StoneOak Media®

Metric Units

THE ROCKWELL ADVENTURES®

SOLAR SYSTEM EXPEDITION

FREE DIGITAL EDITION

FREE Augmented Reality App!

Zappar

HANDS ON PLANET EXPLORATION!

3D INTERACTIVE ADVENTURE

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

A Letter From StoneOak Media

March 27, 2020

Dear Educators and Parents:

We at StoneOak Media wanted to take the time to send a message of hope (and help) to everyone facing the challenges that COVID-19 has brought into our collective daily lives.

We've heard from so many of you over the past few weeks, about the difficulties you're facing. Many of you are now spending a great deal of time at home with your children, as you follow the recommendations of government health officials, and attempt to socially distance yourselves from the broader community. Trying to remain productive under these circumstances, while also engaging your children and furthering their education can be a significant challenge! It's a challenge we would like to help address.

We've recently had a number of conversations internally, and with our long-time collaborators at Zappar, about how we could leverage our cutting-edge educational content to contribute in some way during this time of collective community sacrifice. To this end, we've decided to provide several of our products that can be readily distributed via electronic means, **FREE OF CHARGE** for the next few months. This workbook is one of those products. We've enabled the digital content associated with these books to be active through August 1st, 2020, which should hopefully be enough time for life everywhere to return back to a better level of normal.

We extend our thanks to the heroic efforts of medical staff across the globe, risking their lives to help contain this virus and minimize its impacts. Our thanks also goes out to the educators and parents who are working hard to provide a sense of normalcy to students everywhere. Like everything else, this too shall pass. When it does, and our children grow old and think back to this time, it is our hope that they do so with happy memories of time with family, time to relax, and even time to learn with some engaging content. We're happy to contribute in our own small way towards making this happen.

Thanks again for your support, and stay safe!

Sincerely,

The StoneOak Media Team!

THE ROCKWELL ADVENTURES®

SOLAR SYSTEM EXPEDITION

FREE LIMITED TIME DIGITAL EDITION

ISBN: 978-0-9970192-0-9

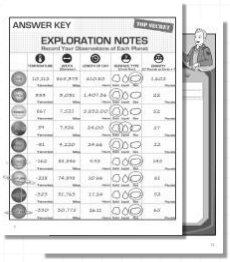
vSSE_6.0

Copyright & Credits

Getting Started: Step 1) Install the Zappar Augmented Reality App

This lesson requires the use of the FREE *Zappar* Augmented Reality application for iOS/Android tablets and smart phones. Students will use this application to scan *Zapcodes* (the circular symbol at the top of certain pages) within this book, which will activate a variety of 3D content within the lesson. The digital content associated with the zapcodes included in this complimentary lesson will expire on August 1st, 2020.

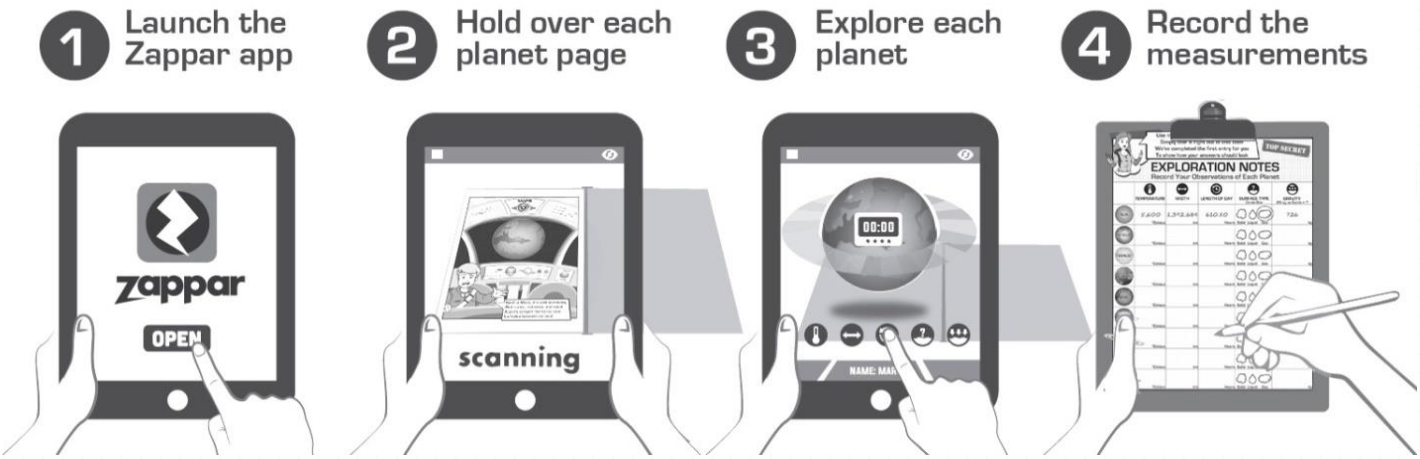
Getting Started: Step 2) Distribute and Print Lesson



IMPORTANT: To complete this lesson, distribute copies of this PDF to each student in your class. Ask that their parents print pages 6 – 24. Note that the answer key for this lesson is contained on page 4 and 5. If you/they are interested, **StoneOakMedia.com** also has additional FREE easy to download and print lesson related resources including: a Data Analysis lesson expansion pack, a Large Format Base Design Page, and much more.

Getting Started: Step 3) Launch the Zappar App and Complete Lesson

Once students have printed pages 7 - 25 of this workbook, and installed the Zappar app, have them complete the mission using the following steps:



Visit us online at www.StoneOakMedia.com for more exciting titles!

