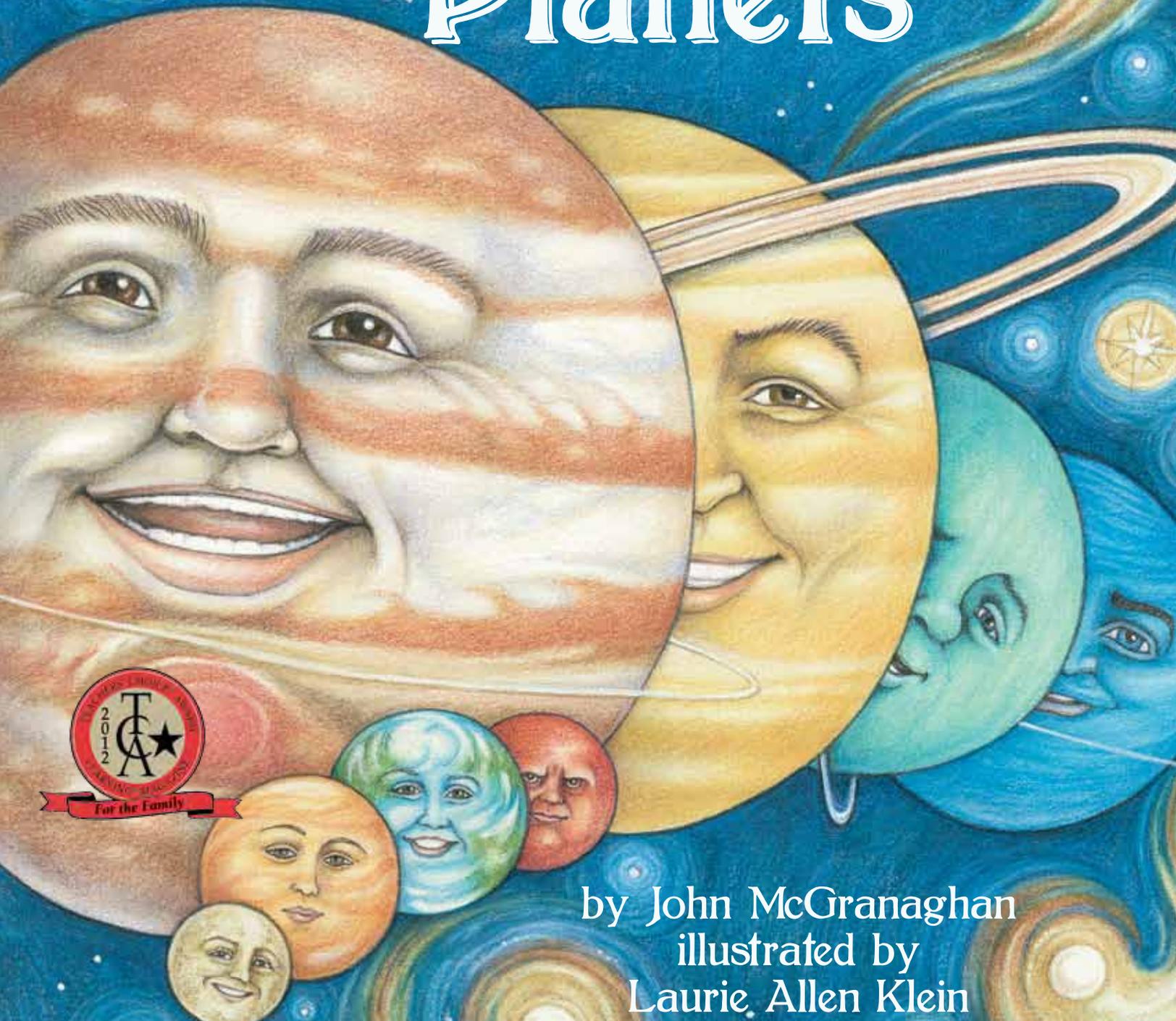


Meet the Planets



by John McGranaghan
illustrated by
Laurie Allen Klein

Meet the Planets



Soar into the Solar System to witness the first Favorite Planet Competition, emceed by none other than the former ninth planet, now known as dwarf planet Pluto. Who will the lucky winning planet be? Readers learn all about each planet as Pluto announces them with short, tongue-in-cheek facts. Children (of all ages) will spend hours searching the art for all the references to famous scientists and people of history, space technology, constellations, art, and classic literature.

