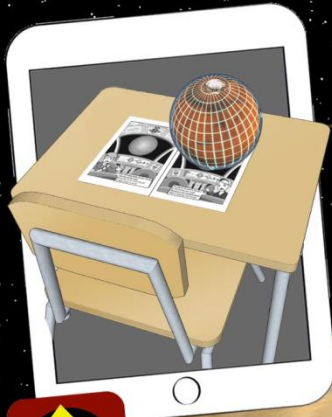


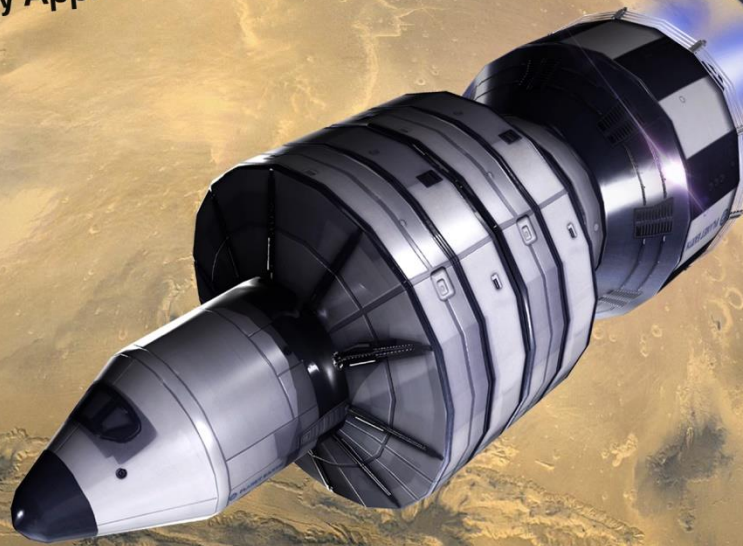


StoneOak Media  
Grades 3-5  
US Customary Units

# THE ROCKWELL ADVENTURES SOLAR SYSTEM EXPEDITION



FREE Augmented  
Reality App!



HANDS ON PLANET EXPLORATION!



Planet Images: NASA

## 2016-2017 SCHOOL YEAR

- Explore & Measure The Planets
- Land Probes On Each Planet's Surface
- Space Colony Design Challenge
- Pre & Post Exploration Tests
- Correlated to State & National Standards

Visit Us Online: [www.StoneOakMedia.com](http://www.StoneOakMedia.com)

# THE ROCKWELL ADVENTURES SOLAR SYSTEM EXPEDITION

Second Edition: 2016 – 2017 Academic Year

© 2015 – 2016

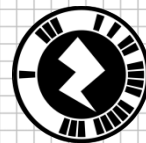
StoneOak Media LLC

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ISBN: 978-0-9970192-6-1

The digital content associated with this book is intended to be used during the 2016 – 2017 academic year, and will expire on September 1<sup>st</sup> 2017. Please visit us online for updated copies of this book, lesson expansion packs, additional titles, and much more.





Scan With Zappar  
App to Learn More

# INTRODUCTION

## (FOR TEACHERS)

### Credits

Written by Raymond Key. Augmented Reality by Zappar ([www.Zappar.com](http://www.Zappar.com)). Selected graphics by StoneOak Media, Farid Sandoval Design, Zappar, and Shutterstock. Certain Technology and Design Elements Patented and Patent Pending.

### Copyright & Copying

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### Zappar Augmented Reality App



This activity book requires the use of the FREE *Zappar* companion application for iOS/Android tablets and smart phones. Students will use this application to scan *Zapcodes* (the circular symbol at the top of this page) within this book, which will activate a variety of 3D content. Students will then interact with this content using virtual measuring tools as part of the lesson. To use the Zappar application within this workbook, simply have your students follow these steps:

**1** Launch the Zappar app



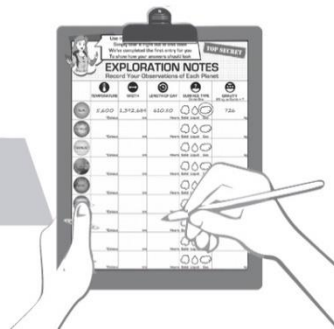
**2** Hold over each planet page



**3** Explore each planet



**4** Record the measurements



The zapcodes included in this book will only work for the 2016-2017 school year. To obtain an updated copy of this book after this period of time, please visit our website ([StoneOakMedia.com](http://StoneOakMedia.com)) or contact your school's curriculum coordinator.

### Additional Resources

Visit us online at [www.StoneOakMedia.com](http://www.StoneOakMedia.com) for additional resources and information:

- **FREE Lesson Expansion Packs**
- **State & National Standards Alignment Info**
- **Additional Educational Products**
- **Much More...**



# INTRODUCTION

## (FOR TEACHERS)

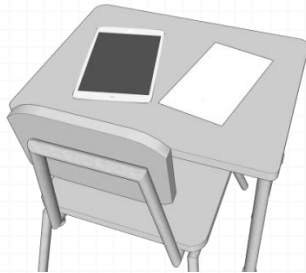
### Lesson Plan

*The Rockwell Adventures: Solar System Expedition* is an educational activity book designed to provide 3rd-5th graders with a hands-on introduction to the Solar System. The lesson within this book is centered on the premise that the reader will be serving as the lead engineer on a top secret mission to find a planet where a new base can be built.

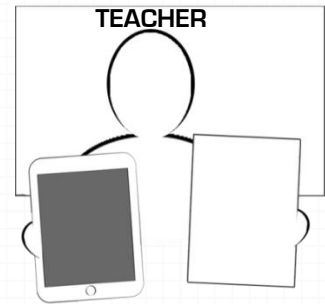
As students travel to each planet in the Solar System, they will record several measurements. These measurements are taken so that, by the end of the mission, the student will know which planet to pick as the location for their base, and what basic design considerations they will need to keep in mind as they draw it. Here's how a typical lesson is intended to work:



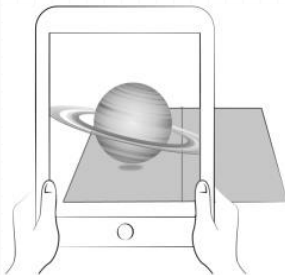
- 1) DOWNLOAD FREE ZAPPAR APP**  
-Teacher Installs



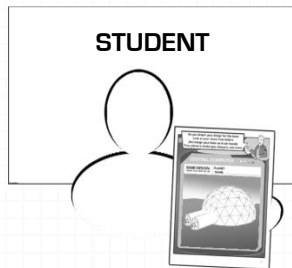
- 2) COPY & DISTRIBUTE**  
- Print/Copy Pages 6- 24  
- Distribute To Students' Desks  
Or Classroom Learning Stations



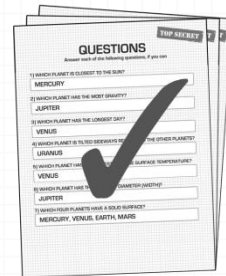
- 2) INTRODUCE LESSON**  
- Pre-Assessment  
- Measure Each Planet  
- Record Measurements  
- Post Assessment  
- Design Planet Base



- 4) STUDENTS EXPLORE**  
- Pre-Assessment  
- Measure Each Planet  
- Record Measurements  
- Post Assessment  
- Design Planet Base



- 5) STUDENTS PRESENT & VOTE**  
- Students Present Planet Choice,  
Base Design, & Rationale  
- Class Votes on Best Design



- 6) EXAMINE PROGRESS**  
- Teacher Compares Pre  
and Post Assessments



**TOP SECRET**

# ANSWERS

(FOR TEACHERS)

1) WHICH PLANET IS CLOSEST TO THE SUN?

**MERCURY**

2) WHICH PLANET HAS THE MOST GRAVITY?

**JUPITER**

3) WHICH FOUR PLANETS HAVE A SOLID SURFACE?

**MERCURY, VENUS, EARTH, MARS**

4) WHICH PLANET IS TILTED SIDEWAYS RELATIVE TO THE OTHER PLANETS?

**URANUS**

5) WHICH PLANET HAS THE HIGHEST AVERAGE SURFACE TEMPERATURE?

**VENUS**

6) WHICH PLANET HAS THE GREATEST DIAMETER (WIDTH)?

**JUPITER**

7) WHICH PLANET HAS THE LONGEST DAY?