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

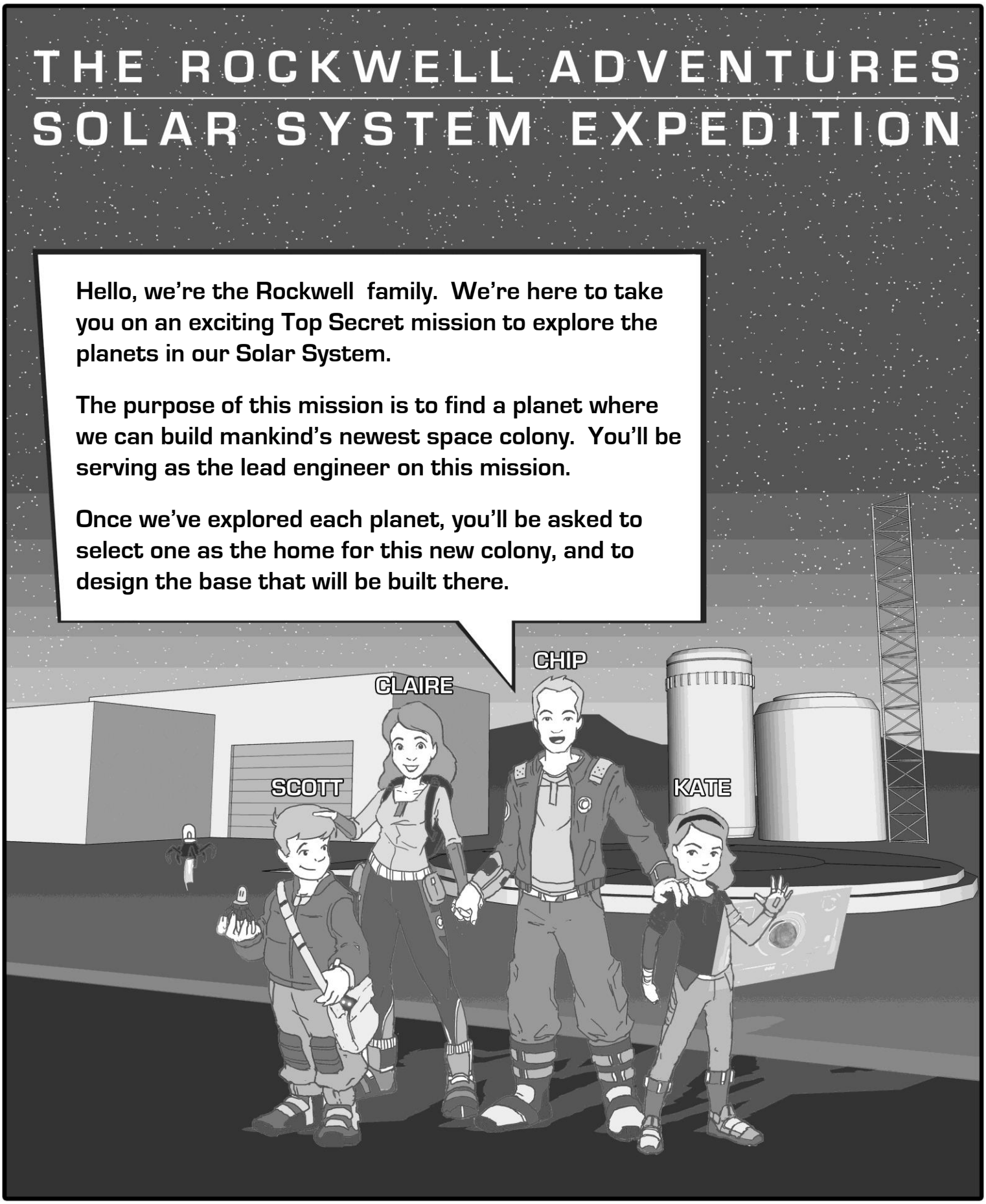
TOP SECRET

EXPLORATION NOTES

Record Your Observations of Each Planet

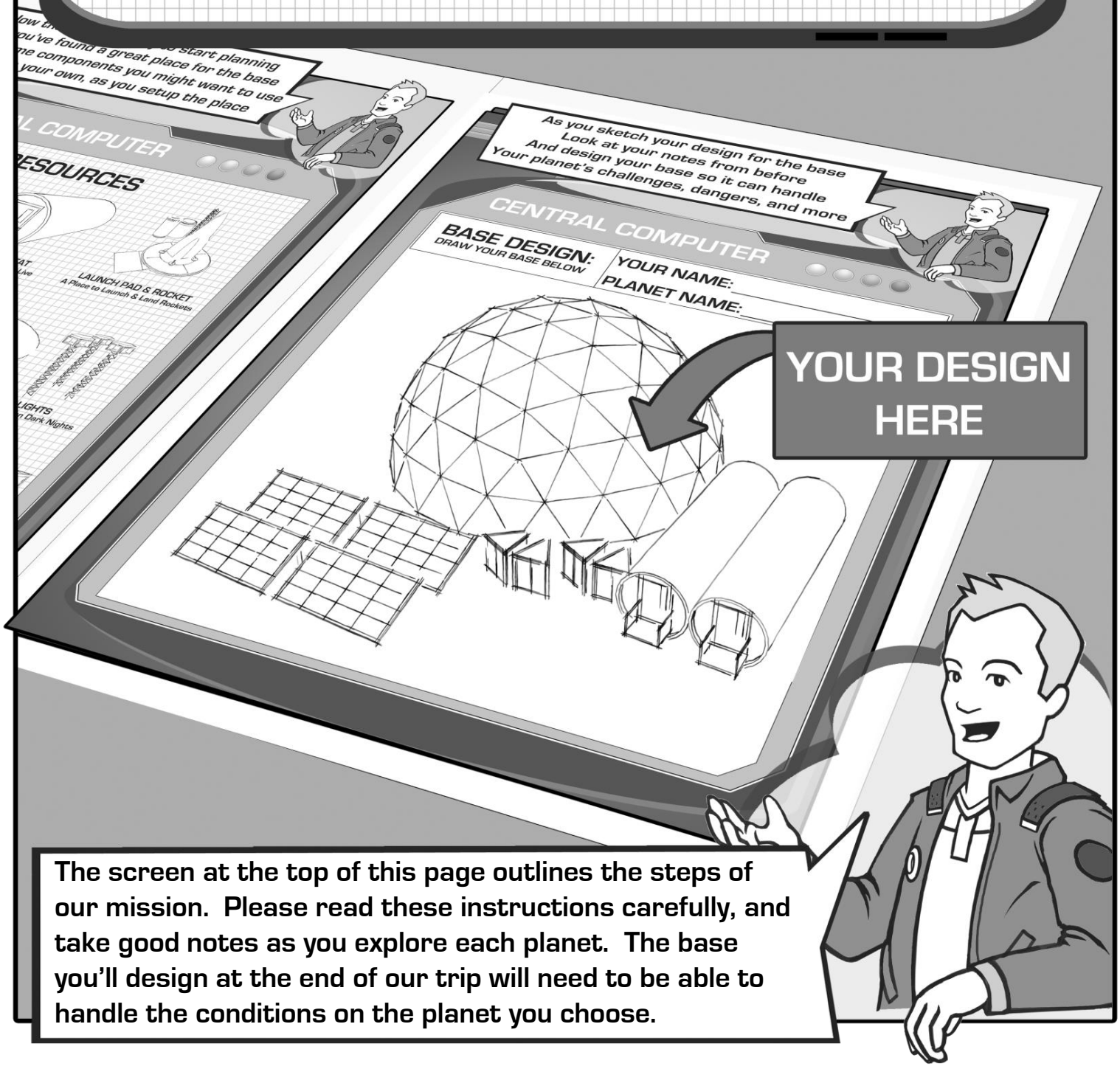
	TEMPERATURE	WIDTH (Diameter)	LENGTH OF DAY	SURFACE TYPE (Circle One)	GRAVITY 26 kg on Earth = ?
SUN	5,600 °Celsius	1,392,684 km	610.80 Hours	Solid Liquid **Gas**	726 kg
MERCURY	167 °Celsius	4,878 km	1,407.36 Hours	**Solid** Liquid Gas	10 kg
VENUS	464 °Celsius	12,104 km	5,832.00 Hours	**Solid** Liquid Gas	24 kg
EARTH	15 °Celsius	12,756 km	24.00 Hours	**Solid** **Liquid** Gas	26 kg
MARS	-63 °Celsius	6,792 km	24.66 Hours	**Solid** Liquid Gas	10 kg
JUPITER	-108 °Celsius	142,984 km	9.93 Hours	Solid Liquid **Gas**	66 kg
SATURN	-139 °Celsius	120,536 km	10.66 Hours	Solid Liquid **Gas**	28 kg
URANUS	-197 °Celsius	51,118 km	17.24 Hours	Solid Liquid **Gas**	24 kg
NEPTUNE	-201 °Celsius	49,528 km	16.11 Hours	Solid Liquid **Gas**	30 kg

THE ROCKWELL ADVENTURES
SOLAR SYSTEM EXPEDITION



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



The screen at the top of this page outlines the steps of our mission. Please read these instructions carefully, and take good notes as you explore each planet. The base you'll design at the end of our trip will need to be able to handle the conditions on the planet you choose.

TOP SECRET

PRE-MISSION 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?

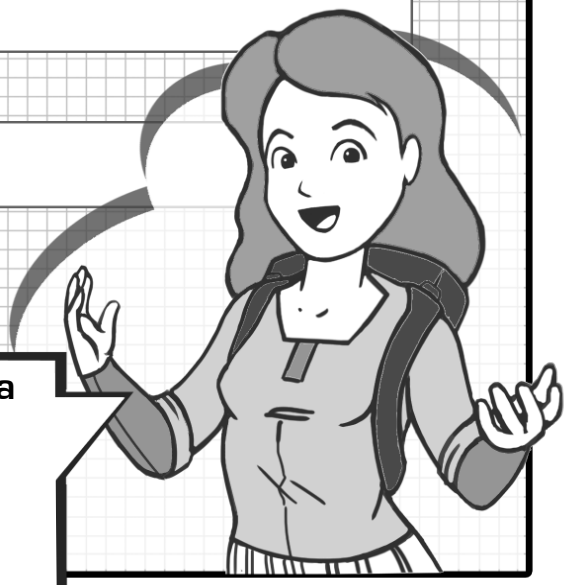
3) WHICH FOUR PLANETS HAVE A SOLID SURFACE?

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 help us better understand how much you already know about the planets. Follow the instructions at the top of the page to complete this short quiz.

Use this sheet to take notes as you explore each planet. To get you started, we've already recorded the data for our first stop, the Sun. Please fill in the other details!

