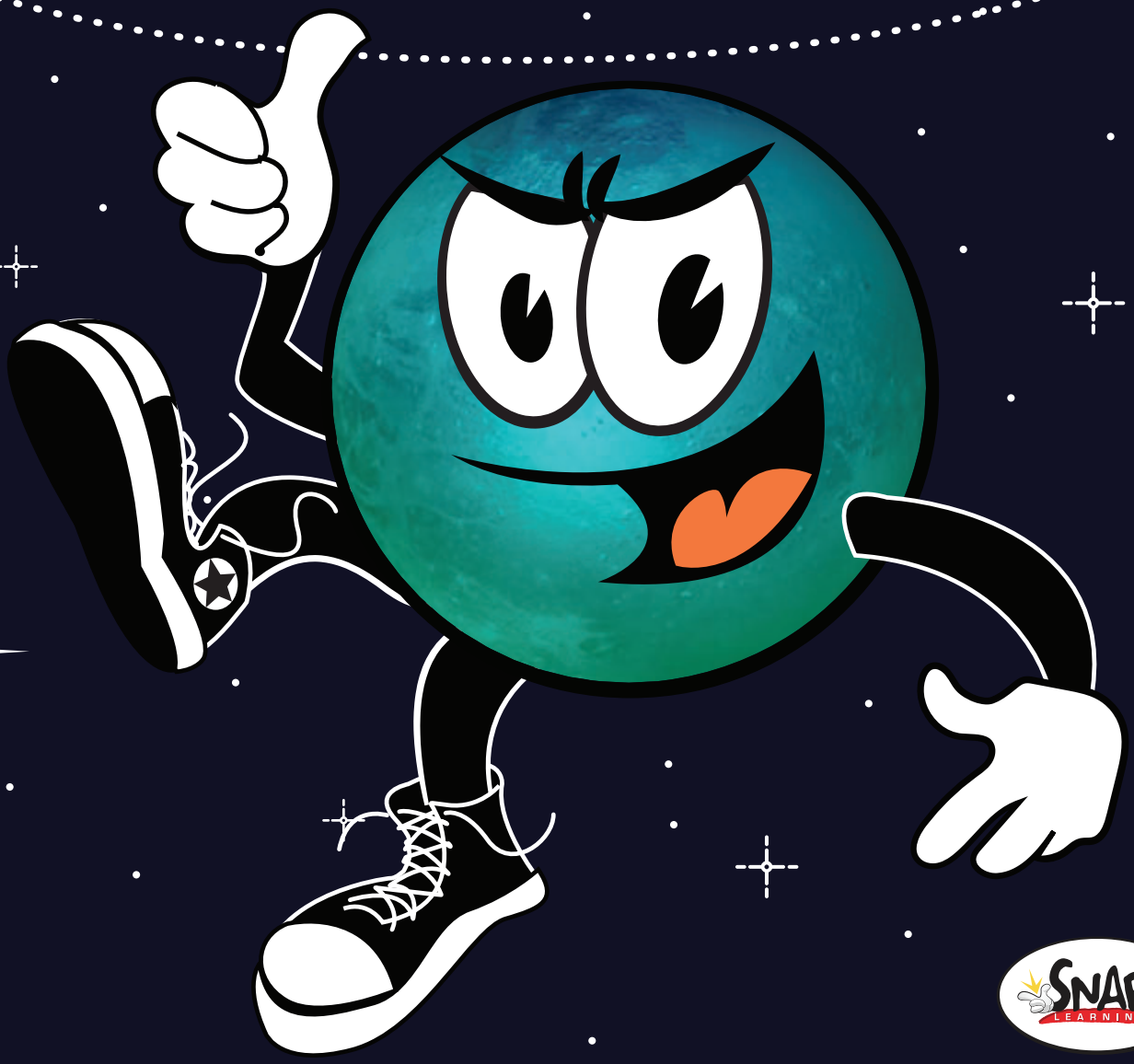
SPACED-OUT

THE STORY OF PLUTO

Written by Christa Beemer ✦ Illustrated by J.R. Craig



SNAP! LEARNING

Spaced Out

Author: Christa Beemer
Illustrator: J.R. Craig

ISBN
Print: 978-1-63260-324-1
ePub: 978-1-63260-325-8

SNAP! Learning®
4325 N. Golden State Blvd. #102
Fresno, Ca 93722

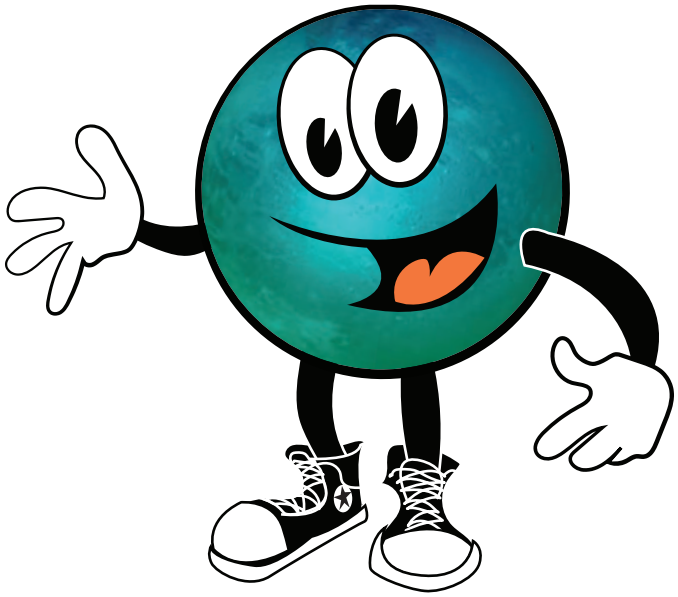
855.200.SNAP
www.snaplearning.net

SPACED-OUT

THE STORY OF PLUTO

TABLE OF CONTENTS

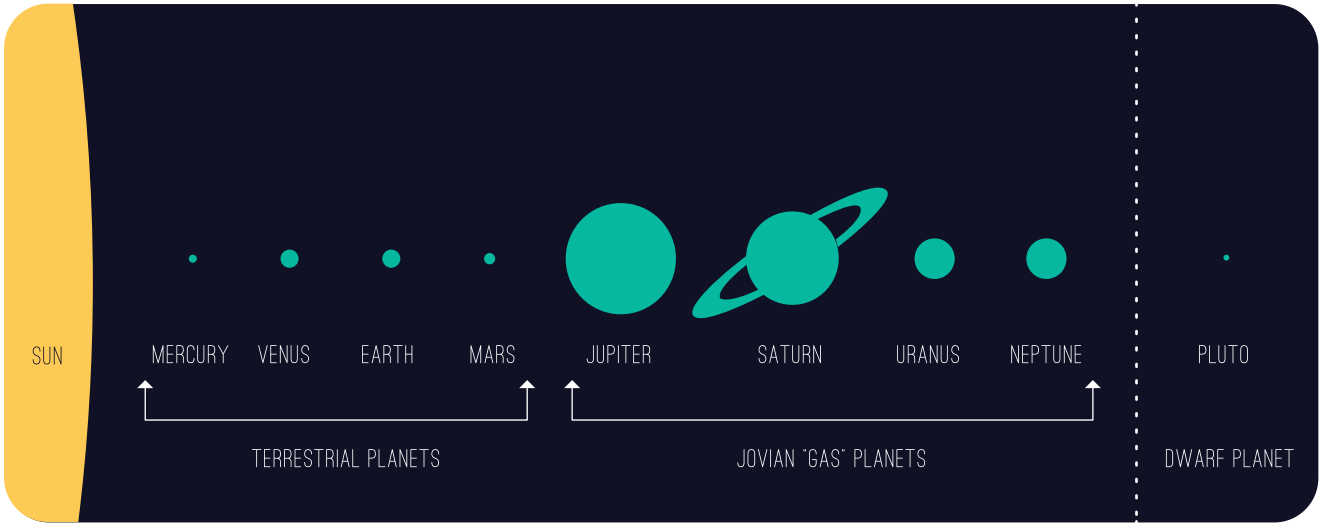
"PLANET" NUMBER NINE



1 Well, it was awfully embarrassing, let me tell you. Degrading, really. I mean, I was important. Out of an entire universe, I was one of the esteemed nine. I had a place in the world! And everybody knew it—from great scientists to little children. Think of all the classrooms that had me postered on their walls!

2 Yes, I was famous. I was something special. I was Pluto. (Pluto the planet, that is, in case you didn't know…because it's possible now that you wouldn't know. Oh, the shame that is mine!)