**VENUS**

# ANSWER KEY

**TOP SECRET**

## EXPLORATION NOTES

Record Your Observations of Each Planet

	 TEMPERATURE	 WIDTH	 LENGTH OF DAY	 SURFACE TYPE Circle One	 GRAVITY 57 Pounds on Earth = ?
 SUN	10,112 °Fahrenheit	865,373 Miles	610.80 Hours	<input type="checkbox"/> Solid <input type="checkbox"/> Liquid <input checked="" type="checkbox"/> Gas	1,602 Pounds
 MERCURY	333 °Fahrenheit	3,031 Miles	1,407.36 Hours	<input checked="" type="checkbox"/> Solid <input type="checkbox"/> Liquid <input type="checkbox"/> Gas	22 Pounds
 VENUS	867 °Fahrenheit	7,521 Miles	5,832.00 Hours	<input checked="" type="checkbox"/> Solid <input type="checkbox"/> Liquid <input type="checkbox"/> Gas	52 Pounds
 EARTH	59 °Fahrenheit	7,926 Miles	24.00 Hours	<input checked="" type="checkbox"/> Solid <input checked="" type="checkbox"/> Liquid <input type="checkbox"/> Gas	57 Pounds
 MARS	-81 °Fahrenheit	4,221 Miles	24.66 Hours	<input checked="" type="checkbox"/> Solid <input type="checkbox"/> Liquid <input type="checkbox"/> Gas	22 Pounds
 JUPITER	-162 °Fahrenheit	88,846 Miles	9.93 Hours	<input type="checkbox"/> Solid <input type="checkbox"/> Liquid <input checked="" type="checkbox"/> Gas	145 Pounds
 SATURN	-218 °Fahrenheit	74,898 Miles	10.66 Hours	<input type="checkbox"/> Solid <input type="checkbox"/> Liquid <input checked="" type="checkbox"/> Gas	61 Pounds
 URANUS	-323 °Fahrenheit	31,763 Miles	17.24 Hours	<input type="checkbox"/> Solid <input type="checkbox"/> Liquid <input checked="" type="checkbox"/> Gas	52 Pounds
 NEPTUNE	-330 °Fahrenheit	30,775 Miles	16.11 Hours	<input type="checkbox"/> Solid <input type="checkbox"/> Liquid <input checked="" type="checkbox"/> Gas	65 Pounds

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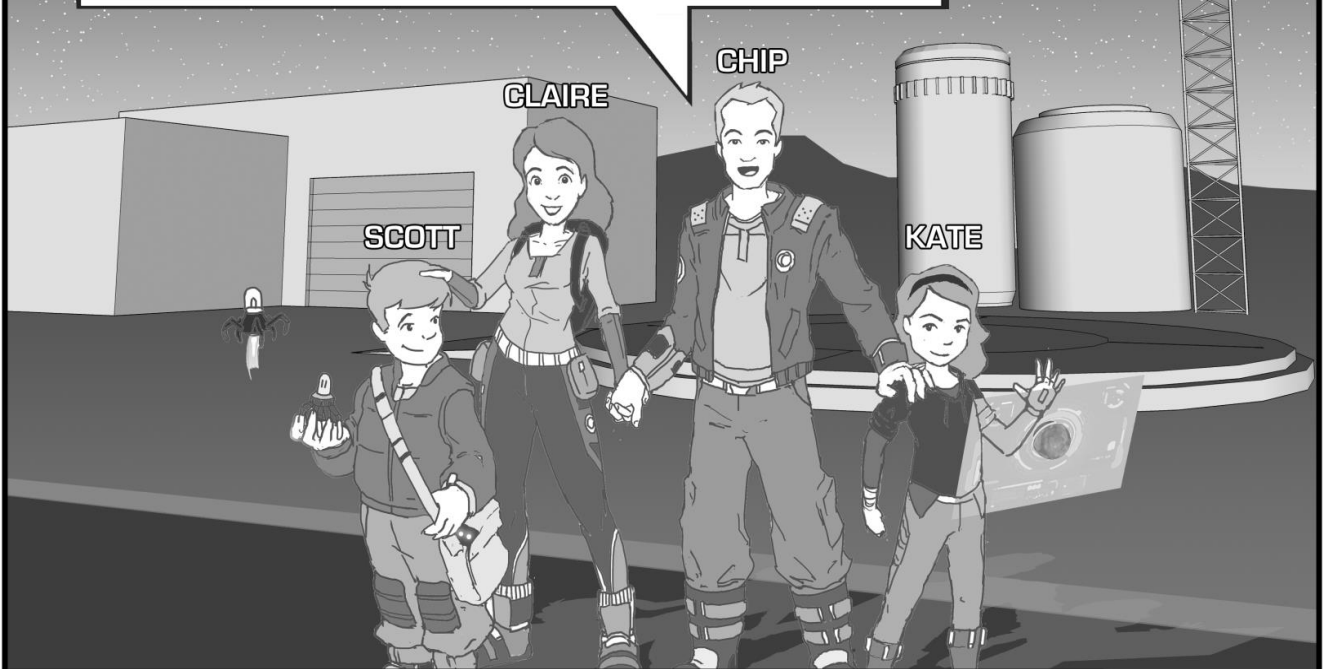
# THE ROCKWELL ADVENTURES

---

# SOLAR SYSTEM EXPEDITION

Hello, we're the Rockwell family  
We're explorers that travel through space  
We've come to take you on a mission  
It's Top Secret; we have no time to waste!

We're going to explore the Solar System  
Our secret mission is to build a new base,  
You'll design this base at our last stop  
Once you've helped pick out the right place

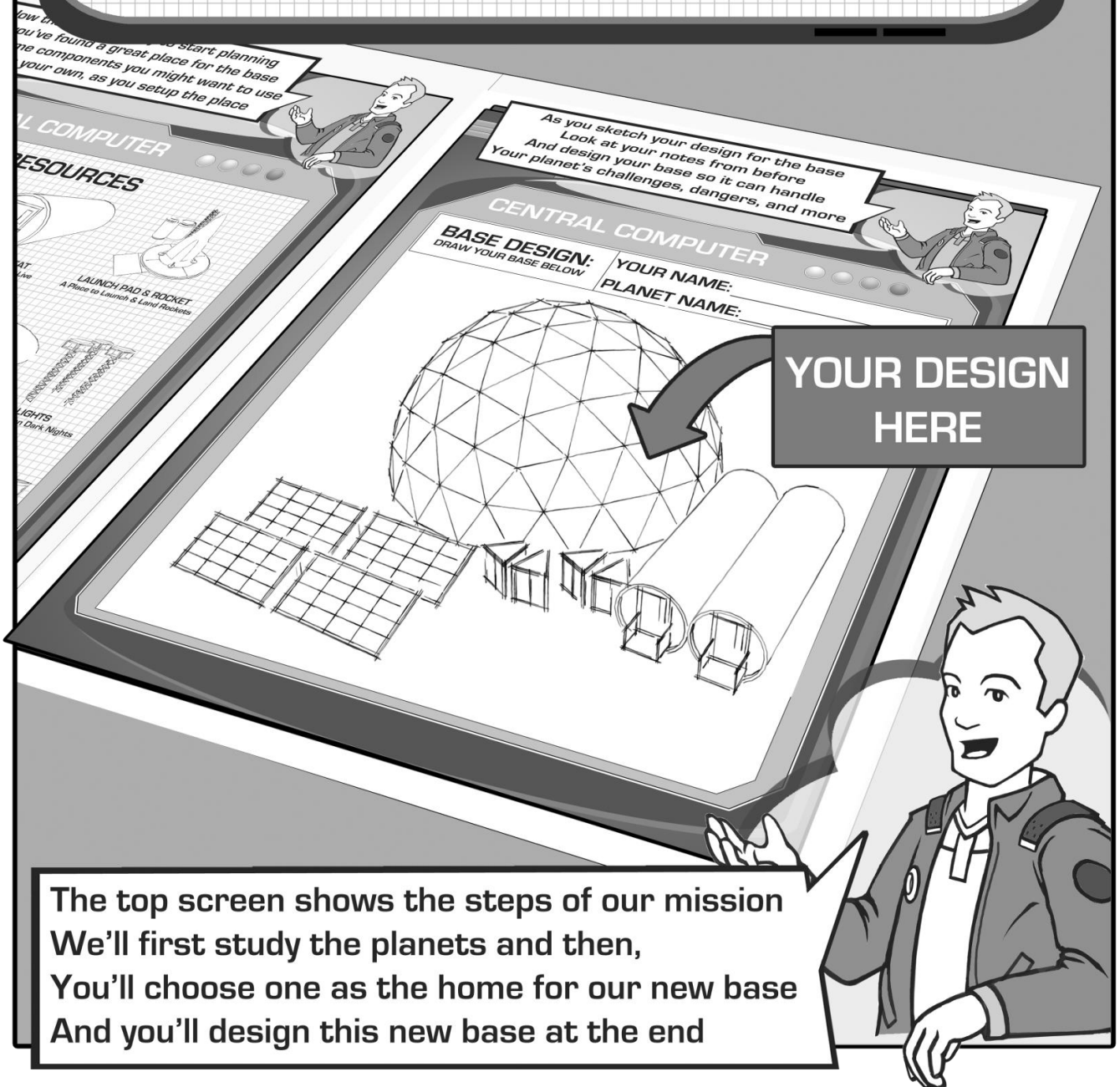


YOUR  
NAME:



# TOP SECRET MISSION STEPS

1. Explore and Take Notes on Each Planet
2. Select The Planet Where Our New Base Will Be Built
3. Design a Base Tough Enough to Survive



**TOP SECRET**

# QUESTIONS

Answer each of the following questions, if you can.  
If you don't know an answer, simply leave it blank

1) WHICH PLANET IS CLOSEST TO THE SUN?