It's so much more than a picture book . . . this book is specifically designed to be both a fun-to-read story and a launch pad for discussions and learning. Whether read at home or in a classroom, we encourage adults to do the activities with the children in their lives. Free online resources and support for the book at www.ArbordalePublishing.com include:

- For Creative Minds as seen in the book (in English & Spanish):
 - And the Winner Is . . .
 - Time and Temperatures
 - Distance from Sun: A Place Value Activity
 - Constellations, Famous People, Space Technology
 - Solar System: True or False?
- Teaching Activities:
 - Reading Questions
 - Language Arts
 - Science
 - Math
 - Geography
 - Coloring Pages
- Interactive Quizzes: Reading Comprehension, For Creative Minds, and Math Word Problems
- English and Spanish Audiobooks
- Related Websites
- Aligned to State Standards (searchable database)
- Accelerated Reader and Reading Counts! Quizzes
- Lexile and Fountas & Pinnell Reading Levels

eBooks with Auto-Flip, Auto-Read, and selectable English and Spanish text and audio available for purchase online.

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John McGranaghan has always been fascinated by outer space and he shares that fascination in a humorous (but educational) way through *Meet the Planets* and *Saturn for My Birthday*. John has also written stories and articles for *Boys' Quest Magazine*, *Pockets Magazine*, *Columbia Magazine*, and local newspapers. He is winner of the 2001 Pockets Fiction Contest. When John isn't writing, he enjoys sports and spending time with his wife and two boys. John is a school counselor in the Philadelphia suburbs.

Laurie Allen Klein has been a freelance artist for nearly 20 years. Over the last several years, she has worked as the on-staff artist for a marine park, where she does everything from painting life-size sea animal murals, to illustrating children's activity books. As evident by the extras included in the art, she has combined her love and fascination with outer space (and science fiction) with children's illustration in *Meet the Planets*. Laurie also illustrated *Furs and Feathers*, *Where Should Turtle Be?*, *Solar Forecast*, the award-winning *Little Skink's Tail*, and *If a Dolphin Were a Fish* for Arbordale. Laurie lives in Florida.