3 Don't misunderstand; it's not that everything revolved around me. It's not that at all. And I would never have been so proud as to say it did! We all revolved around the sun—all nine of us: Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus, Neptune, and…used-to-be Pluto. And of all nine of us, I was the small guy.



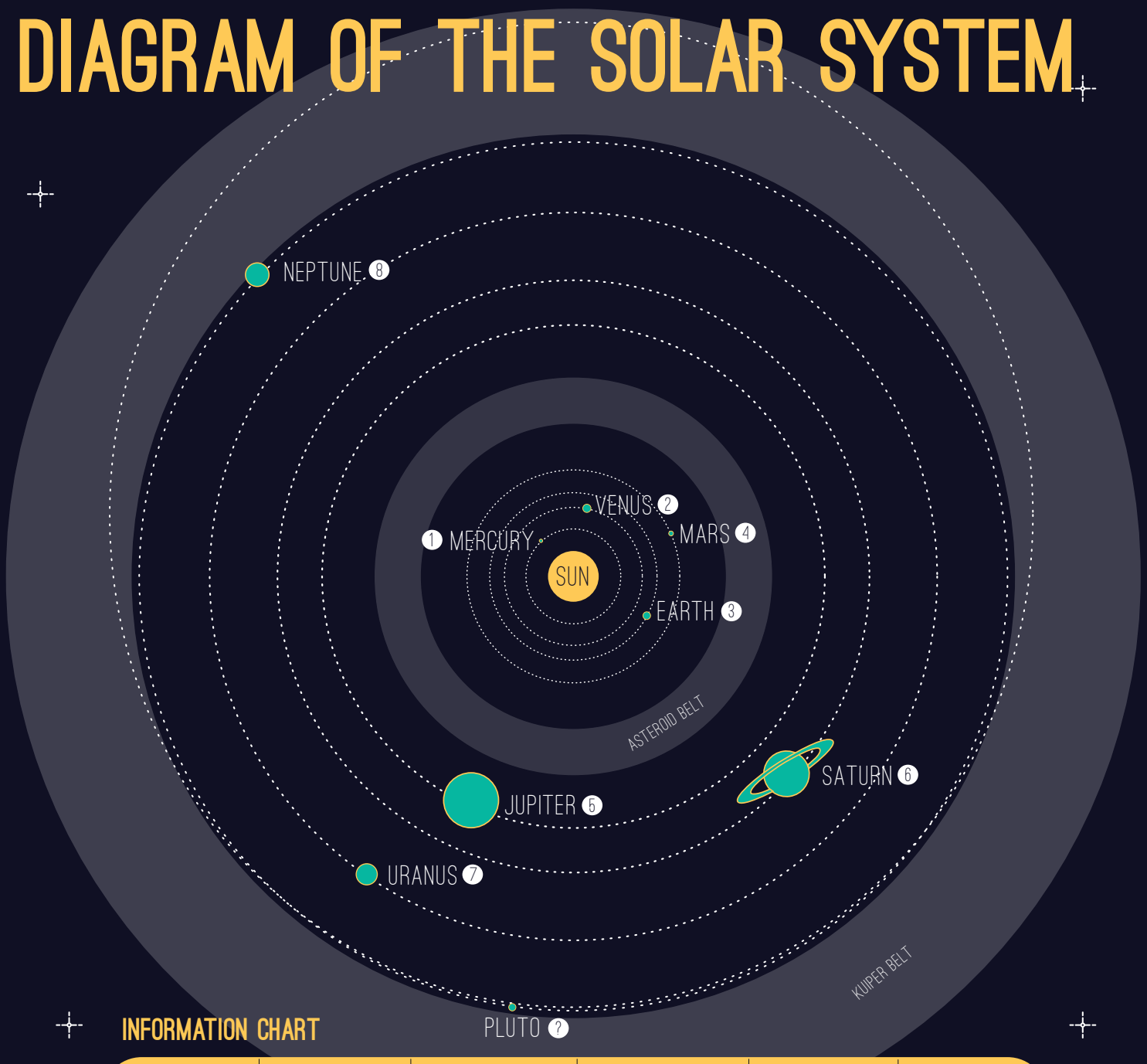
4 Let me give you an idea how small. I'm less than a fourth the size of Earth, and Earth, uh, isn't exactly the big space ball, you know? That's Jupiter, and I'm about one-hundredth his size. So in case the whole fraction thing isn't your deal, let me just tell you that it would take 100 of me to measure up to one of him. (Wow, this comparison thing sure doesn't do much for my self-esteem. I'm feeling kind of puny here. So let's go back to talking about how I was a planet!)

