Name

Welcome!

You are now among the few people on Earth to be looking for an alien world!

There are billions of planets out there, waiting to be discovered. As planet-hunters discover more and more planets - especially worlds that more closely resemble Earth - the big question is, "What are these worlds like?"

1

Your Cosmic Address

You'll be looking out into space vast distances to look for another planet. As a starting point, it's important to think about where you are right now, right here on your home planet.

If there are any creatures on the worlds you'll be exploring, they won't be writing to you anytime soon. But if they did....

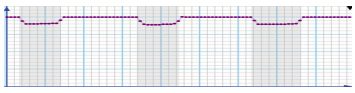
Here's a quick reminder for your galactic post office:

Your Name:	CH_KG1BM05
Your Street:	1550 Owens Store Road
Your City:	Canton
Your State:	GA
Your Country:	
Your Planet:	Earth
Your Star:	Sol (our Sun)
Your Galaxy:	Milky Way

2

Modeling Lab

Challenge 1: What does the 'Signal' look like?



As the planet passes in between the Earth adn the star the brightness decreasses as more of the planet moves in between the Earth and the star. Until the planet starts to move from in

between the two the brightness increases to the normal level.

Challenge 2: How much light is blocked?

.04 What fraction of the star's light does the planet block?

4 By what percent will the star dim?

What determines how much your star will dim?

0

- A. Only the planet's size.
- B. Only the planet's speed.
- C. Both the planet's size and speed

3

Modeling Lab

Challenge 2 Continued

Your Explanation

I took the area of the star facing the earth and divided the area of the planet facing the earth by the former area

Challenge 3: What scale will you use?

20 Scale you used for your graph

Your Explanation

By decreasing the difference from one point on the yaxis to the next you enhance the features of the graph so they can be more easily seen. conversely when you increase the difference between two points on the yaxis you reduced how noticable to features of the graph are.

Challenge 4: Is predicted brightness graph the same at this distance?

The level of brightness remains the same as even though you are changing the position from which your data is collected the proportion of the star´s brightness the is being reduced by the pressence of the planet remains the same as both become smaller to the eyes of the observer.

4

Image Lab

HATP36-140327093030;9.5;0.7162;HATP-36;140327;093030;4239;3208;7336;1643;1622;11()HATP36-140327065830;6.96667;0.7268;HATP-36;140327;065830;3925;3095;6316;1849;1848;11 HATP36-140327 Select a Star

HATP36-140327

(HATP36-140327093030)	Total brightness inside your circle
Target star (T)	4239
Comparison Star 1 (C1)	3208
Comparison Star 2 (C2)	7336
Background 1 (B1)	1643
Background 2 (B2)	1622

Your Results

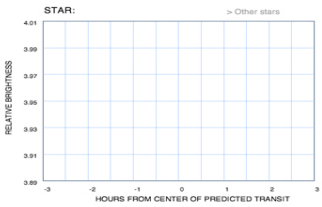
Relative Brightness (RB) = (T - ((B1 + B2)/2)) / (((C1 + C2)/2) - ((B1 + B2) /2))

RB=(4239-((1643+1622)/2))/(((3208+7336)/2)-((1643+1622)/2))

RB	0.7162
Time	9.5

Image Name	Time	Brightness
HATP36-140327093030	9.5	0.7162
HATP36-140327065830	6.96667	0.7268

Brightness Graph



5

Image Lab

Data Detectives

Challenge 1: Observations vs. Predictions

Challenge 2: Where are the problems?

Challenge 3: Tutorial

Challenge 4: Factors affecting the class's graph

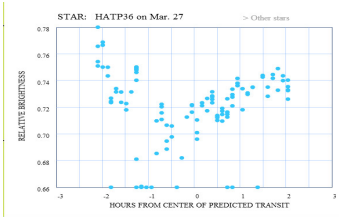
6

Data Lab

Select a Star

HATP36-140327

Detection



Challenge 1a: Have I found an exoplant?

Yes there is a noticable dip in the brightness of the planet over the period of the expected transit.

Challenge 1b: Additional evidence

It helps to increase the certainty of the accuracy of the dip.

7

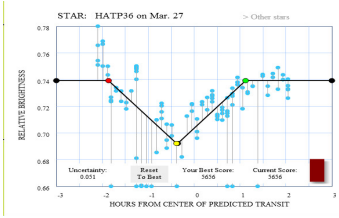
Data Lab

Challenge 2: Estimate the curve

0.736	Baseline Brightness	-1.82	Beginning of Transit
0.712	Dip Brightness	1.1	End of Transit

There are many factors not accounted for that prevent a theoretical brightness graph such as the interference of the earth´s atmosphere, and star spots.

Challenge 3: Using the model



0.74 Baseline Brightness
0.694 Dip Brightness
-1.86 Beginning of Transit
1.12 End of Transit

It is based on human error in the true brightness as well as interference with the earth´s atmosphere

8

Data Lab II

Select a Star

HATP36-140327

Size

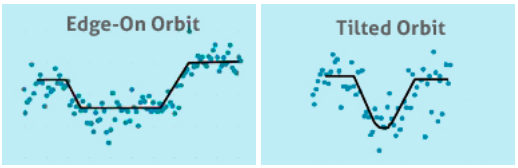
Challenge 4a: Calculate the planet's size

My planet is 0.214 times the width of my star.

Orbit

Challenge 5: Is the planet's orbit tilted?

My data is most consistent with a Tilted orbit.



Challenge 6: How close is the planet to its star?

My planet is 5 million miles from its star.

9

Data Lab II

Press Conference

Method

The method I used to detect this planet was; I used the Micro Observatory Telescope in Arizona to detect it.

Evidence for detection

The evidence for a positive detection included: There is a significant dip in the brightness of the star during the expected transit time of the planet between the earth and the star.

Evidence for size and orbit

Here´s how my evidence reveals the size and orbit of my planet: Given the amount of light theoretically blocked by the planet, its size can be determines. Also knowing the distance of the planet from its star is determined by the time it takes for the planet to pass in front of the star.

Prospects for life

I think the planet´s physical conditions affect the prospects for life this way: It seems highly unlikely for the planet to have a hopes for life given its extreme closeness to the star as well as the immense width of it.

10