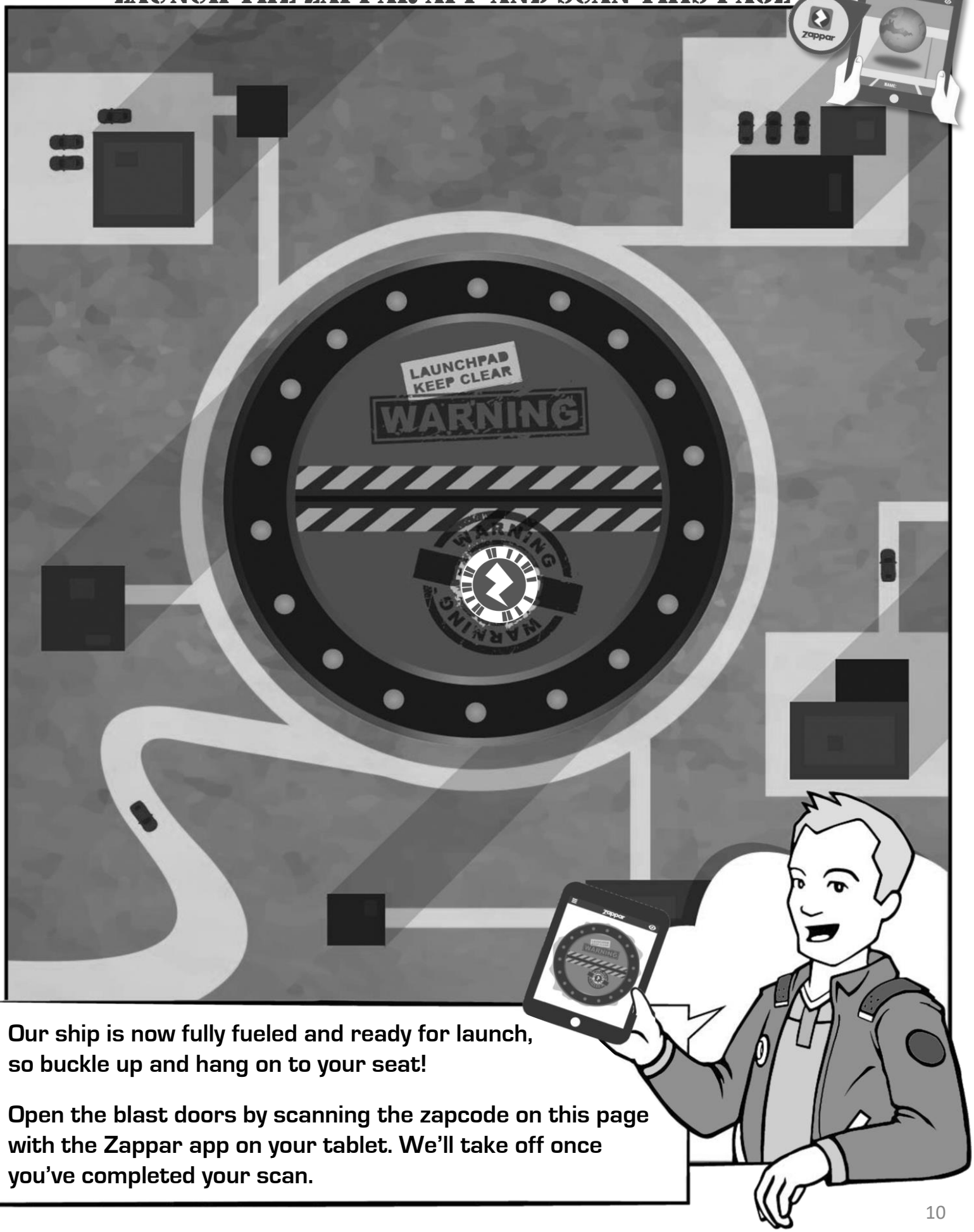
TOP SECRET

EXPLORATION NOTES

Record Your Observations of Each Planet

	TEMPERATURE	WIDTH (Diameter)	LENGTH OF DAY	SURFACE TYPE (Circle One)	GRAVITY 26 kg on Earth = ?
SUN	5,600 °Celsius	1,392,684 km	610.80 Hours	Solid Liquid Gas	726 kg
MERCURY	°Celsius	km	Hours	Solid Liquid Gas	kg
VENUS	°Celsius	km	Hours	Solid Liquid Gas	kg
EARTH	°Celsius	km	Hours	Solid Liquid Gas	kg
MARS	°Celsius	km	Hours	Solid Liquid Gas	kg
JUPITER	°Celsius	km	Hours	Solid Liquid Gas	kg
SATURN	°Celsius	km	Hours	Solid Liquid Gas	kg
URANUS	°Celsius	km	Hours	Solid Liquid Gas	kg
NEPTUNE	°Celsius	km	Hours	Solid Liquid Gas	kg

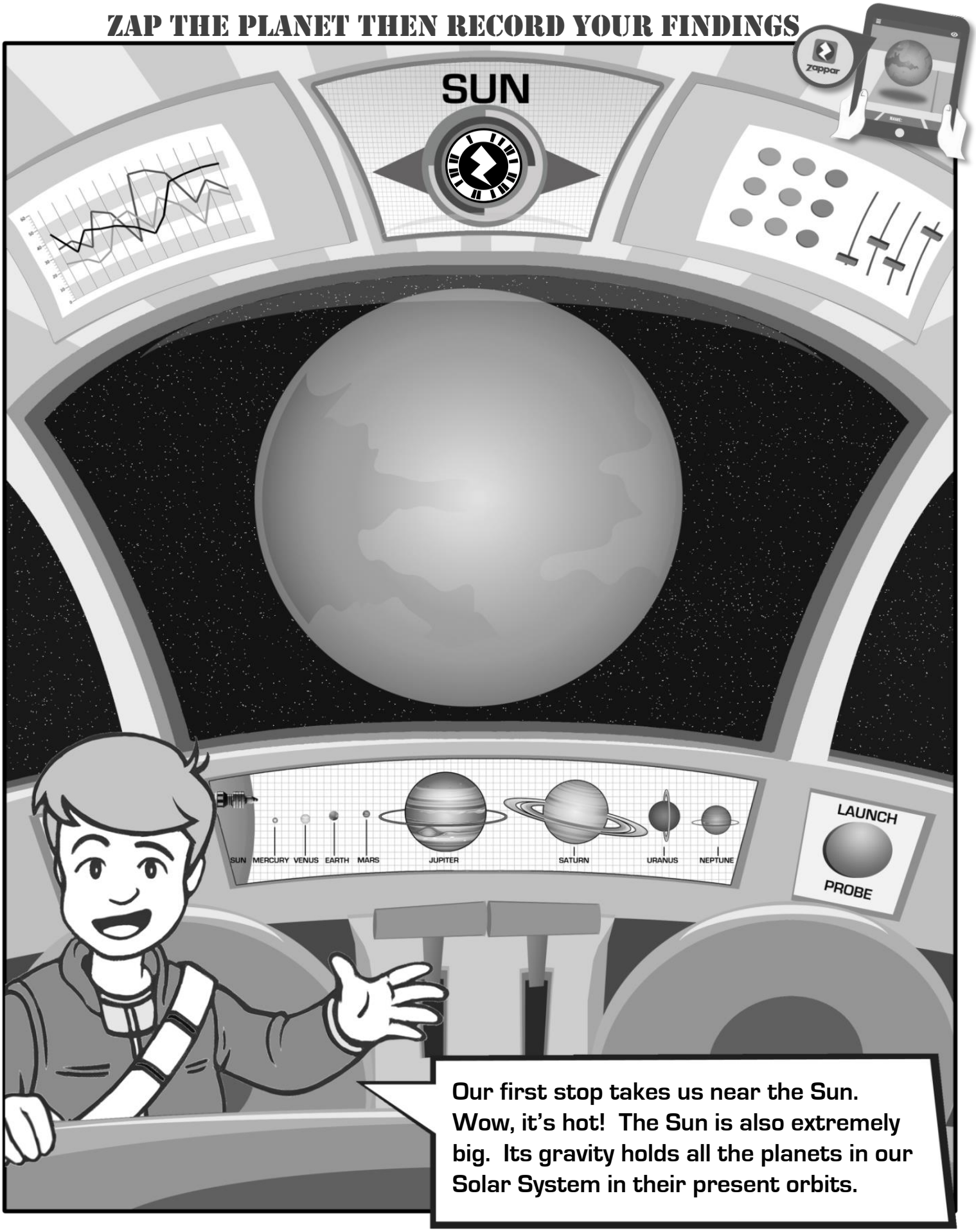
LAUNCH THE ZAPPAR APP AND SCAN THIS PAGE