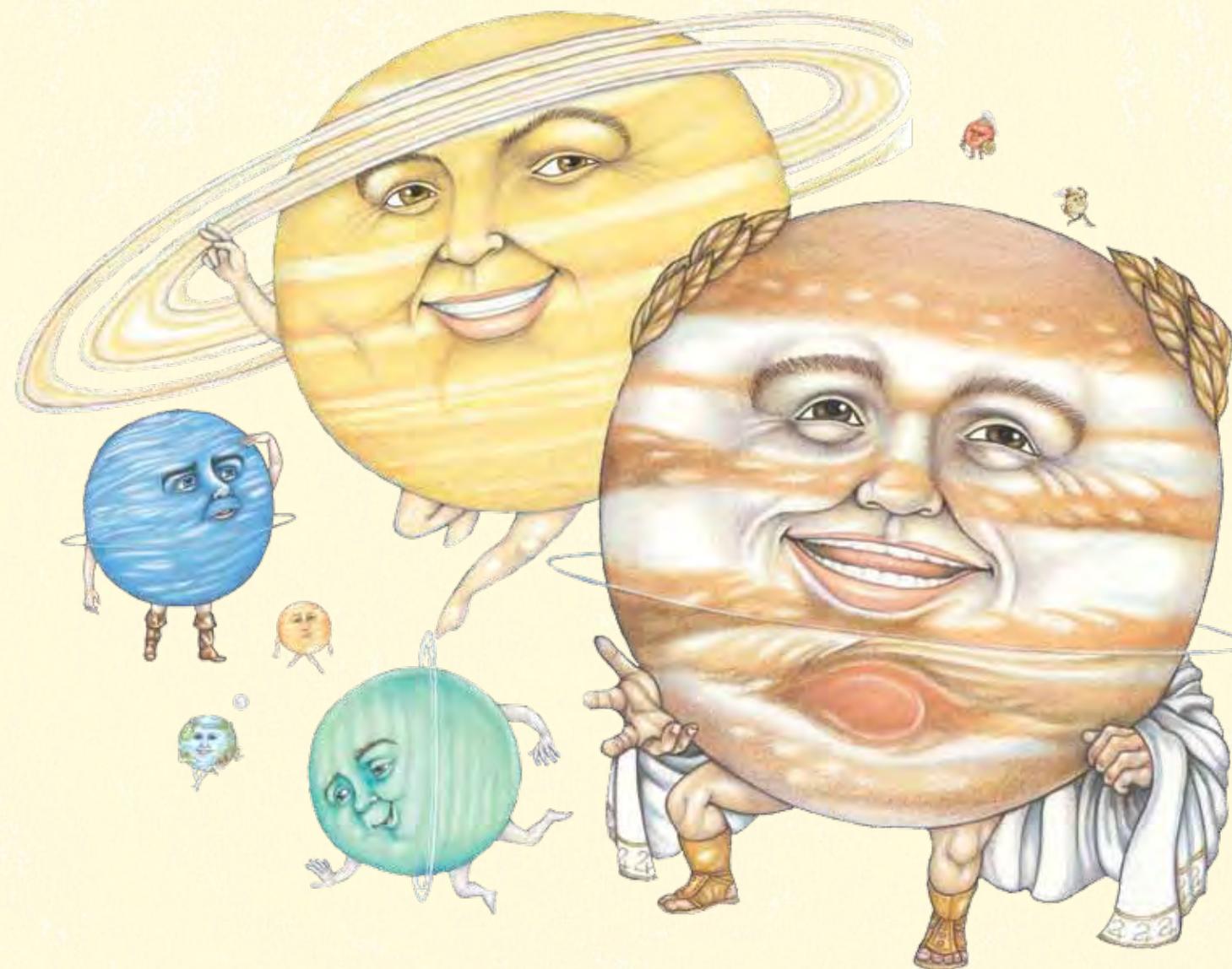


John McGranaghan



Laurie Allen Klein

Meet the Planets

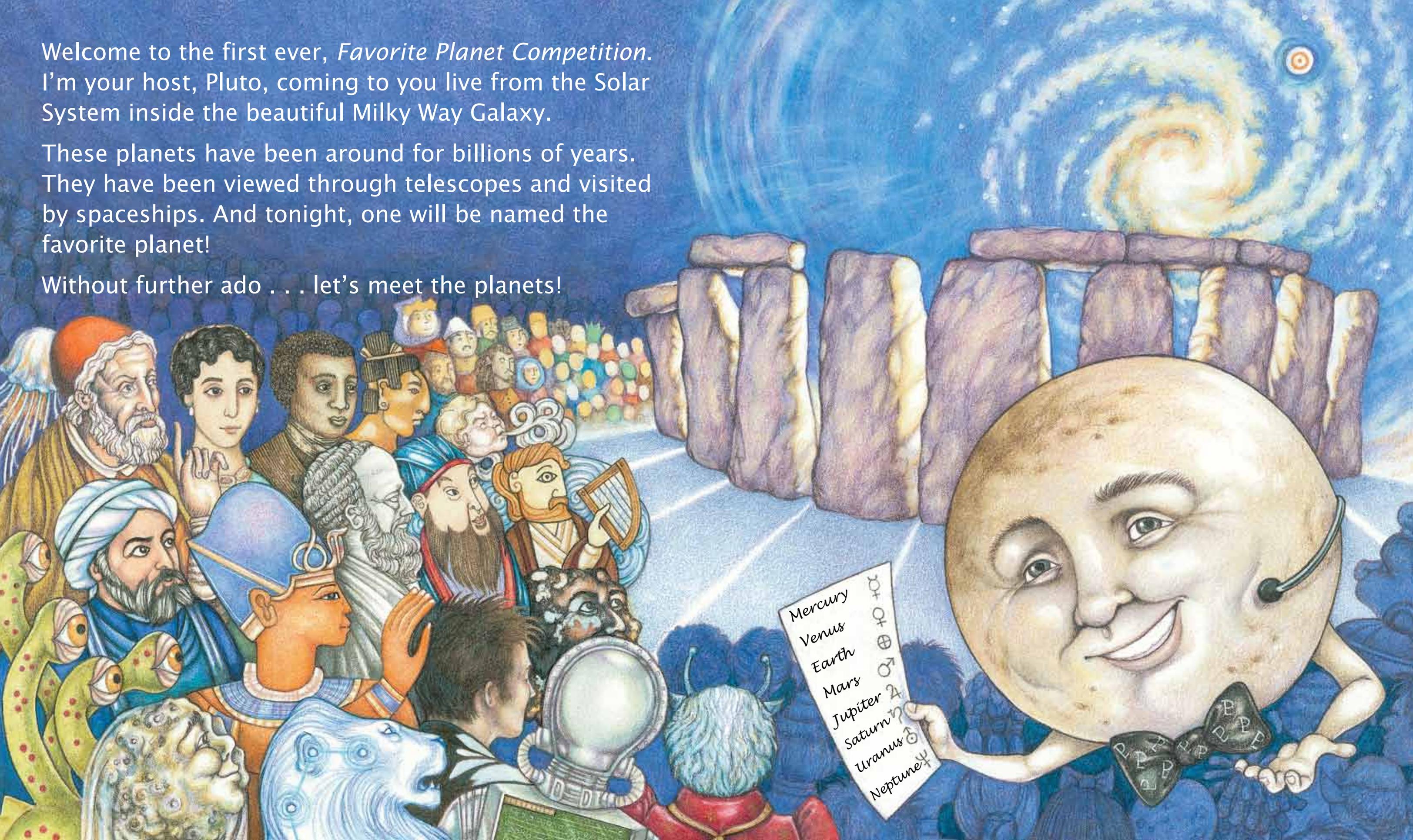


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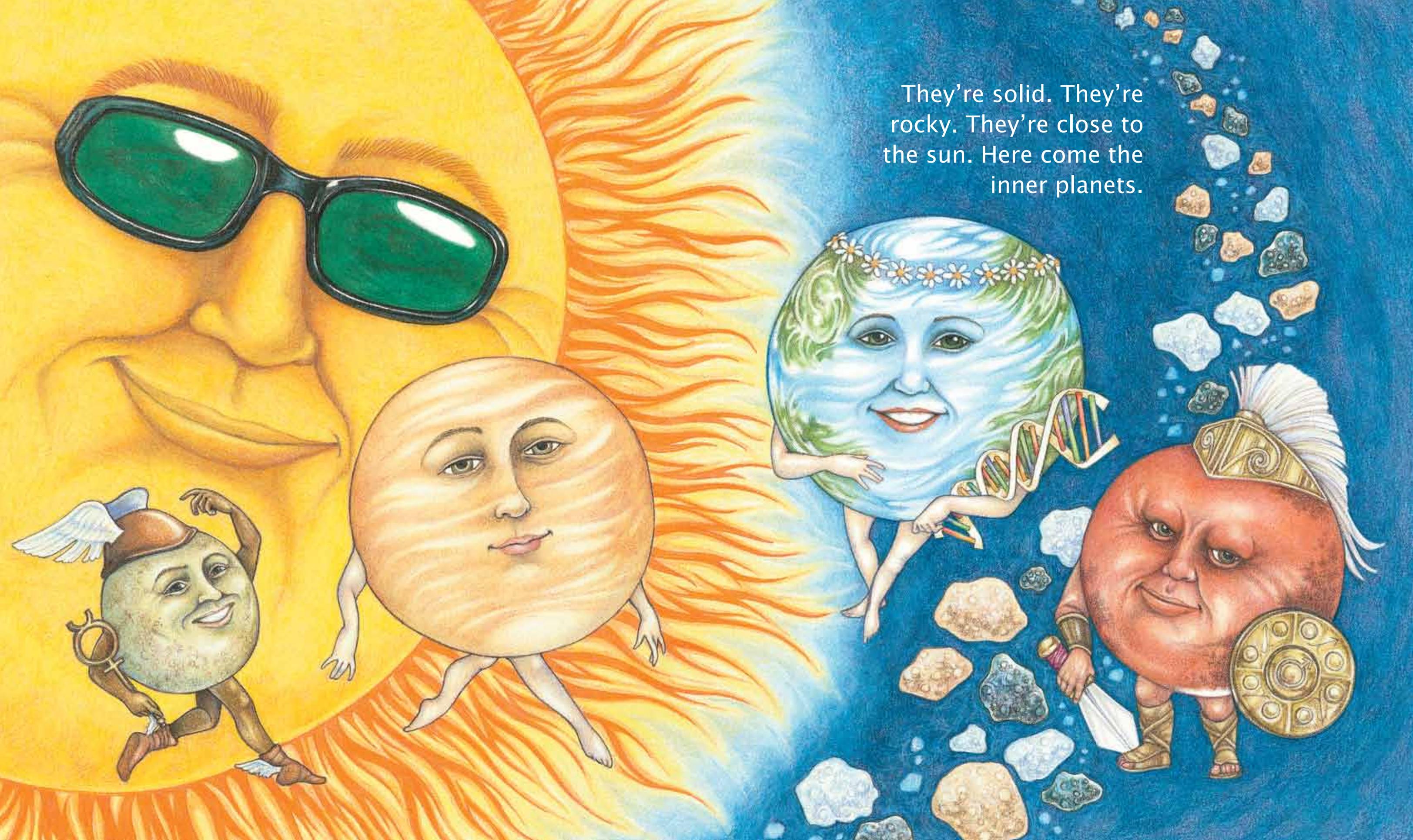
Welcome to the first ever, *Favorite Planet Competition*. I'm your host, Pluto, coming to you live from the Solar System inside the beautiful Milky Way Galaxy.

These planets have been around for billions of years. They have been viewed through telescopes and visited by spaceships. And tonight, one will be named the favorite planet!

Without further ado . . . let's meet the planets!



They're solid. They're rocky. They're close to the sun. Here come the inner planets.



He's a little bigger than Earth's moon and covered in craters; but make no mistake, he's all planet. Circling the sun in just 88 Earth days, he's the fastest moving planet in the Solar System. He's named after the speedy messenger of the gods; now you see him, now you don't . . . meet Mercury!



For Creative Minds

The For Creative Minds educational section may be photocopied or printed from our website by the owner of this book for educational, non-commercial uses. Cross-curricular teaching activities, interactive quizzes, and more are available online. Go to www.ArbordalePublishing.com and click on the book's cover to explore all the links.

And the Winner is . . .

There are so many fun ways to incorporate math and science skills into learning about the solar system! Please see the free online teaching activities for more solar system fun.

Which planet do YOU think should be the Solar System's favorite planet? Why? Ask your friends, family members, and classmates which is their favorite planet.

Copy or download this page from the internet (see above). Please do not write in the book!

