

Analyzing Light Curves

Names: _____

Instructions: The “Transit Light Curves” show the light of 9 different stars and how the light level changes when a planet transits each star. Study the light curves to find the period of the planet. The period is the time between transits and is year-length for a planet.

Use “Kepler’s 3rd Law Graphs” to find the “Orbital Distance” of the planet from its parent star. The “Planet’s Size” is found by measuring the “Change in Brightness,” a small percentage drop in the light level as the planet transits. Calculate the planet’s radius using the formula in the table below.

Orbital Distance (from Kepler’s 3rd Law graph)		
Planet Name	Period Units _____	Orbital Distance Units _____
Kepler 4b		
HAT-P-7b		
HAT-P-11b		
Mystery-b		
Mystery-c		
Tres-2b		
Kepler 5b		
Kepler 6b		
Kepler 7b		
Kepler 8b		

Planet’s Size (radius using formula)			
Planet	Brightness Drop of Z (%)	\sqrt{Z}	Radius = $10 \times \sqrt{Z}$ (in Earth radii)
Kepler 4b			
HAT-P-7b			
HAT-P-11b			
Mystery-b			
Mystery-c			
Tres-2b			
Kepler 5b			
Kepler 6b			
Kepler 7b			
Kepler 8b			

Questions:

1. Which planet(s) are similar in size to Earth?
2. Jupiter’s radius is about 11 times Earth’s radius. Which planets are similar in size to Jupiter?
3. Describe the relationship between the period of the planets and their orbital distances.