5 Yes, I was a planet. One of the most famous objects in all of space. They discovered me in 1930. I say "they…" I was actually discovered by a man named Clyde W. Tombaugh. He was part of a team of scientists, and it wasn't long before the whole world knew about me—me, the ninth planet!

Clyde W. Tombaugh

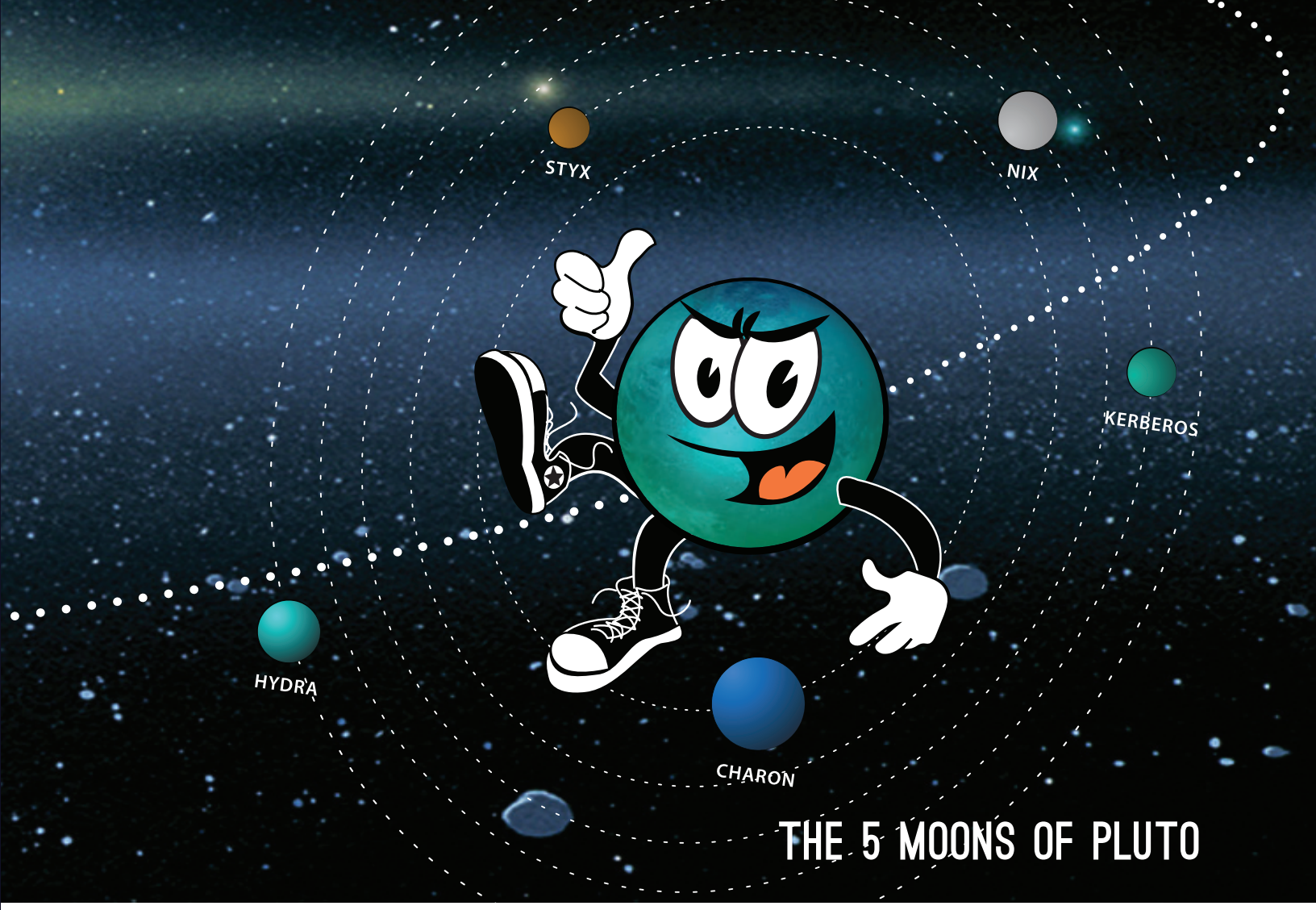
6 Planet X. That's what they called me at first. Then, this eleven-year-old girl from Oxford suggested they call me Pluto, after the Roman god of the Underworld. I fit right in! Most of the other planets had also been named for Roman or Greek gods.