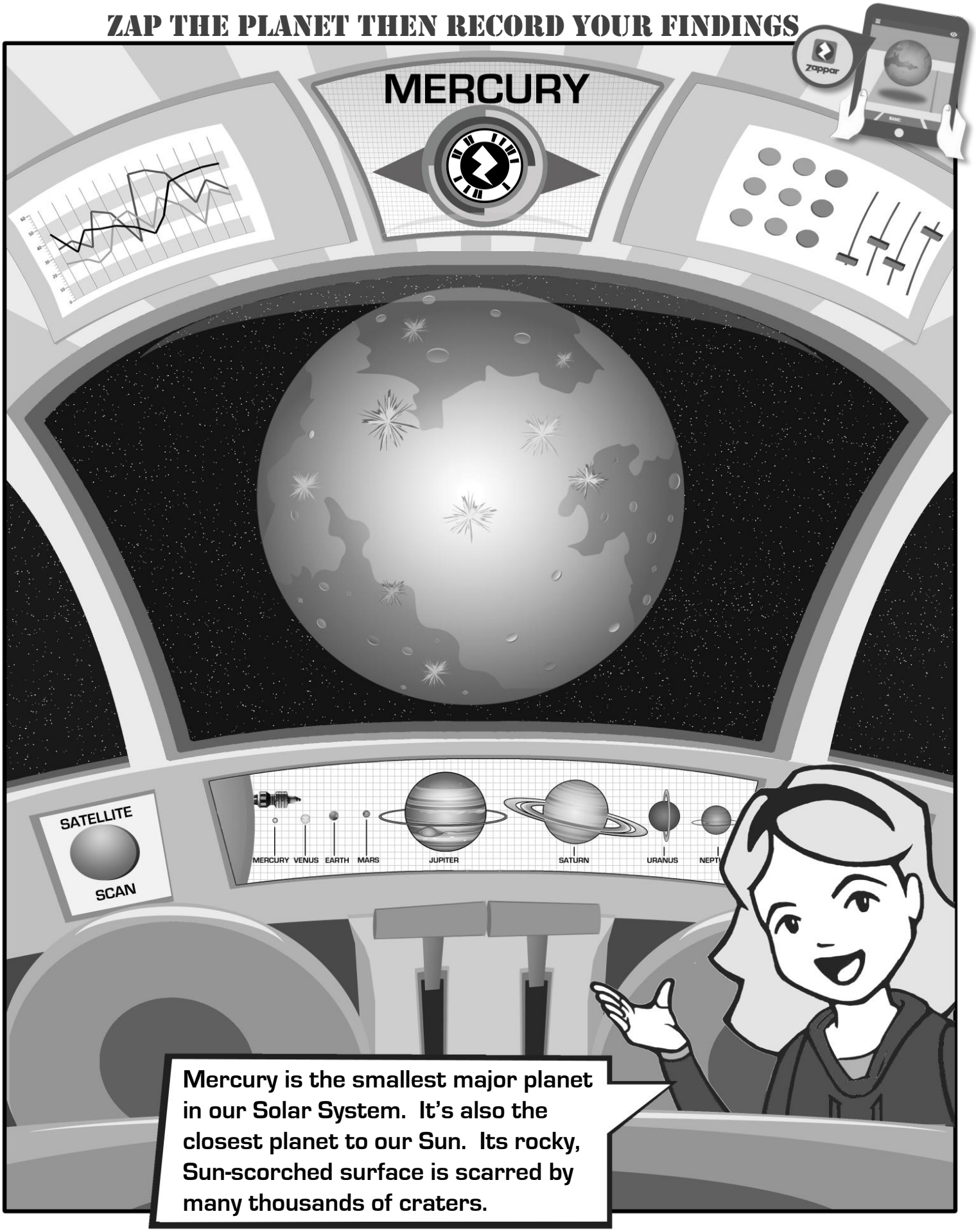
Our ship is now fully fueled and ready for launch, so buckle up and hang on to your seat!

Open the blast doors by scanning the zapcode on this page with the Zappar app on your tablet. We'll take off once you've completed your scan.

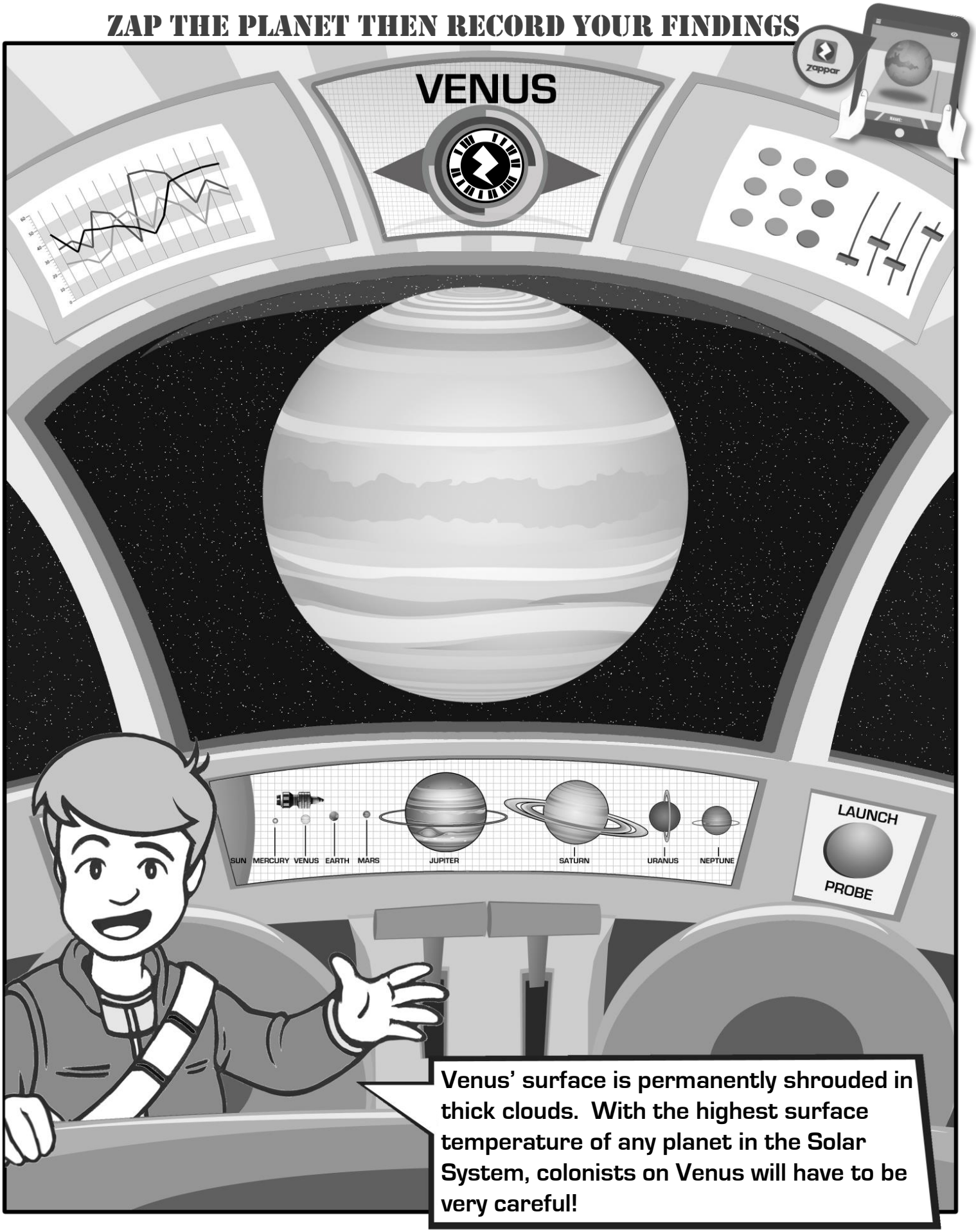
ZAP THE PLANET THEN RECORD YOUR FINDINGS