Keep track of the answers using tally marks. For every answer, draw an "up and down" (vertical) line. Every 5th line should cross the four before it. Count the tally marks to see who the winner is and then graph the results.



Mercury	♀		
Venus	♀		
Earth	⊕		
Mars	♂		
Jupiter	♃		
Saturn	♄		
Uranus	♅		
Neptune	♆		
How many votes?		1-5	6-10

							
Mercury	Venus	Earth	Mars	Jupiter	Saturn	Uranus	Neptune

Planets are not to scale.

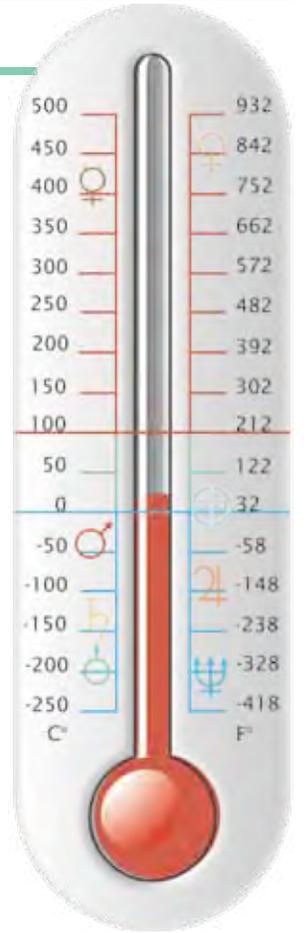
Time and Temperatures

Planet		Revolves around Sun*	Rotates on its axis*
Mercury	♀	88 days	59 days
Venus	♀	225 days	243 days
Earth	⊕	365.25 days	one day
Mars	♂	687 days	one day
Jupiter	♃	12 years	10 hours
Saturn	♄	29 years	10 1/2 hours
Uranus	♅	84 years	17 hours
Neptune	♆	165 years	16 hours

*The rounded lengths of time are shown in Earth time measurements.

Our day of 24 hours comes from the approximate amount of time it takes the Earth to **rotate** (spin) on its axis (a make-believe stick going through the Earth from the North to South Poles).

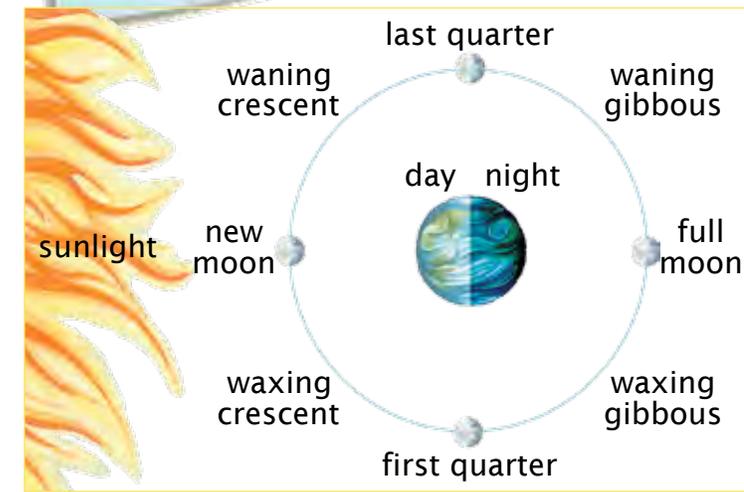
Our year (365 days) comes from the approximate amount of time it takes the Earth to **revolve** (orbit) around the Sun. We add a leap day every four years (leap year) to even out the extra fraction.



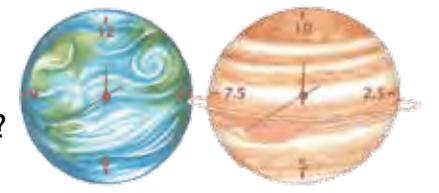
How long would a "year" be on other planets?

Do you notice a pattern between inner versus outer planets and the amount of time it takes them to rotate or revolve?

Find the planet symbol to identify the planet's average temperature.



How long would a "day" be on the other planets?



Our months come from the almost 30 days it takes the moon to revolve around the Earth. The first day of a lunar month is the day of the new moon, when the sun and moon rise at approximately the same time. The moon rises about 50 minutes later each day as it goes through its phases.

Food for thought: How long would a "month" be on a planet with no moon or with more than one moon? How would YOU determine how many months or how many days in a month? What would you call them?

Distance From Sun: A Place-Value Activity

Answer the following place-value questions. Answers are upside down at the bottom of the page. For more place value and decimal activities, see the book's online activities.