2) WHICH PLANET HAS THE MOST GRAVITY?

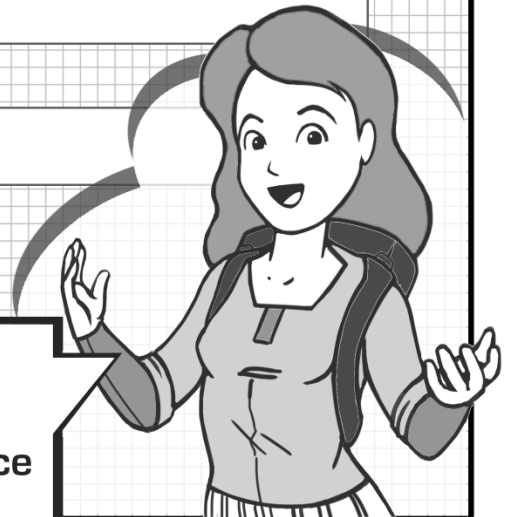
3) WHICH FOUR PLANETS HAVE A SOLID SURFACE?

4) WHICH PLANET IS TILTED SIDEWAYS RELATIVE TO THE OTHER PLANETS?

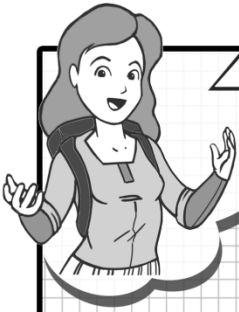
5) WHICH PLANET HAS THE HIGHEST AVERAGE SURFACE TEMPERATURE?

6) WHICH PLANET HAS THE GREATEST DIAMETER (WIDTH)?

7) WHICH PLANET HAS THE LONGEST DAY?



To prepare for this exciting journey  
We need to ask a few basic questions  
These will measure your knowledge of space  
Just follow these simple directions












































Use this sheet to take notes as you go  
 Simply tear it right out of this book  
 We've completed the first entry for you  
 To show how your answers should look

**TOP SECRET**

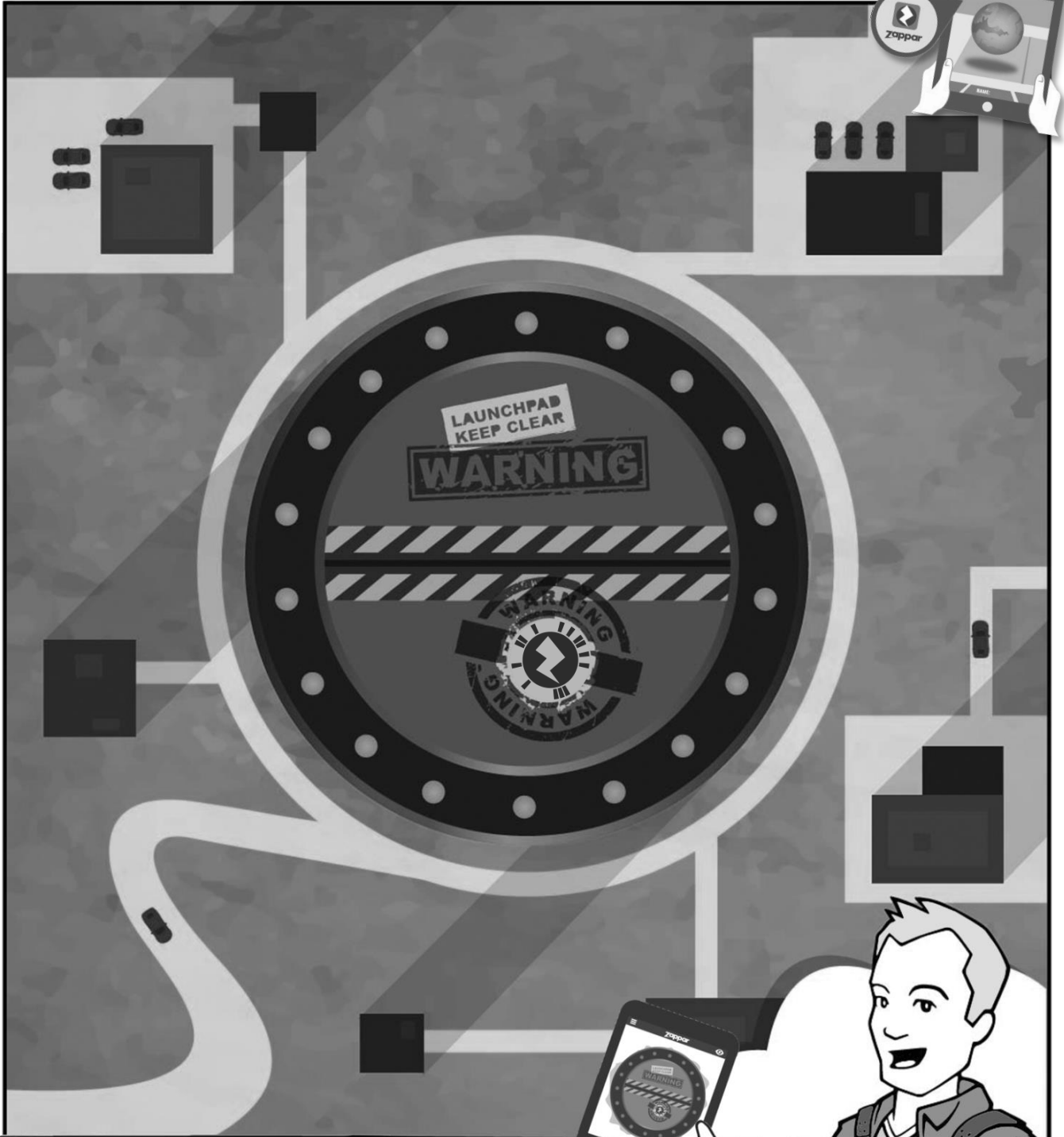
# EXPLORATION NOTES

Record Your Observations of Each Planet

	 TEMPERATURE	 WIDTH	 LENGTH OF DAY	 SURFACE TYPE Circle One	 GRAVITY 57 Pounds on Earth = ?
 SUN	10,112 °Fahrenheit	865,373 Miles	610.80 Hours	  	1,602 Pounds
 MERCURY	°Fahrenheit	Miles	Hours	  	Pounds
 VENUS	°Fahrenheit	Miles	Hours	  	Pounds
 EARTH	°Fahrenheit	Miles	Hours	  	Pounds
 MARS	°Fahrenheit	Miles	Hours	  	Pounds
 JUPITER	°Fahrenheit	Miles	Hours	  	Pounds
 SATURN	°Fahrenheit	Miles	Hours	  	Pounds
 URANUS	°Fahrenheit	Miles	Hours	  	Pounds
 NEPTUNE	°Fahrenheit	Miles	Hours	  	Pounds