DIAGRAM OF THE SOLAR SYSTEM



INFORMATION CHART

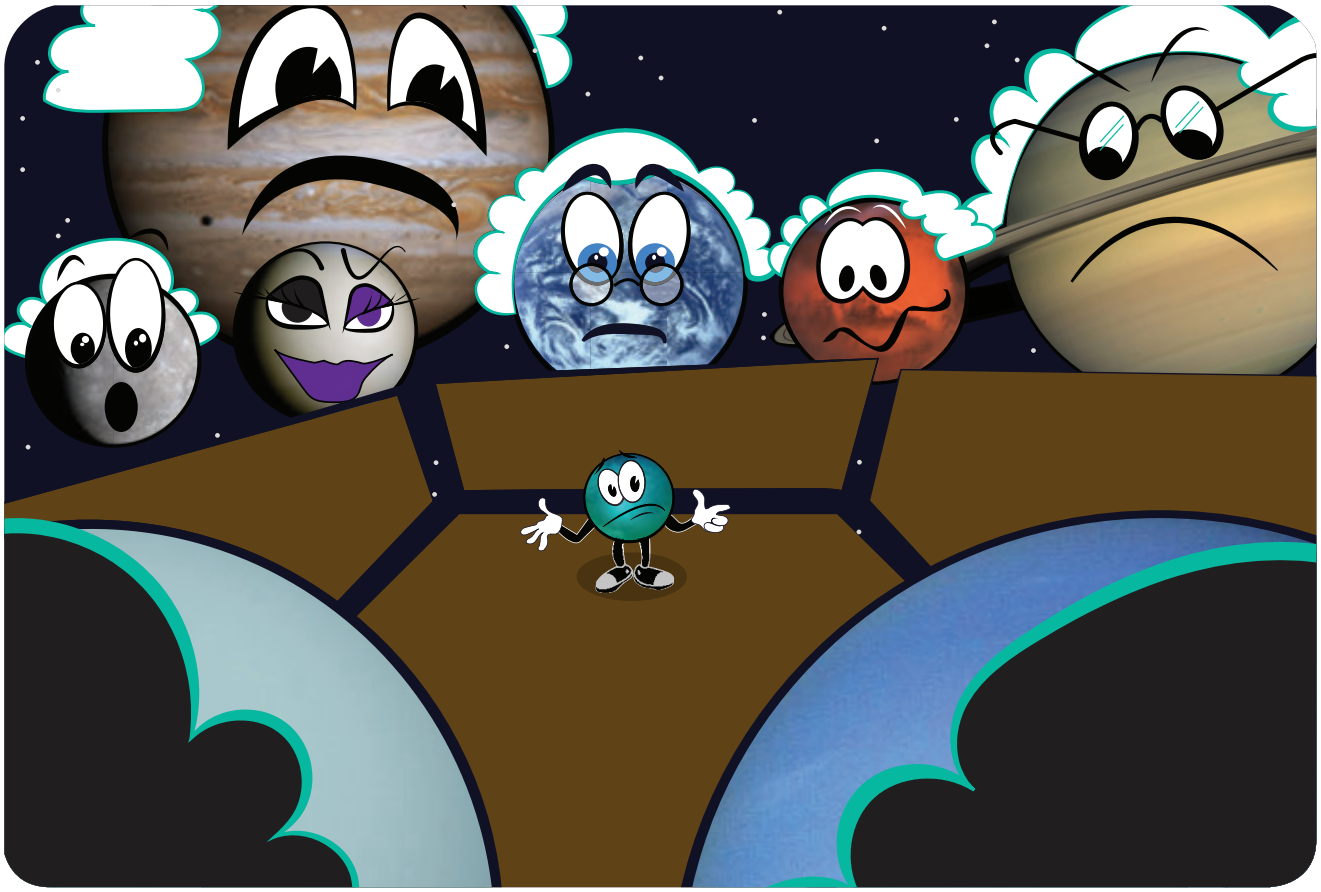
PLANET	MASS (TO EARTH)	TEMPERATURE	DISTANCE FROM SUN	ROTATION TIME	ORBIT THE SUN
MERCURY	0.06	MIN -184°C / MAX 465°C	35,983,610 MILES	58.6461 DAYS	87.969 DAYS
VENUS	0.949	AVERAGE 449°C	67,232,360 MILES	243.16 DAYS	224.701 DAYS
EARTH	1.00	AVERAGE 7.2°C	92,957,100 MILES	23 HOUR 56 MIN	365.3 DAYS
MARS	0.11	MIN -123°C / MAX 36°C	141,635,300 MILES	24 HOUR 37 MIN	686.98 DAYS
JUPITER	317.8	AVERAGE -153°C	483,632,000 MILES	9 HOUR 55 MIN	4332.59 DAYS
SATURN	95.2	AVERAGE -184°C	888,188,000 MILES	10 HOUR 13 MIN	10,759.2 DAYS
URANUS	14.6	AVERAGE -184°C	1,783,950,000 MILES	17.2 HOURS	30,684 DAYS
NEPTUNE	17.2	AVERAGE -223°C	2,798,842,000 MILES	16 HOUR 17 MIN	60,190 DAYS
PLUTO	0.03	AVERAGE -234° C	3,647,000,000 MILES	6 DAYS 9 HOURS	90,465 DAYS



7 Ah! The memory of it just makes me feel all warm and fuzzy inside. And that's a really big deal because I'm really not warm inside. I'm—well, I'm pretty much ice inside—ice that's colder than -300 degrees Fahrenheit.