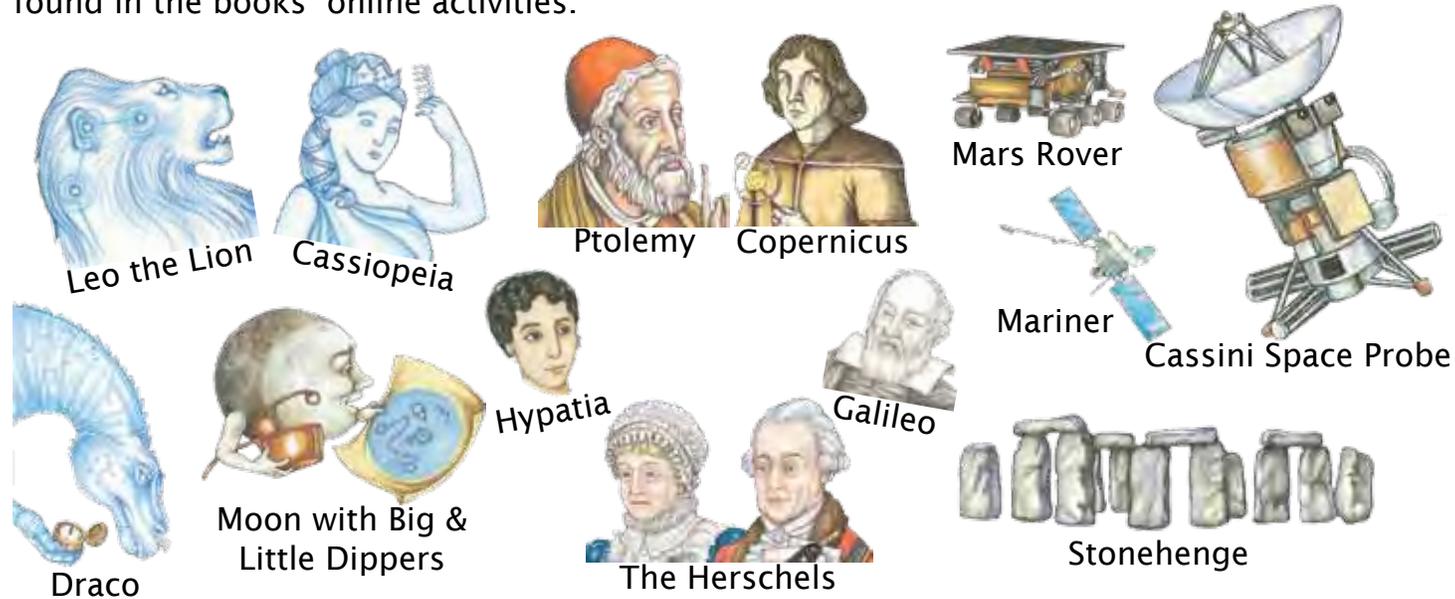
	Billions	Hundred Millions	Ten Millions	Hundred Thousands	Ten Thousands	Hundreds	Tens	Ones
Earth		1	49	5	97	8	9	0
Jupiter		778	412	0	20	2	0	0
Mars		227	936	6	40			
Mercury		57	909	1	75			
Neptune	4	498	252	900				
Saturn	1	426	725	400				
Uranus	2	870	972	200				
Venus		108	208	930				

Planet distances are in kilometers.

- Which planet's distance has the highest digit in the ten thousands' column?
- Which planet's distance has the highest digit in the ten millions' column?
- Which planet's distance has the highest digit in the hundred millions' column?
- If you were to round to the millions, how far would it be in kilometers to Venus?
- How many planets are over a billion kilometers from the sun? Which ones?
- What place value do you need to look at to tell if Earth or Venus is farther from the Sun?
- What is the value of the digit "5" in the distance between the Sun and Neptune?

Constellations, Famous People, and Space Technology

There are art references in this book to constellations, famous people, space technology, classic books, and even other art. Can you find the art in the book? What are some other things you see in the art? A detailed explanation of what is what and who is who can be found in the books' online activities.



Place-Value Answers: 1, Earth; 2, Neptune; 3, Uranus; 4, 108,000,000; 5, three; Saturn & Uranus; 6, ten millions place; 7, five ten thousands or fifty thousand;

Solar System True or False Questions

Use information found in the book to answer the following true/false questions. Answers are upside down at the bottom of the page.

- Plants are at the bottom of our food webs and all life relies on plants for food. The outer planets have thick layers of soil for plants to grow.
- Living things on Earth need liquid water to drink. All planets have water.

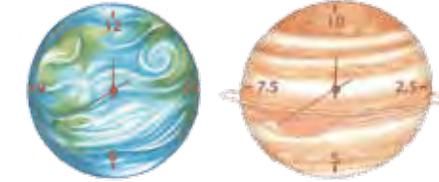


- Living things on Earth need a safe, comfortable place to live. Temperatures on other planets would not support life as we know it—it would either be too hot or too cold.

- Living things on Earth need oxygen. Many animals get oxygen through lungs and fish get it through gills. Since oxygen is also found on Mars, things that live on Earth might be able to live there too.