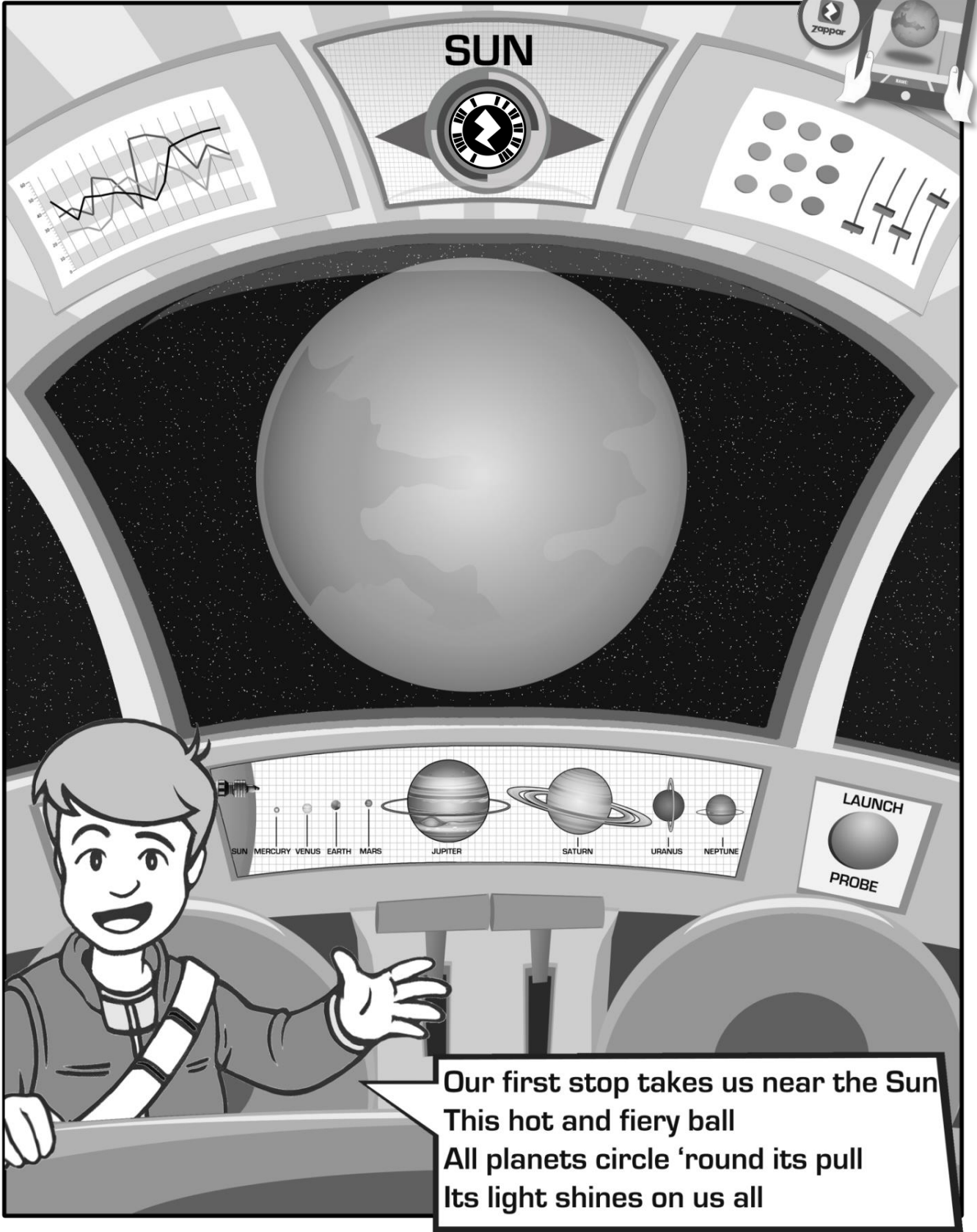


**LAUNCH THE ZAPPAR APP AND SCAN THIS PAGE**

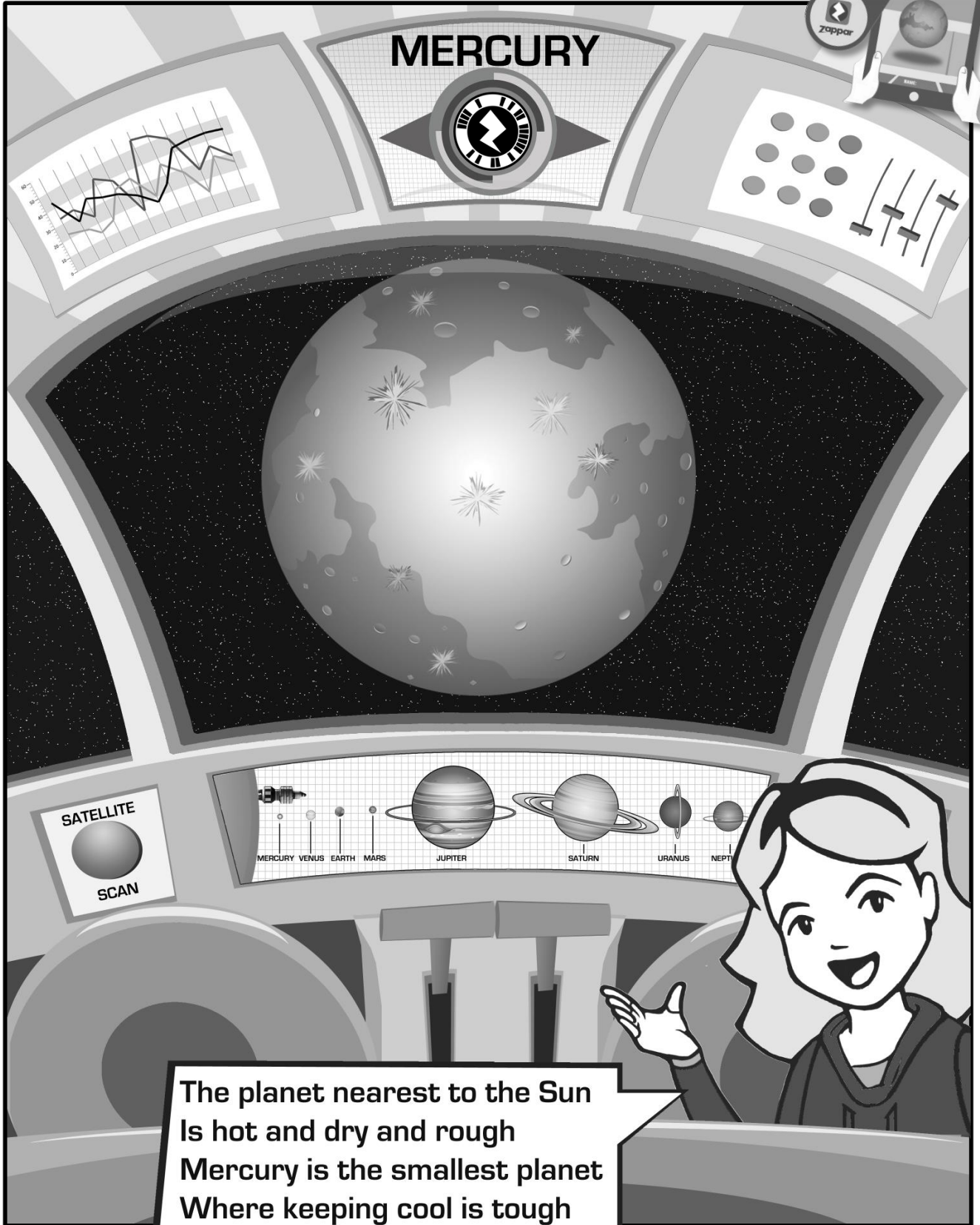


Our space ship is fueled now, and ready  
So buckle up and hang on to your seat  
Zap this page to open the blast doors  
We'll take off once your scan is complete

# ZAP THE PLANET THEN RECORD YOUR FINDINGS



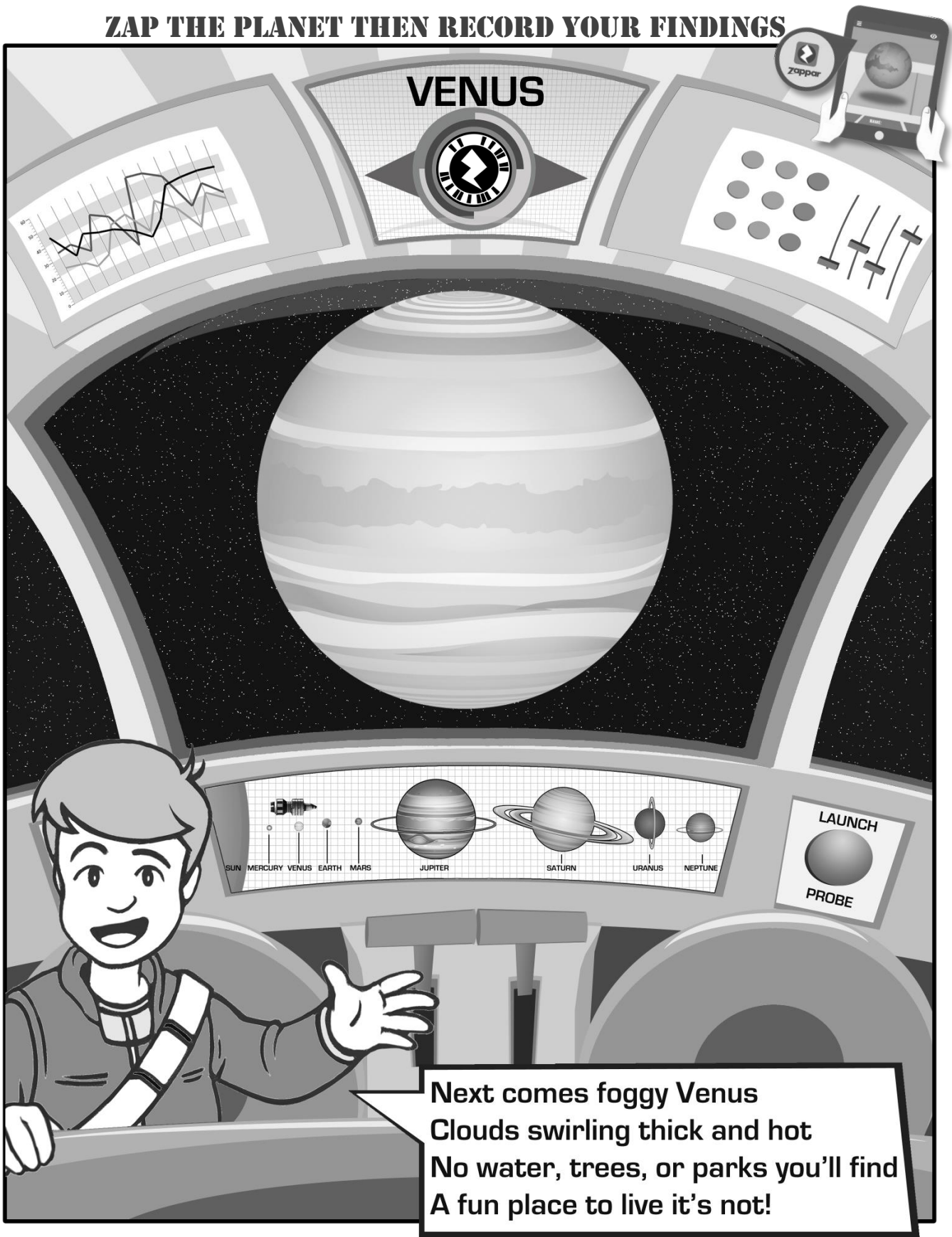
# ZAP THE PLANET THEN RECORD YOUR FINDINGS