8 People don't come to visit me—ever—because I'm so cold I'd kill them. Kind of a bummer. But my negative temperatures aren't something to have a negative attitude about because…did I mention that I was a planet?!

9 Well, here's what happened. (You might want to grab a tissue.) Over time, technology improved, knowledge increased, and scientists were able to find out more about me. They realized that I'm not alone out here in my region of space, yet all other planets are. (Darn it.)



10 So, this group of astronomers met in 2006 at the XXVI General Assembly of the International Astronomical Union. (That "XXVI" is the Roman numeral for 26, by the way.) They talked about what it means to be a planet and decided there are three criteria.

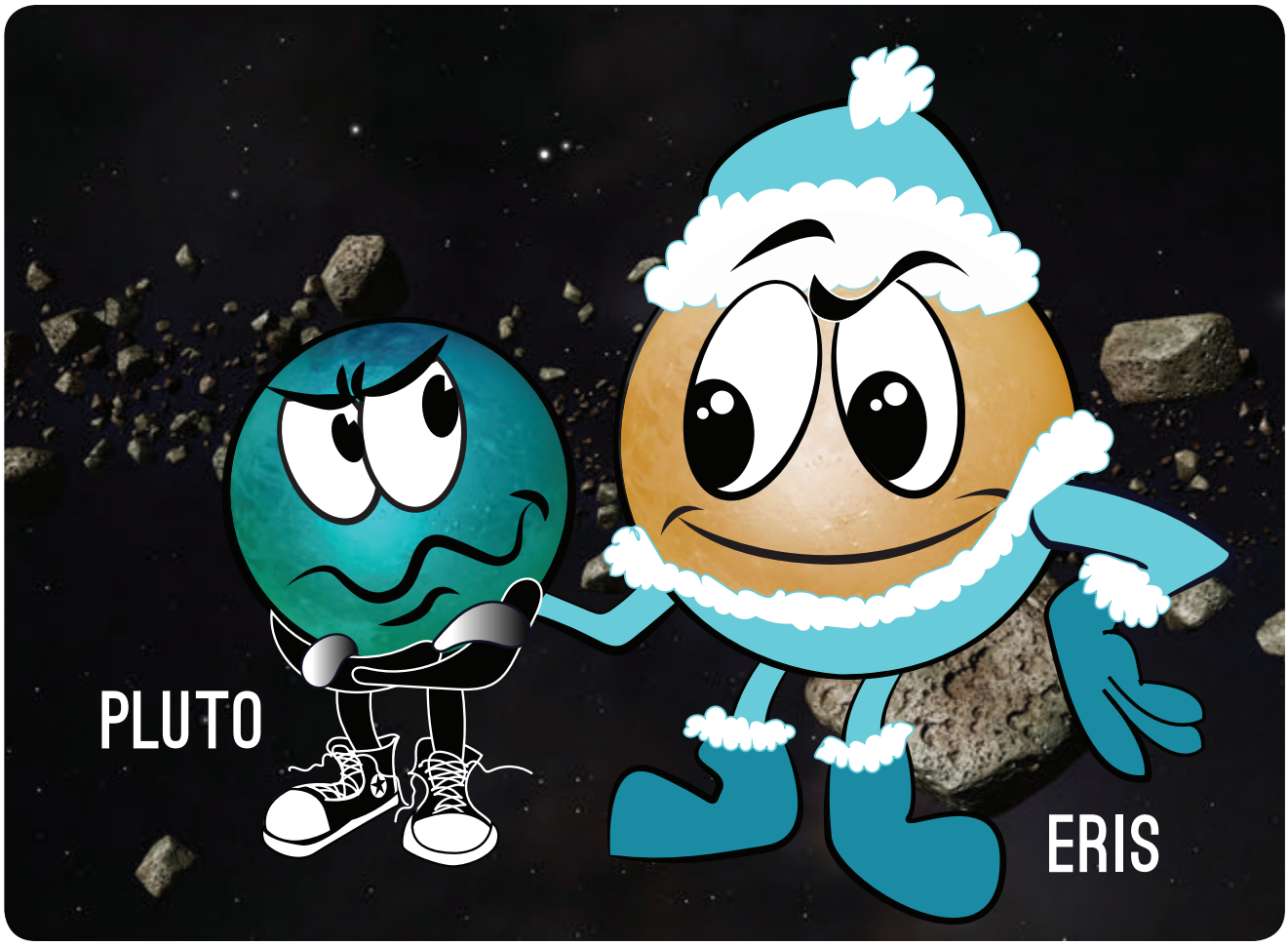
11 First, planets must revolve around the sun, which I do. Second, planets must have enough gravity to pull themselves into a spherical shape, which I do. And third, planets must have enough gravitational force to either push all other objects in their orbit out of their orbit or consume those objects. In other words, planets must be bullies, egotistical loners, and cannibals!

