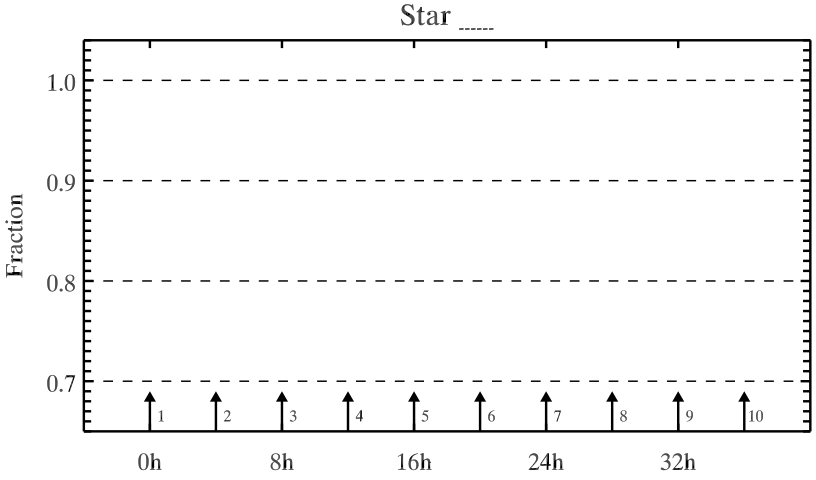
Obs. #	Value	Fraction
Star		1.00
1.	23.2	
2.	23.2	
3.	23.2	
4.	23.2	
5.	23.2	
6.	23.2	
7.	23.2	
8.	23.2	
9.	23.2	
10.	23.2	



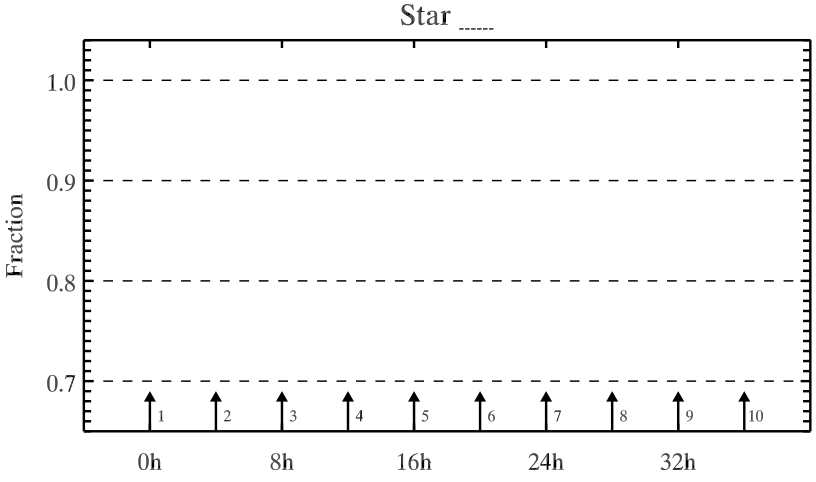
Obs. #	Value	Fraction
Star		1.00
1.	23.7	
2.	22	
3.	21.9	
4.	21	
5.	20.5	
6.	22.8	
7.	23.6	
8.	23.8	
9.	23.9	
10.	24	



Obs. #	Value	Fraction
Star		1.00
1.	27.3	
2.	27	
3.	27	
4.	26	
5.	24.6	
6.	24.8	
7.	25.8	
8.	26.8	
9.	26.9	
10.	27	



Obs. #	Value	Fraction
Star		1.00
1.	27.7	
2.	28	
3.	27.9	
4.	27.3	
5.	27	
6.	27	
7.	27.2	
8.	27.9	
9.	28	
10.	28	



Discussion Questions:

1) Draw a planet orbiting a star—what orientation is required to produce planetary transits? How common do you think that orientation is?

2) What can you learn about the physical properties of the planets from transits based on the data you took (hint: there is more than one thing)?

3) What is the difference between the planets around Star A and Star C (be as quantitative as possible)?

4) What is the difference between the planets around Star C and Star D?

5) How can you explain the results from star B (there are a variety of reasons that we may not see a signal)?

6) The Earth's radius is about 100 times smaller than the Sun. How sensitive would our light meter have to be to detect its transit?