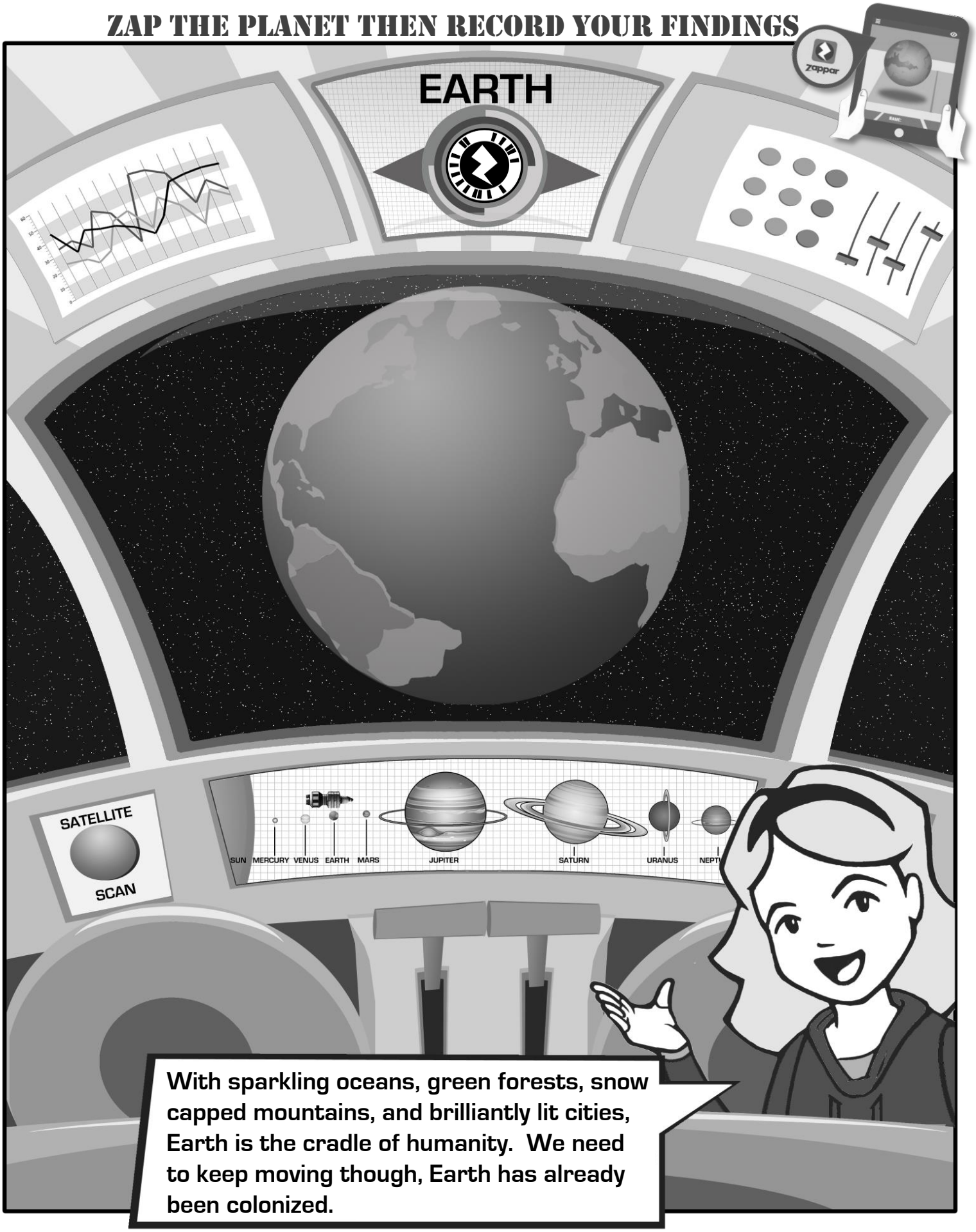
ZAP THE PLANET THEN RECORD YOUR FINDINGS



ZAP THE PLANET THEN RECORD YOUR FINDINGS



ZAP THE PLANET THEN RECORD YOUR FINDINGS



ZAP THE PLANET THEN RECORD YOUR FINDINGS

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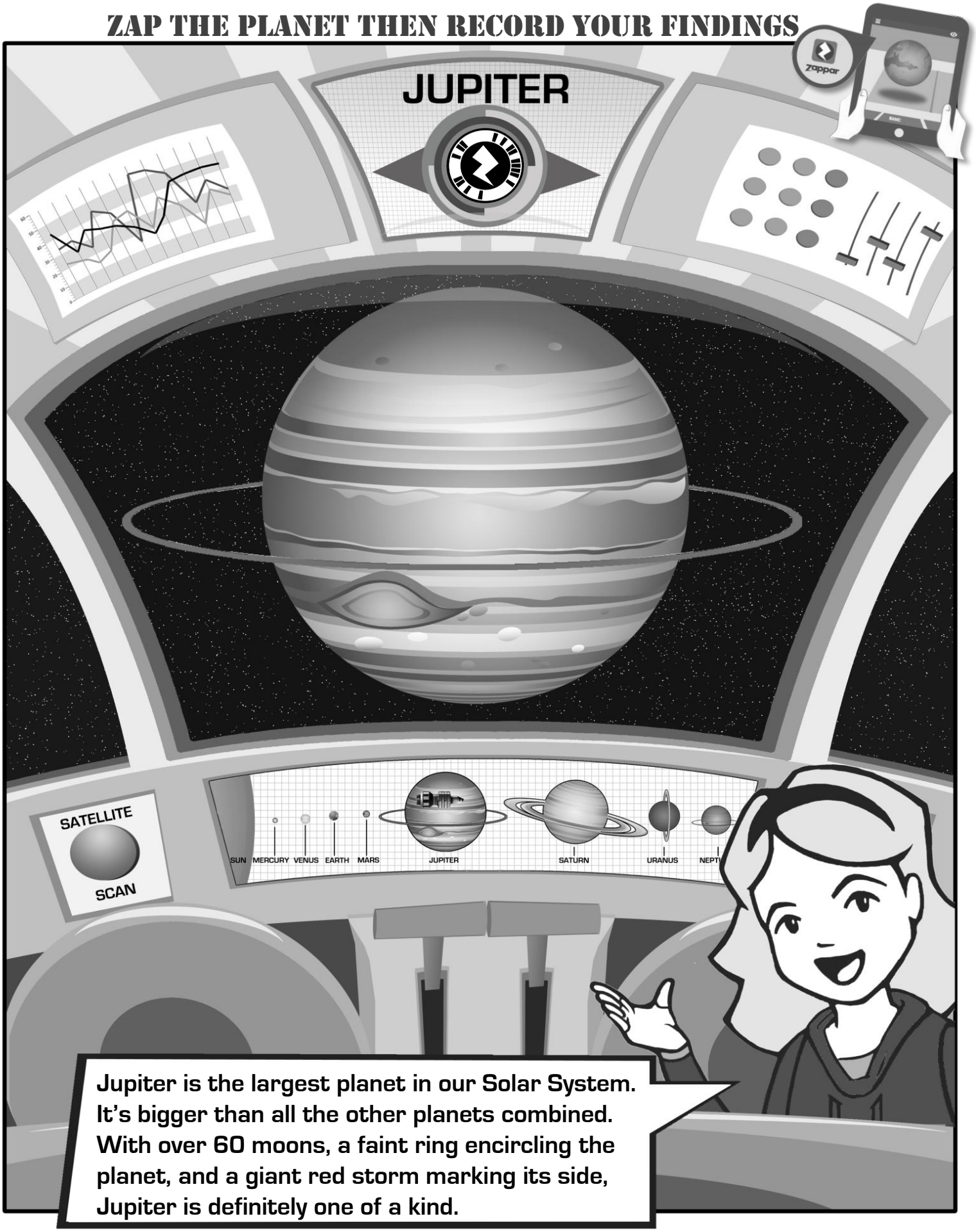
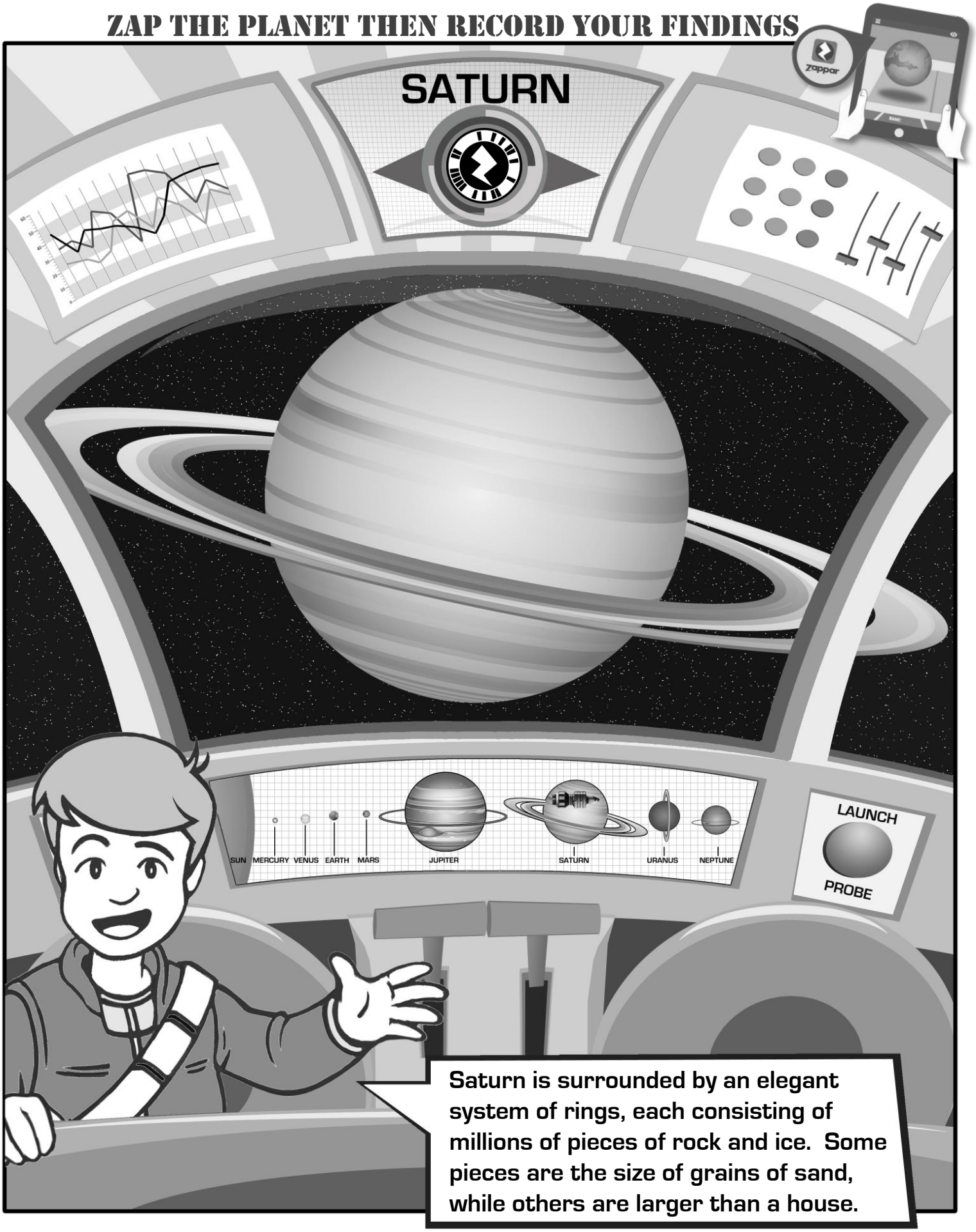