The planet nearest to the Sun  
Is hot and dry and rough  
Mercury is the smallest planet  
Where keeping cool is tough

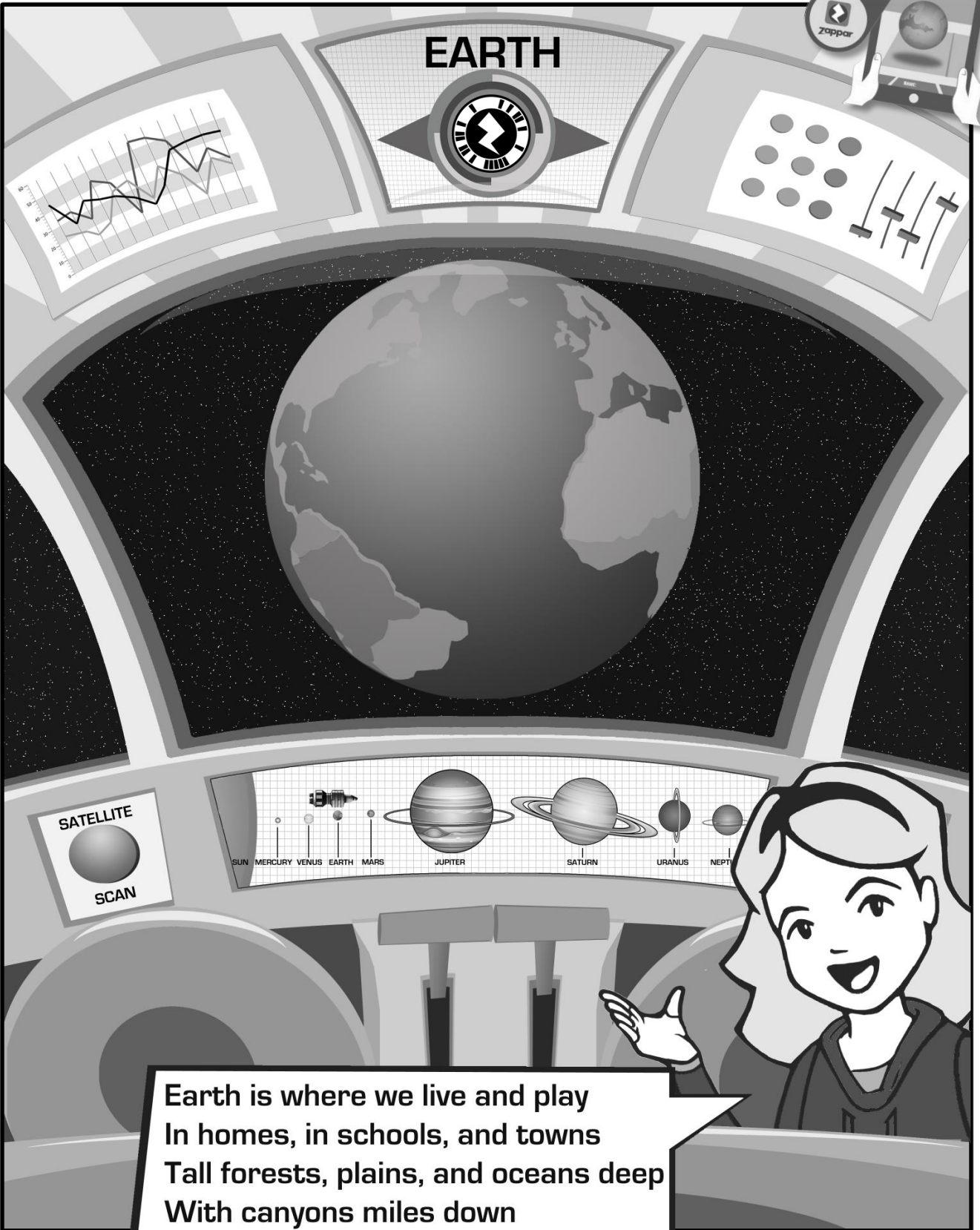


# ZAP THE PLANET THEN RECORD YOUR FINDINGS



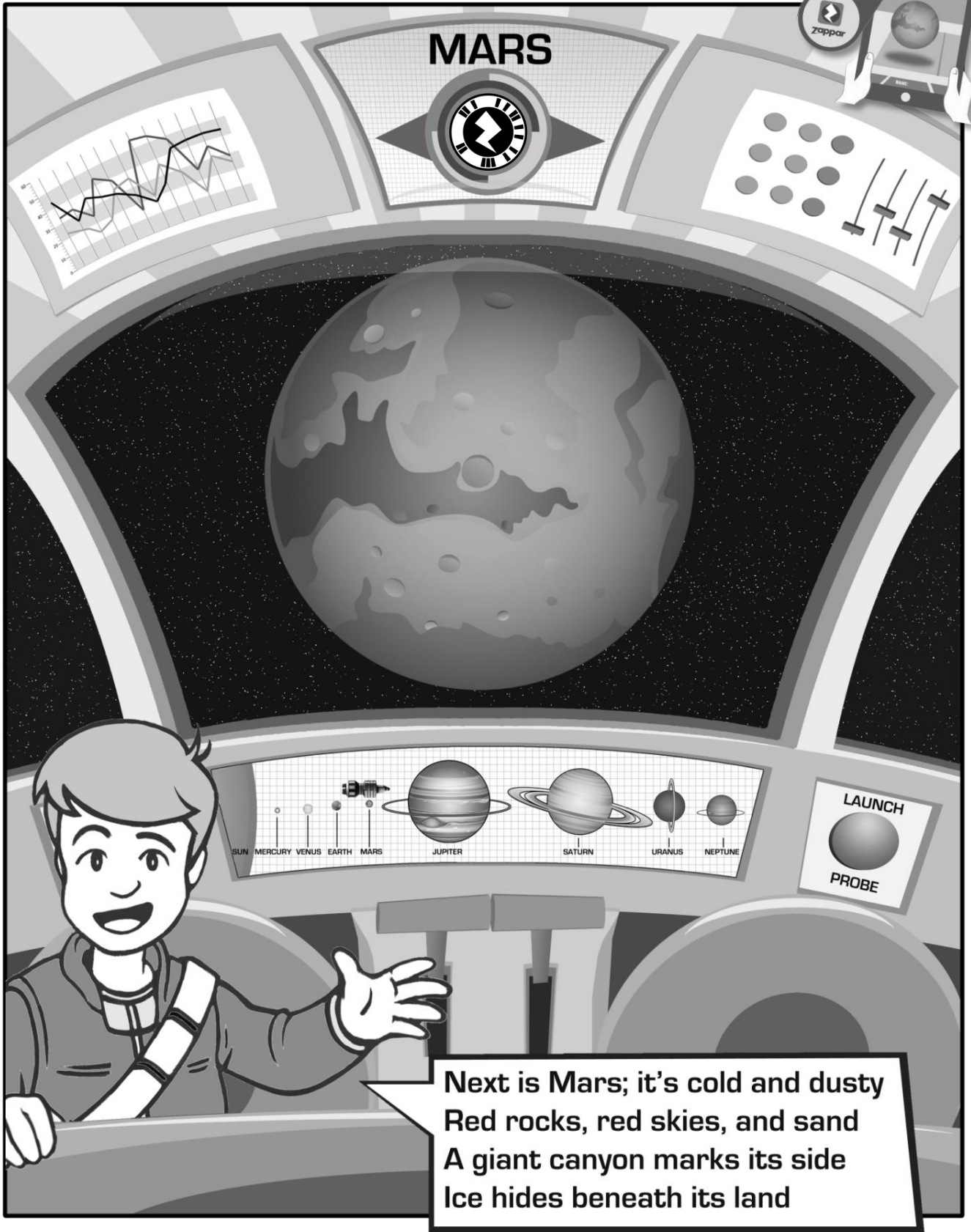
# ZAP THE PLANET THEN RECORD YOUR FINDINGS