12 See, I told you this was unfair! I'm out here SO far away from the sun—in the cold, in the dark! Do I have to be all by myself too?! Some standards are just too high. I'm already so arctic that if you come to visit me you'll die. Doesn't that count as being non-social enough? Apparently not.

13 The XXVI General Assembly of the International Astronomical Union shook their heads and ruled that, because I was not alone in my orbit, I was not, after all, a planet. Instead, I was a dwarf planet. That's what they said, those small-minded people!

14 So they denounced me. Took me off the planet list. Announced it on television. Oh, how the reports of it ring in my ears. "Pluto is not a planet. Pluto is just one of some 70,000 icy objects in this part of space called the Kuiper Belt." Just an icy object. What a cold thing to say!

15 And you know what? I'm not even the biggest icy object in the Kuiper Belt. I am outsized by icy object Eris. But I am the only icy object that once had the distinction of being a planet! The only one! I am still something! They can dishonor me, humiliate me before the whole wide world, but they can't take away my history! I will fight to the death! I will not be forgotten!



16 I will write an ode to myself. Right here, right now!

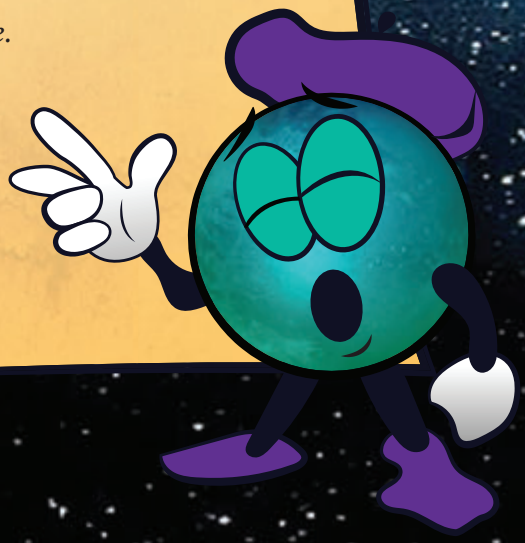
17 *Farthest from the Sun*
the smallest little one
history has revered him.
He is Pluto.

18 *Made of rocky ice*
he still was really nice.
Oh, the crowds they cheered him.
He is Pluto.

19 *Nearly 80 years he was talked about*
in lecture halls all round about.
They couldn't get enough of him.
They put lots of pictures up of him
and they said with heartfelt love
"He is Pluto."

20 *Then they changed their minds*
it really was unkind.
His status was revoked
Oh, poor Pluto.

21 *Planet number nine*
was cut from the planet line.
Was this some cruel joke
on little Pluto?



22 *Nearly 80 years he was talked about*
Will he now just be forgot'n about?
And where they couldn't get enough of him
will they still have any love for him
or say with quest'ning eyes
"Who is Pluto?"

23 *So now in the Kuiper Belt*
is a non-planet that once felt
like he was really something.
He is Pluto.

24 *And you may disagree*
but I'm still impressed with me.
I refuse to be a nothing.
I AM PLUTO!

25 The good news concerning my sad end is that, when the astronomers made their decision, generations of people had already learned in their classrooms that I was a planet. Those people, who held me in their hearts as such, rose up in protest on my behalf. I am still a planet in their eyes.

26 Let the science books tell you I am an icy object dwarf planet. But when I was brought low by this new title, I was publicly mourned. And you—you who are reading about me here—you see the injustices served to me. You understand the great sorrow of my tale. You sympathize. And you still think I'm something special. Don't you?

EYES OF THE UNIVERSE

27 Our knowledge of outer space increases as technology advances. Mercury, Venus, Mars, Jupiter, and Saturn were all discovered by ancient Babylonian astronomers in the 2nd millennium BC. These planets were visible to the human eye.

28 Not until 1609 did Galileo search the sky with a telescope. He was actually able to see features of the moon. Two centuries later, scientists invented the spectroscope.

While a telescope magnifies objects, a spectroscope separates the light acting on an object. This makes it possible for scientists to see the physical features of planets and to study their chemical compositions and motions.