ZAP THE PLANET THEN RECORD YOUR FINDINGS



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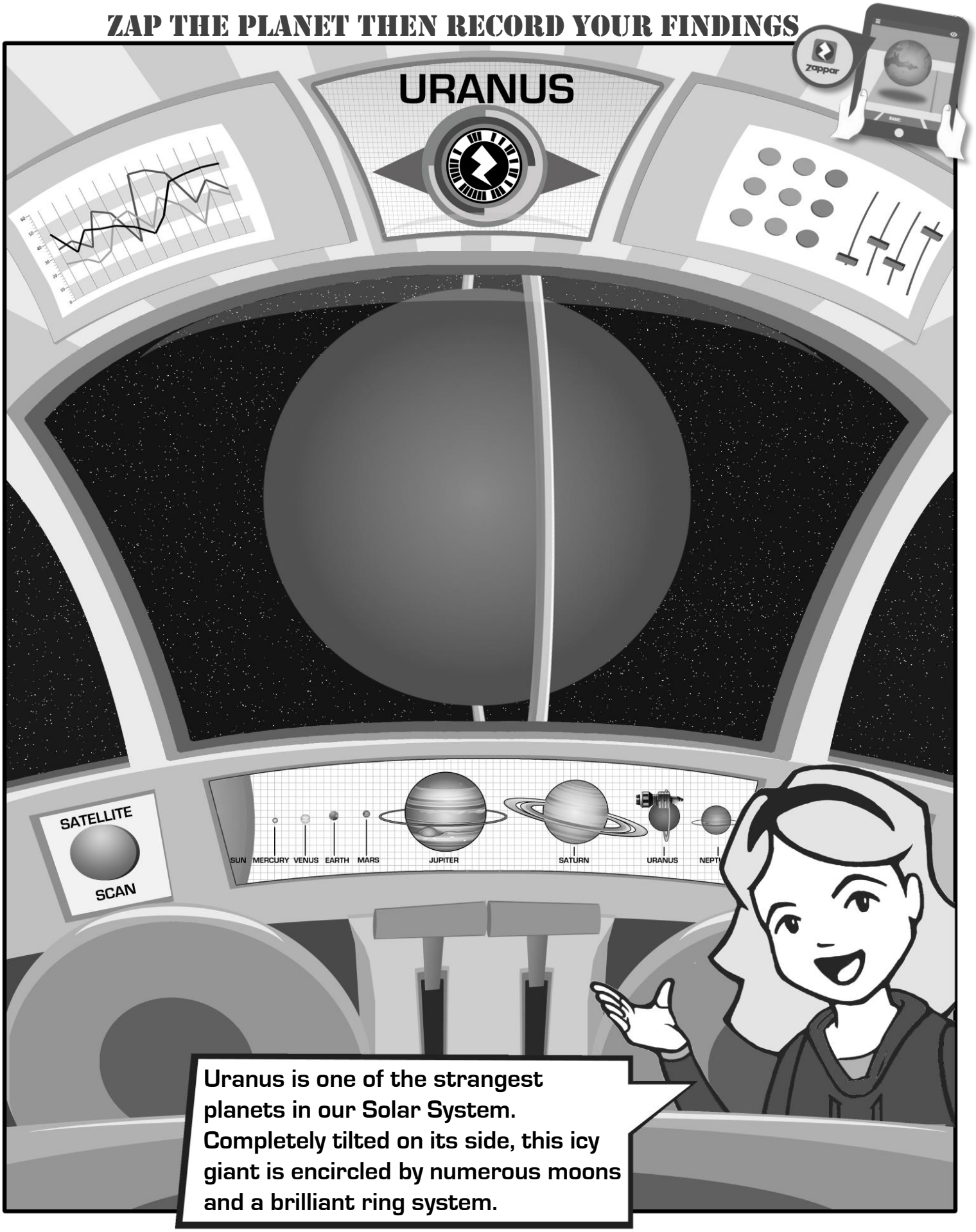
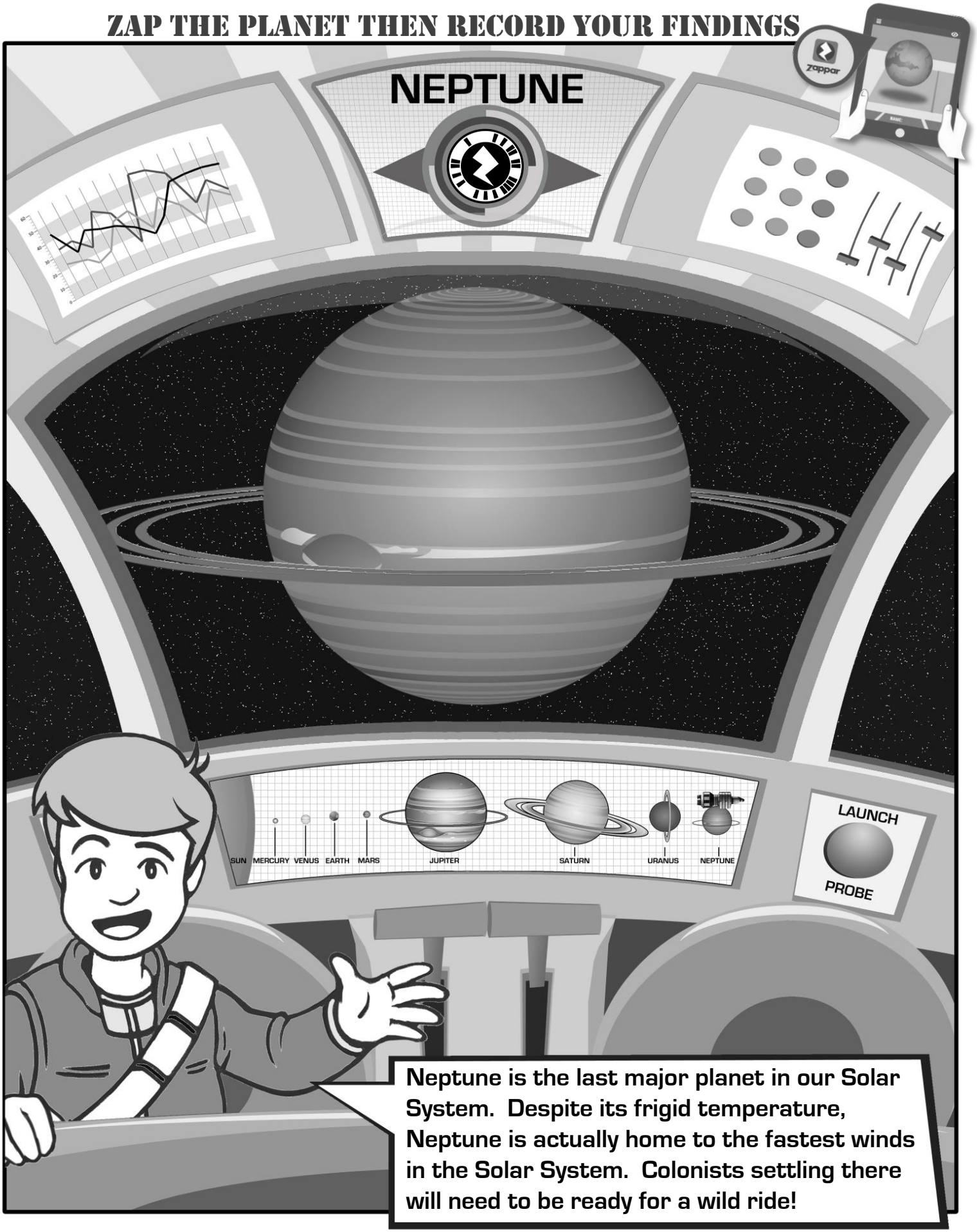