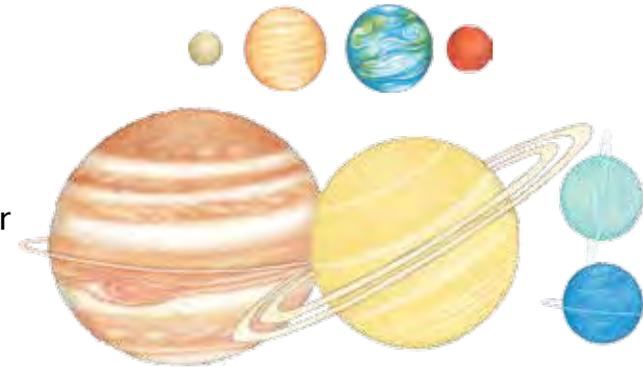


- A day on Mars would be about the same length as a day on Earth but a day on Jupiter would only be 10 hours.



- A day on Venus is longer than its year.

- The inner planets are gaseous and have rings, but the outer planets are rocky.



- We can only see the moon at night.



True/False Answers: 1. False: the outer planets are gas with no soil; 2. False: there may be water frozen on ice on some of the other planets (or on their moons), but scientists have not (yet) found liquid water on any planets; 3. True; 4. False: Mars' atmosphere has carbon dioxide, not oxygen; 5. True: a day is the amount of time it takes the planet to rotate on its axis; 6. True: a year is the amount of time it takes the planet to revolve around the Sun; 7. False: the inner planets are rocky and the outer planets are gaseous; 8. False: Depending on where the moon is in its cycle, we can see it during the day too.

Solar System Matching Activity

Can you identify the solar system objects? The answers are upside down on the bottom of the next page.

1 This planet is our home and is the only planet not named after a Greek or Roman god! Just over 70% of the planet's surface is water, and 97% of that is ocean or saltwater. Two percent is frozen ice or underground freshwater, leaving 1% freshwater from lakes and rivers.

2 It takes this satellite almost 30 days to revolve around the Earth, giving us our months. Depending on where it is in its revolution, we see it in different phases. We might see it during the day, at night, or not at all.

3 Named after the Roman goddess of love and beauty, this planet is too hot for life to survive. It has active volcanoes but no water or moon. It rotates (spins) in the opposite direction from all the other planets, and is about the same size as Earth.

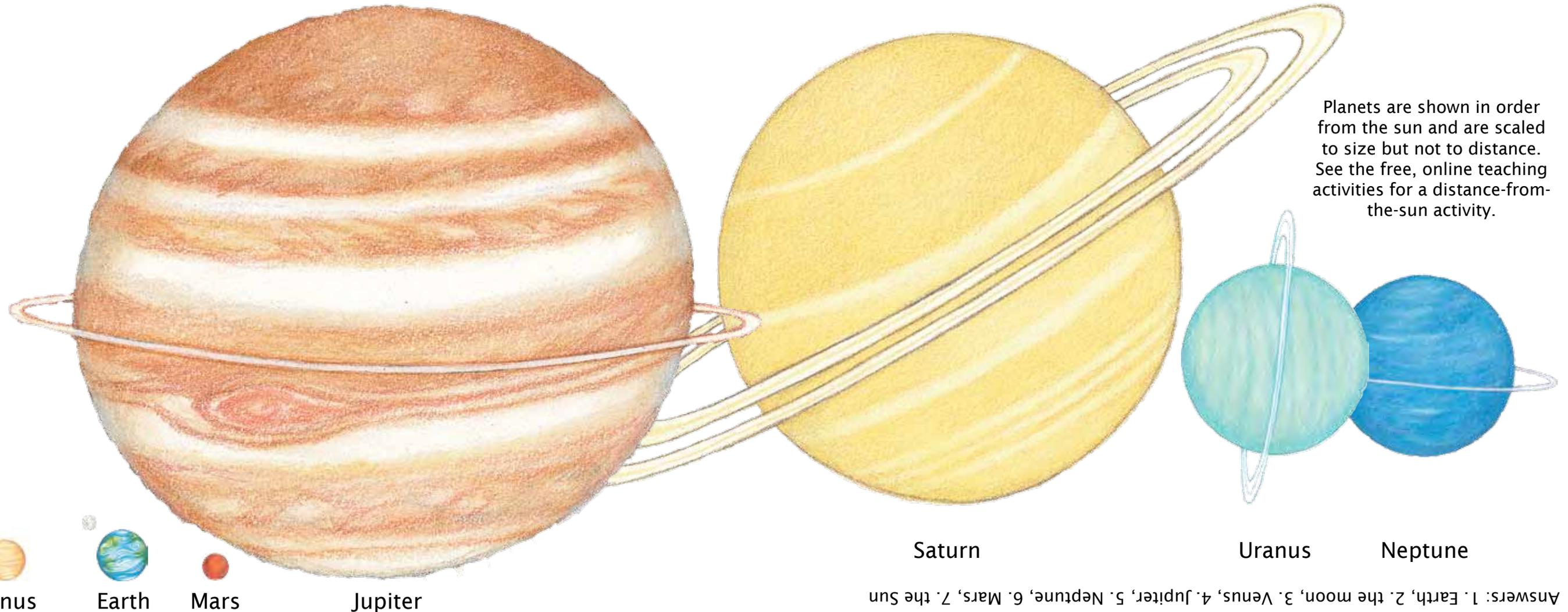
4 The largest planet was named after the Roman king of the gods. Astronomers believe the large red spot is a hurricane-like storm that has been there for over 100 years! This planet has different color bands from different gases, 62 known moons, and rings that are hardly visible.