## EARTH



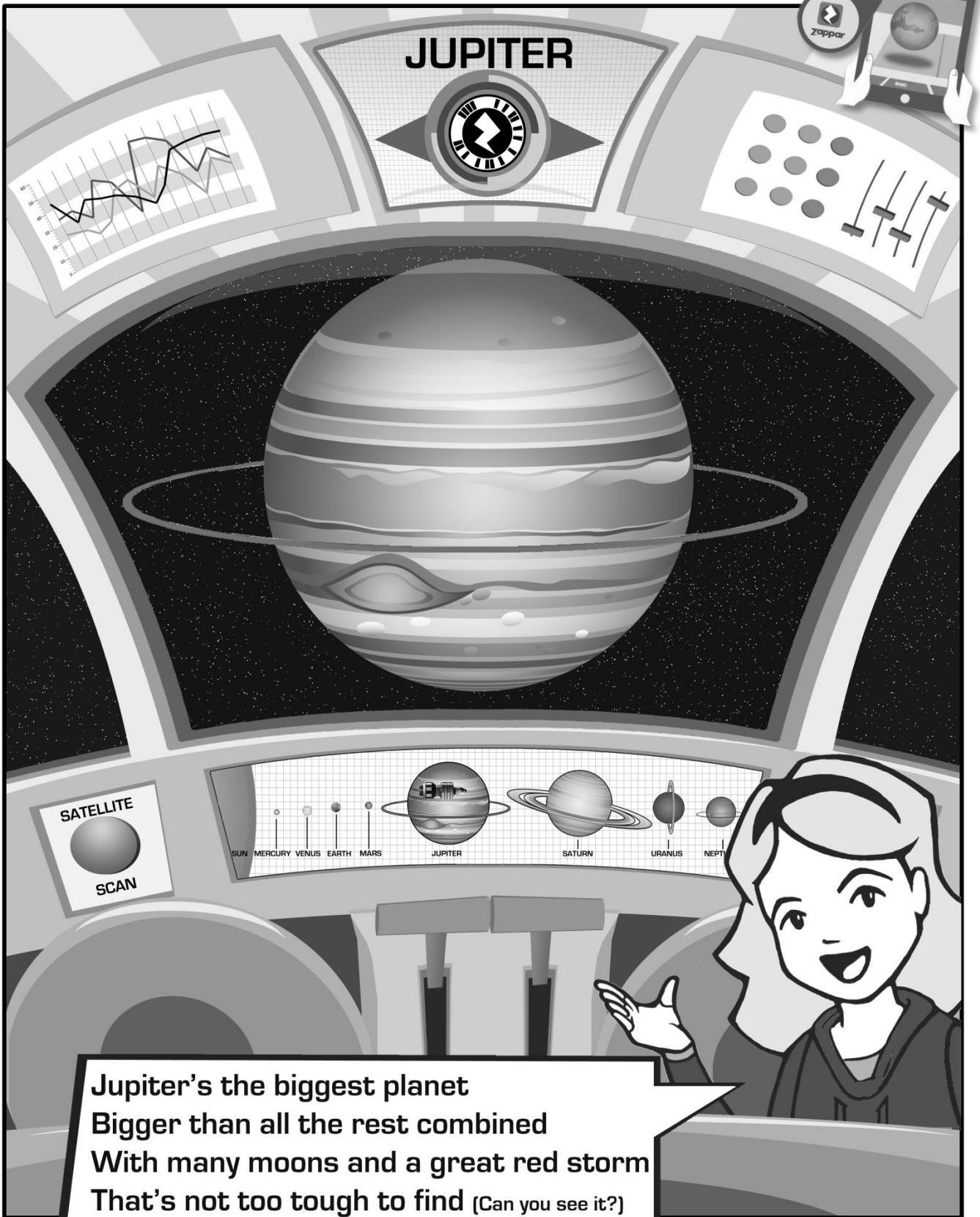
Earth is where we live and play  
In homes, in schools, and towns  
Tall forests, plains, and oceans deep  
With canyons miles down