ZAP THE PLANET THEN RECORD YOUR FINDINGS



TOP SECRET

POST-MISSION QUESTIONS

Refer to your notes and answer each question

1) WHICH PLANET IS CLOSEST TO THE SUN?

2) WHICH PLANET HAS THE MOST GRAVITY?

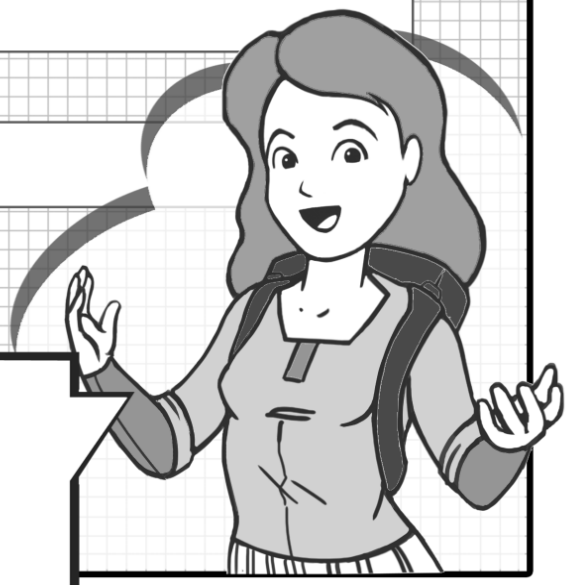
3) WHICH FOUR PLANETS HAVE A SOLID SURFACE?

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?

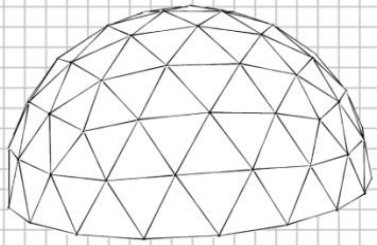


Alright, it's time to retake the quiz, and see how much you have learned. Please refer to the notes you've taken and answer each of the above questions.

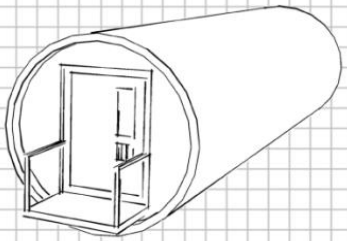
You're now ready to choose a planet, and sketch a design for our new base. Here are some optional components you might want to use in your design, or come up with your own as you setup the colony.

CENTRAL COMPUTER

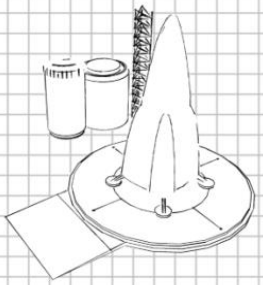
RESOURCES



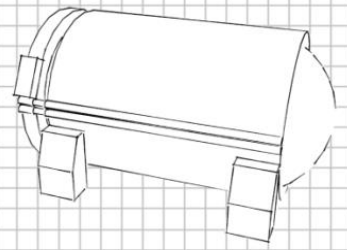
GREENHOUSE
A Place To Grow Plants For Food & Air



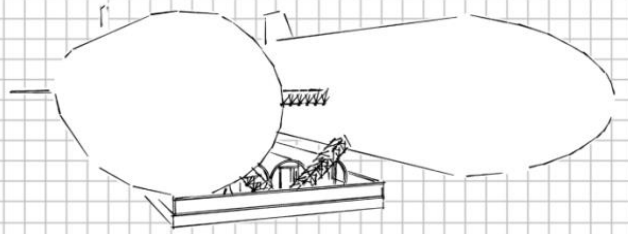
CREW HABITAT
A Place For People To Live



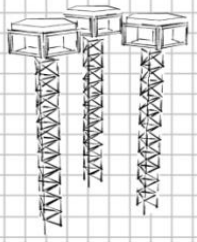
LAUNCH PAD & ROCKET
A Place to Launch & Land Rockets



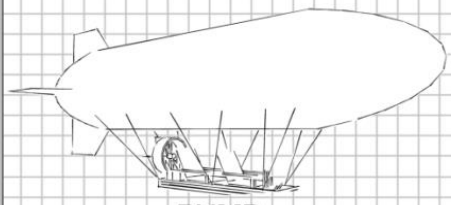
POWER GENERATOR
Makes Electricity To Power Base



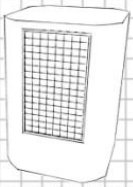
FLOATING PLATFORM
Supports Bases That Float