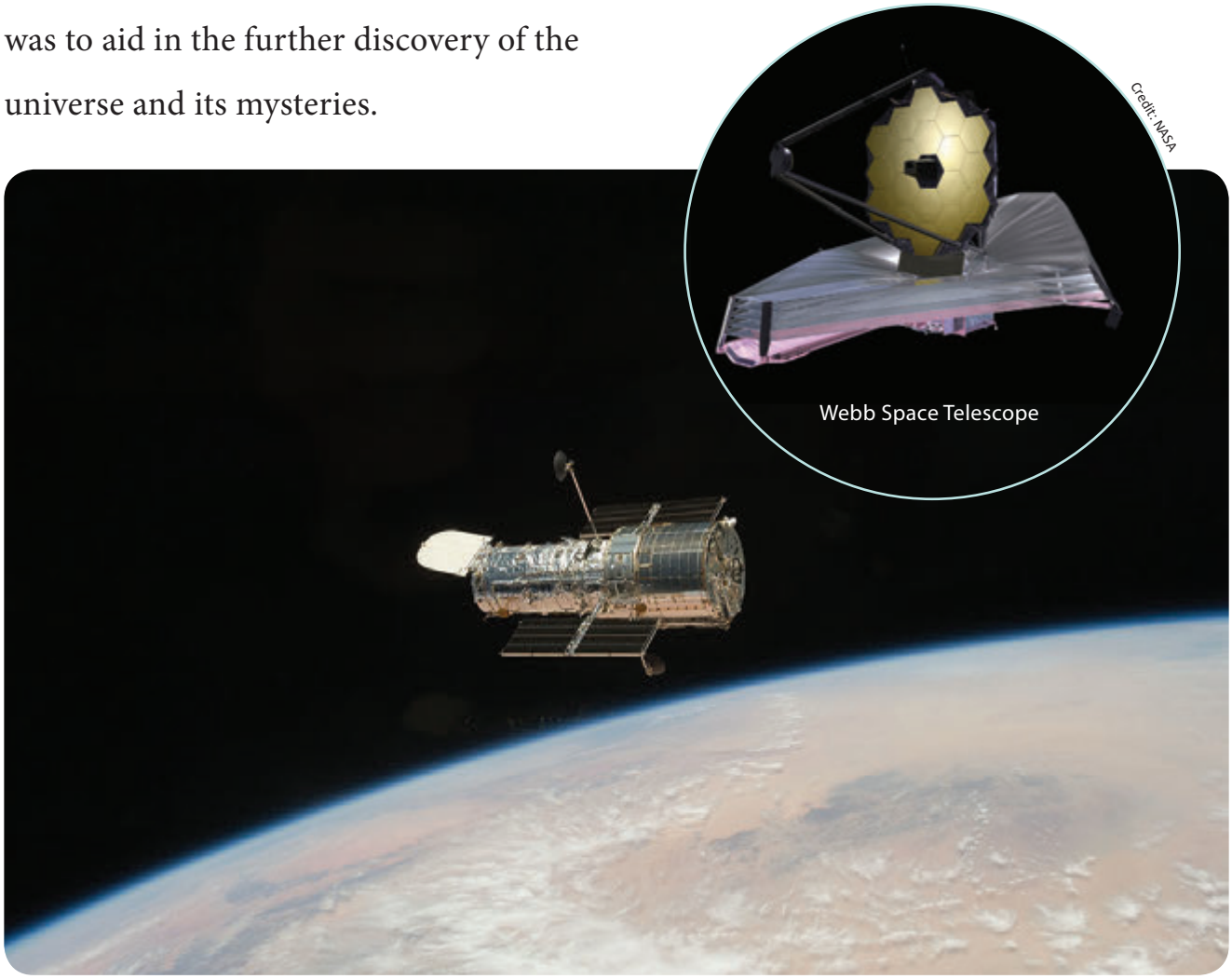
29 Even with the spectroscope, the Earth's atmosphere limited scientists' view. However, it did not limit their curiosity.

Galileo Galilei showing the Doge of Venice how to use the telescope, Fresco, Giuseppe Bertini 1858.

30 In the 1940s, renowned astrophysicist Lyman Spitzer proposed the idea of having an observatory in outer space. Scientists set this idea in motion thirty years later through the development of the Hubble Space Telescope.

31 Five astronauts on the space shuttle *Discovery* deployed this telescope beyond the Earth's atmosphere in 1990. The name of the shuttle was fitting, since the purpose of the Hubble Space Telescope was to aid in the further discovery of the universe and its mysteries.

32 Currently, scientists are working on an even more advanced telescope called the James Webb Space Telescope. This telescope has larger mirrors and even more sensitive light detectors. It will reveal space from an even clearer and more detailed perspective. The telescope is scheduled for launch in 2018. Astronomers are anxiously awaiting the views and understandings of space the James Webb Space Telescope will provide.



Hubble Space Telescope, May 2009.

REFERENCES

Cain, Fraser. "Why Pluto is No Longer a Planet." Universe Today. Retrieved on 11 July 2013 from: http://www.universetoday.com/13573/why-pluto-is-no-longer-a-planet

"Ceres: Roman Myth." *Mr. Donn's Social Studies Site.* Retrieved on 11 July 2013 from: http://rome.mrdonn.org/romangods/ceres.html

"Compare the size of Jupiter and Pluto?" *Answers.* Retrieved on 11 July 2013 from: http://wiki.answers.com/Q/Compare_the_size_of_Pluto_and_Jupiter

Lindemans, Micha F. "Cerberus." *Encyclopedia Mythica*. Retrieved on 11 July 2013 from: http://www.pantheon.org/articles/c/cerberus.html

"Pluto and the King: A Greek and Roman Myth." *Mr. Donn's Social Studies Site.* Retrieved on 11 July 2013 from: http://rome.mrdonn.org/romangods/king-of-corinth.html

Redd, Nola Taylor. "How Cold is Pluto?" *Space.com*. Retrieved on 11 July 2013 from: http://www.space.com/18563-pluto-temperature.html

"Telescope History." *NASA.* Retrieved on 11 July 2013 from: http://www.nasa.gov/audience/forstudents/912/features/telescope_feature_912.html

"The James Webb Space Telescope." *NASA.* Retrieved on 11 July 2013 from: http://www.jwst.nasa.gov/about.html

"The River Styx: Roman Mythology for Kids." *Mr. Donn's Social Studies Site.* Retrieved on 11 July 2013 from: http://rome.mrdonn.org/romangods/riverstyx.html

Images

Page 12
Galilei showing the Doge of Venice how to use the telescope by Giuseppe Bertini 1858.
http://www.gabrielevanin.it/S.%20Marco%201609.htm

Page 13
Hubble Space Telescope, NASA
http://spaceflight.nasa.gov/gallery/images/shuttle/sts-125/html/s125e011835.html

The Webb Space Telescope, NASA
http://www.jwst.nasa.gov/images_artist13532.html (direct link)

Quick Writes

1

2

3

4

Quick Writes

5

6

7

8

Quick Writes

9

10

11

12

Research Integrate and Synthesize

DIRECTIONS

Integrate or synthesize information from two sources on the same topic. Use this book as one of the sources. Enter the titles or websites of the two sources in the space provided. Enter 4-5 facts from each source. Using the facts from both sources, write a short research paper of one or two paragraphs.