# ZAP THE PLANET THEN RECORD YOUR FINDINGS

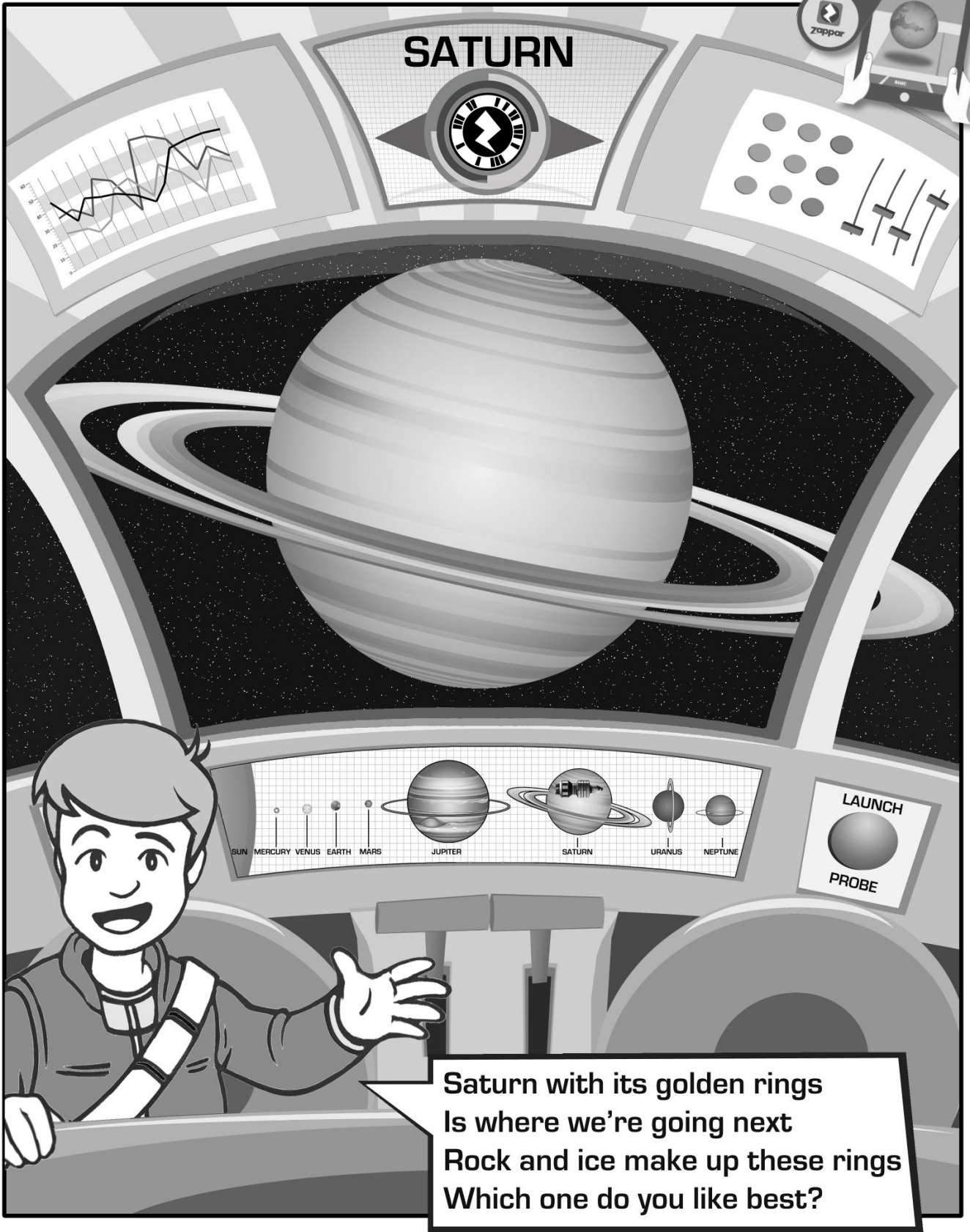




# ZAP THE PLANET THEN RECORD YOUR FINDINGS



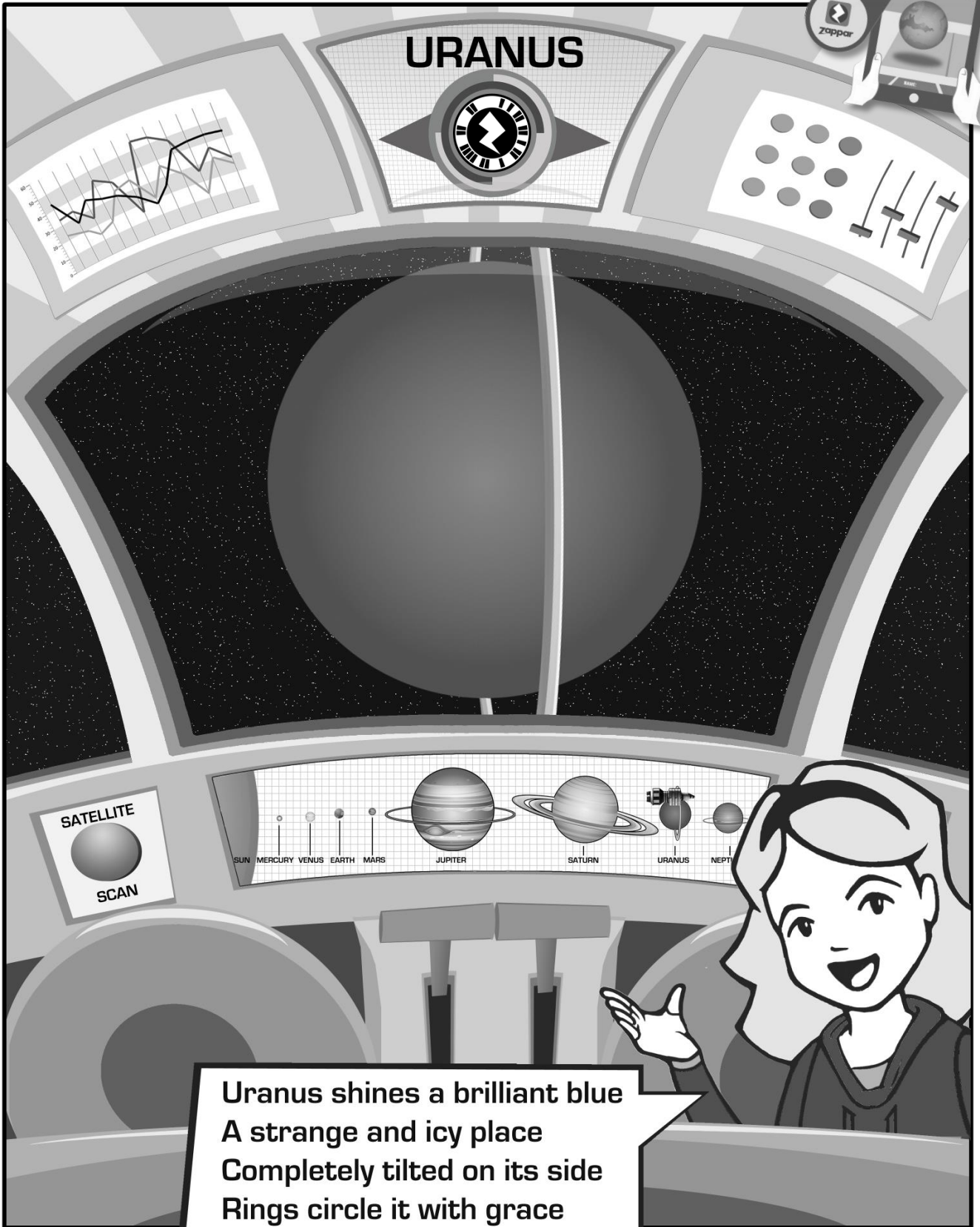
# ZAP THE PLANET THEN RECORD YOUR FINDINGS





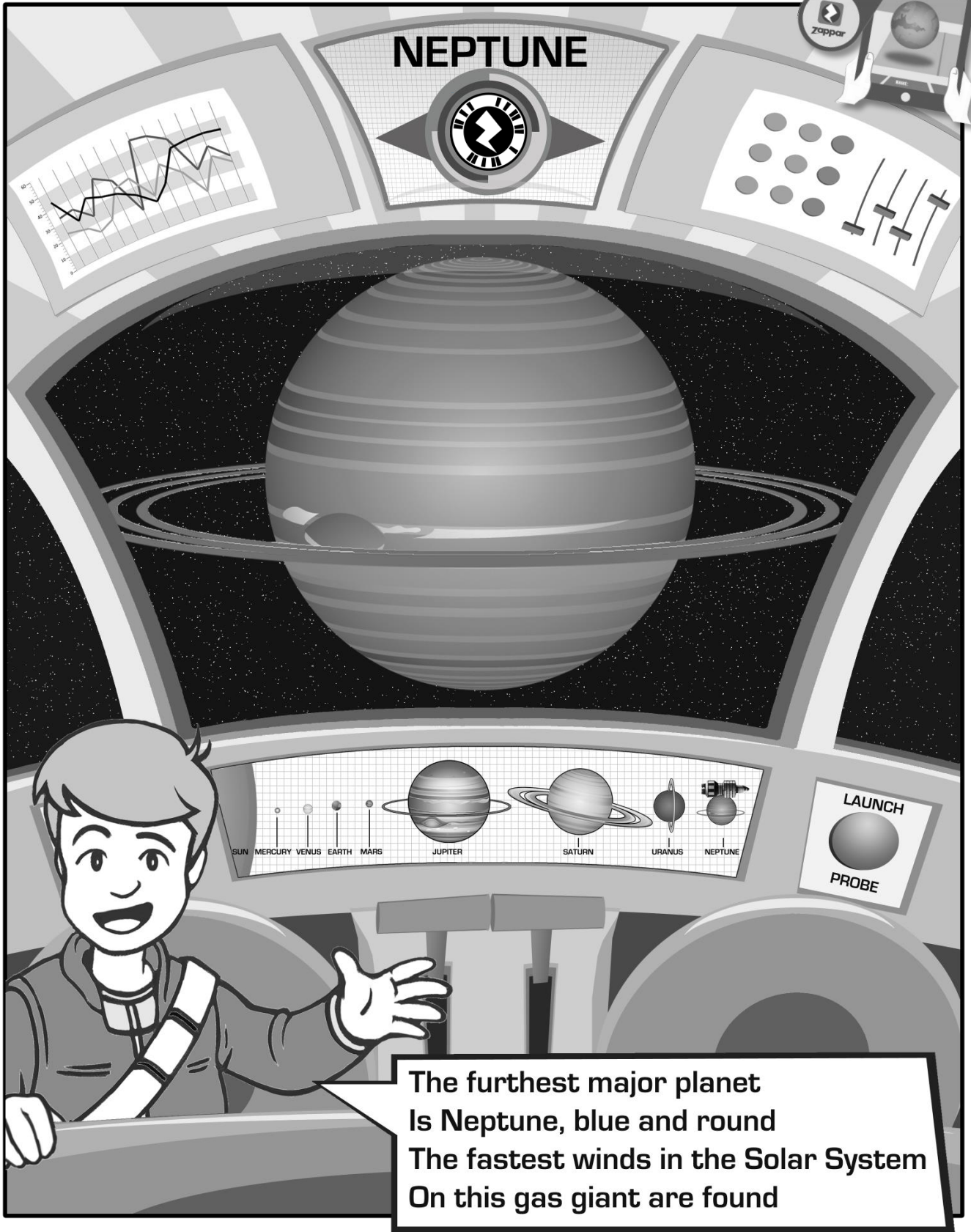
# ZAP THE PLANET THEN RECORD YOUR FINDINGS

## URANUS



Uranus shines a brilliant blue  
A strange and icy place  
Completely tilted on its side  
Rings circle it with grace

# ZAP THE PLANET THEN RECORD YOUR FINDINGS



**TOP SECRET**

# QUESTIONS

Refer to your notes and answer each question

1) WHICH PLANET IS CLOSEST TO THE SUN?

2) WHICH PLANET HAS THE MOST GRAVITY?

3) WHICH FOUR PLANETS HAVE A SOLID SURFACE?

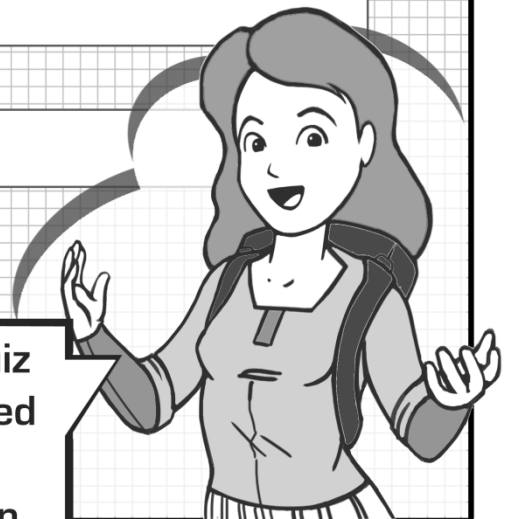
4) WHICH PLANET IS TILTED SIDEWAYS RELATIVE TO THE OTHER PLANETS?

5) WHICH PLANET HAS THE HIGHEST AVERAGE SURFACE TEMPERATURE?

6) WHICH PLANET HAS THE GREATEST DIAMETER (WIDTH)?

7) WHICH PLANET HAS THE LONGEST DAY?