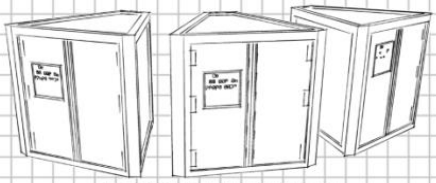
LIGHTS
To Brighten Dark Nights



BLIMP
Transporation For Your Crew



AIR CONDITIONER
Cleans, Heats, & Cools Air



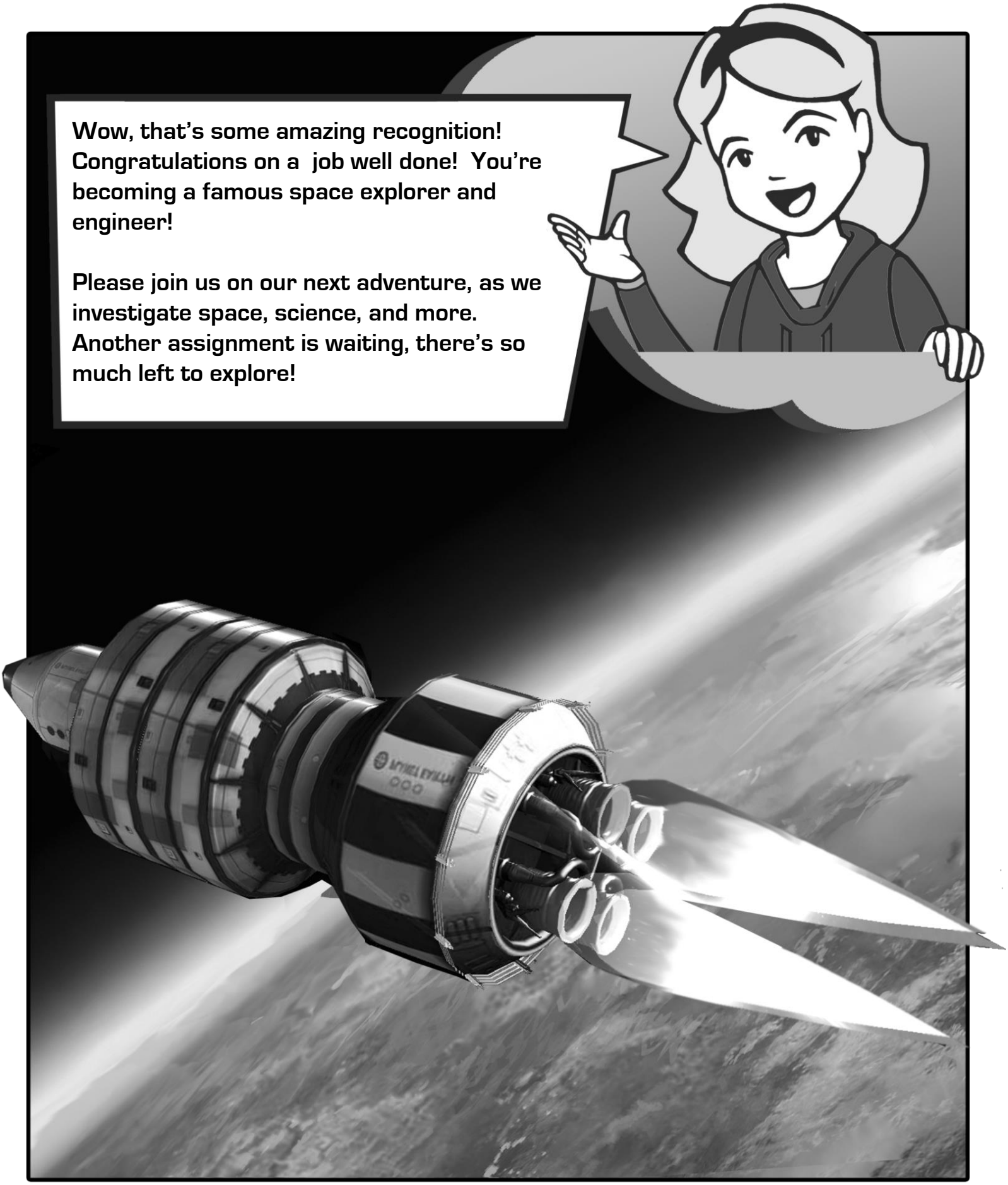
FOOD & SUPPLIES
Boxes With Material To Help Your Base Get Started

As you sketch your design for the base, look at the measurements that you previously recorded. Be sure to design your base so it can handle the conditions you measured on your planet.

CENTRAL COMPUTER

BASE DESIGN DRAW YOUR BASE BELOW	YOUR NAME: _____ PLANET NAME: _____

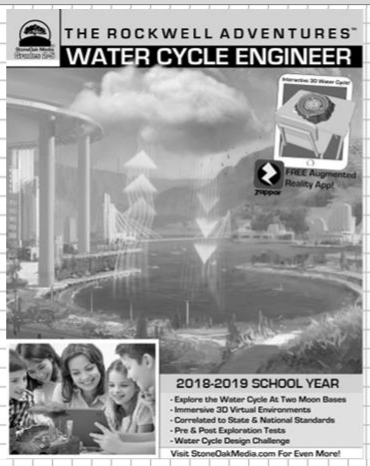
SCAN THE ZAPCODE TO READ THE NEWS STORY


Wow, that's some amazing recognition! Congratulations on a job well done! You're becoming a famous space explorer and engineer!
Please join us on our next adventure, as we investigate space, science, and more. Another assignment is waiting, there's so much left to explore!

Additional Resources Available At StoneOakMedia.com

ADVANCED STEM LESSONS & KITS

Solar System Expedition



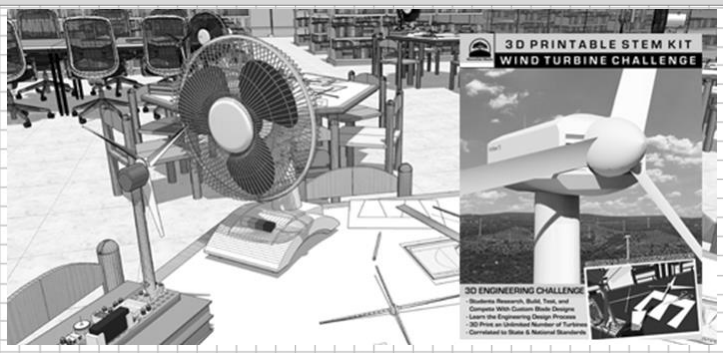
Water Cycle Engineer

Wind Turbine Challenge

Planetary Outpost

STEM FOCUSED SCHOOL WORKSHOPS

Solar System Expedition Student Presentation



Wind Turbine Challenge Student Presentation

FREE PROFESSIONAL DEVELOPMENT

Accelerating STEM Education Using Augmented Reality

Low Cost 3D Design & 3D Printing Resources for STEM

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:

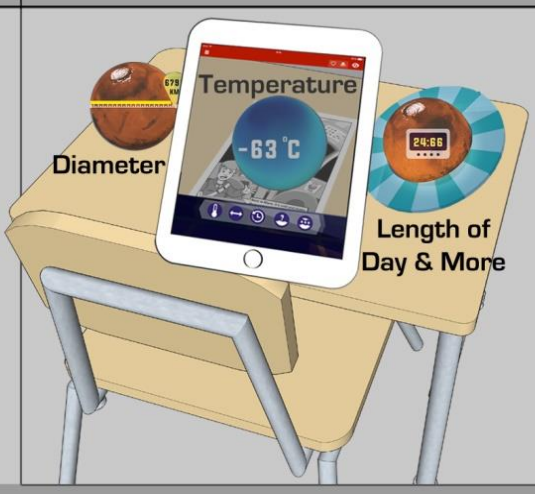
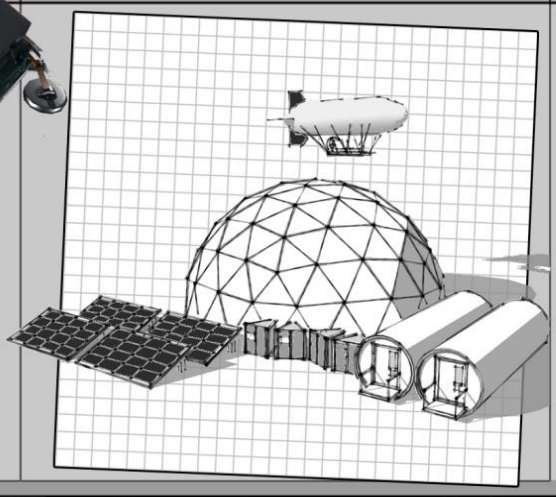
Measure Each Planet	Explore Each Planet	Design A Suitable Base
		

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Image of Mercury Courtesy NASA

StoneOak Media

Wisdom begins with wonder. -Socrates

zappar