5 The smallest of the outer planets and the farthest from the sun, this blue-colored planet was named for the Roman King of the sea. We know of 13 moons, the largest of which is called "Triton," named for the Greek god of the sea. Astronomers think that the dark spots are hurricane-like storms but much, much stronger.

6 This red-planet is often seen at night, without a telescope. The rover mission to study this planet brings a whole new meaning to "Red Rover." Scientists don't believe there is water on the planet now but think there was at one time. There is no oxygen on this planet but there is carbon dioxide in the atmosphere.

7 This is the star of our solar system, around which we revolve! It is a medium-sized star but looks so big because it is so much closer to us than any of the billions of other stars. It gives us the heat and light that we need to live. We see it rise in the east in the morning and set in the west in the evening.

Sun



Answers: 1. Earth, 2. the moon, 3. Venus, 4. Jupiter, 5. Neptune, 6. Mars, 7. the Sun

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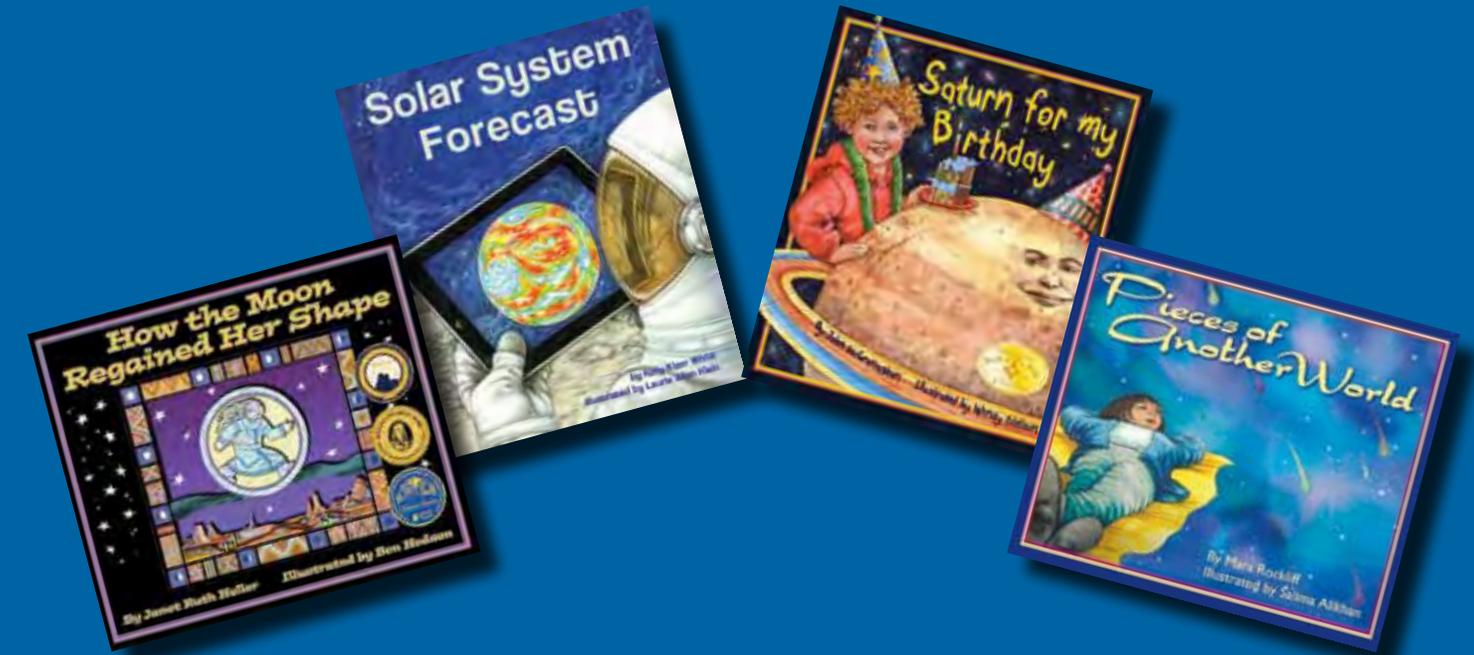
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