Alright, it's time to retake the quiz  
To see how much you have learned  
Refer to the notes that you took  
And answer each question in turn





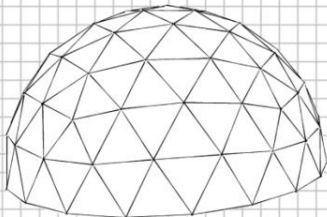
You're now ready to choose a planet  
 And sketch a design for our base  
 Here's some components you might want to use  
 Or design your own, as you setup the place



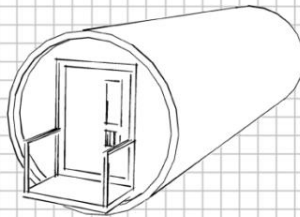
## CENTRAL COMPUTER



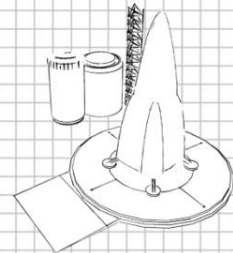
### RESOURCES



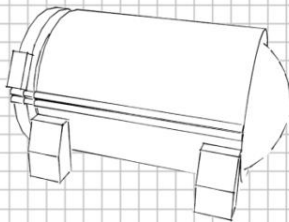
**GREENHOUSE**  
 A Place To Grow Plants For Food & Air



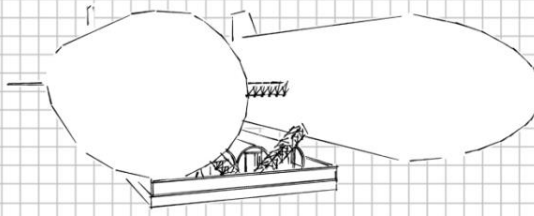
**CREW HABITAT**  
 A Place For People To Live



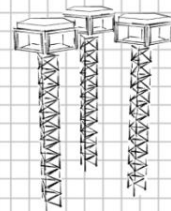
**LAUNCH PAD & ROCKET**  
 A Place to Launch & Land Rockets



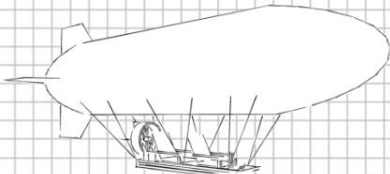
**POWER GENERATOR**  
 Makes Electricity To Power Base



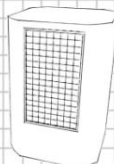
**FLOATING PLATFORM**  
 Supports Bases That Float



**LIGHTS**  
 To Brighten Dark Nights



**BLIMP**  
 Transportation For Your Crew



**AIR CONDITIONER**  
 Cleans, Heats, & Cools Air



**FOOD & SUPPLIES**  
 Boxes With Material To Help  
 Your Base Get Started

As you sketch your design for the base  
Look at your notes from before  
And design your base so it can handle  
Your planet's challenges, dangers, and more



## CENTRAL COMPUTER



### BASE DESIGN

DRAW YOUR BASE BELOW

YOUR NAME: \_\_\_\_\_

PLANET NAME: \_\_\_\_\_

A large, empty rectangular area with a thin border, intended for drawing the base design. It occupies the majority of the lower half of the page.

## SCAN THE ZAPCODE TO READ THE NEWS STORY



Thanks for your help on this mission  
And for the fantastic base you've designed!  
A crew will depart soon to build it  
Who knows what treasures they'll find!

EARTH NEWS  
NETWORK



TOP  
STORY

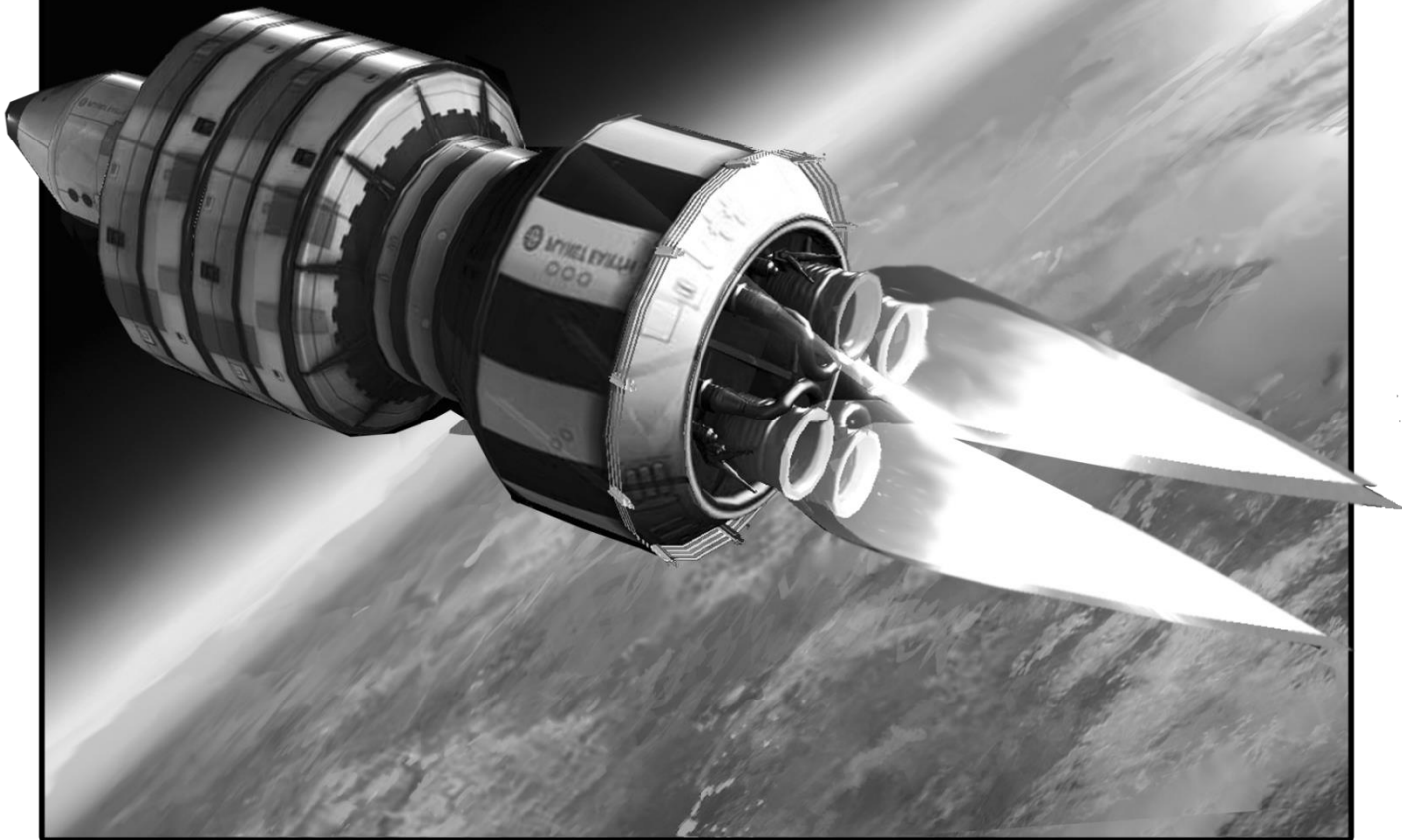
PROBE  
10

Hey look, there's a message from Earth!  
It just came up on that screen  
It's some kind of urgent news story!  
Scan that zapcode so it can be seen



**Wow, you got some amazing recognition  
That's definitely a job well done!  
You're becoming a famous explorer  
But the adventure has hardly begun**

**Please join us on our next adventure  
As we investigate science and more  
Another assignment is waiting  
There's so much left to explore!**



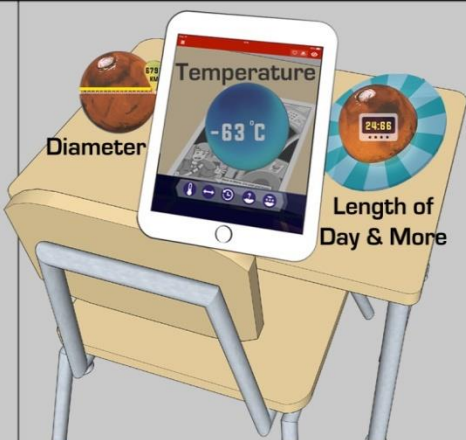


# THE ADVENTURE BEGINS

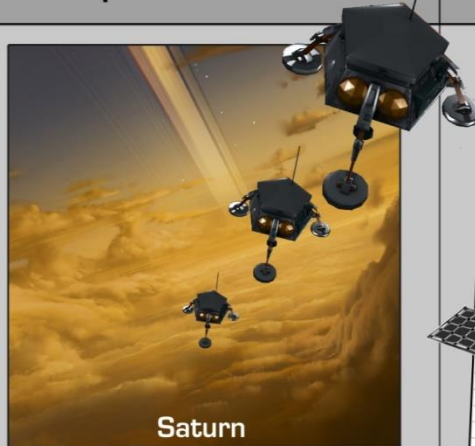


Join the Rockwell family on their Top Secret mission to colonize a new planet. This fun-filled STEM-focused tour of the Solar System teaches students basic facts about each of the planets, and challenges them to design a base that is appropriate for the planet they choose to colonize. During this mission, students use this workbook and the companion Zappar augmented reality app to:

## Measure Each Planet



## Explore Each Planet



Saturn

## Design A Suitable Base