1 Source _____

-
-
-
-
-

2 Source _____

-
-
-
-
-

Writing Space

Vocabulary

DIRECTIONS

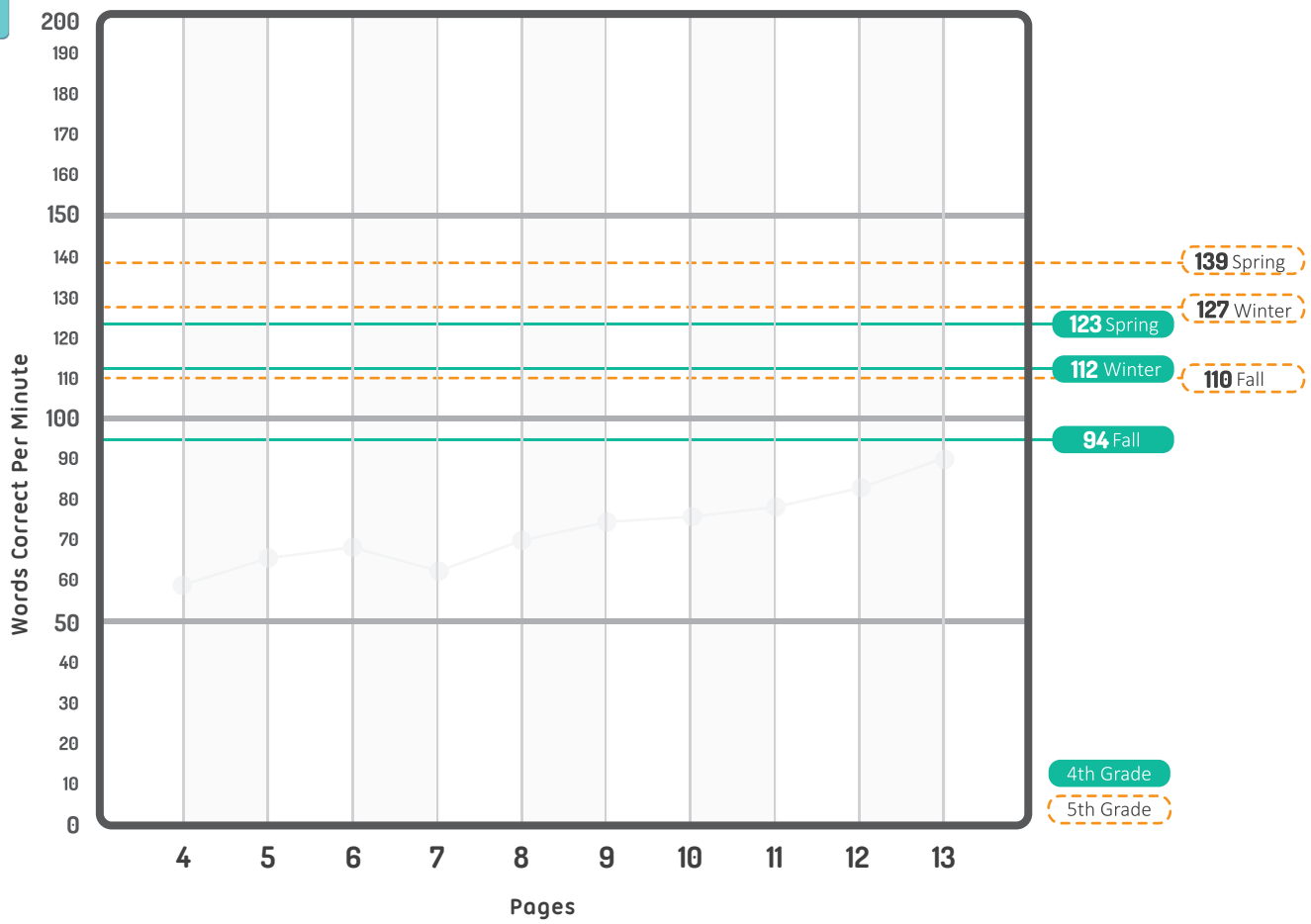
List unknown vocabulary words on the chart provided. Give a brief definition from a print or digital source. Create your own link (image, symbol, word association). Briefly explain the impact of the word choice on the tone or meaning of the text.

TEXT _____ **PAGE(S)** _____

Paragraph #	Word or Phrase	Brief Definition	My Link	Tone Or Meaning

FI
FLUENCY

Oral Reading Fluency Chart



TDQ
TEXT DEPENDENT QUESTIONS

Book Check Rubric

Weigh score by 1

	0 No Attempt	1 Below Basic	2 Basic	3 Proficient	4 Advanced
Task	Student makes **no attempt** to complete the task.	Student **makes an attempt** to complete the task. but demonstrates little or no understanding of the task.	Student **completes most of the elements** of the task.	Student **completes all elements** of the task.	Student **completes all elements** of the task.
Understanding		Student demonstrates **little or no understanding** of the task.	Student demonstrates a **limited understanding** of the text.	Student **demonstrates** an understanding of the text.	Student demonstrates a **deep understanding** of the text.
Evidence			Student provides **limited or no evidence** to support their answer.	Student **supports** the answer with **evidence** from the text.	Student **completely supports** the answer with **solid evidence** from the text.

Book Check :
Spaced Out

Name: _____

Date: _____

Total: ___/36

TC TEXT COMPLEXITY

1 **Select a paragraph. Write a question and answer. Cite details from the text to support the answer.**

DT DETAILS IN TEXT ___/4

Paragraph ____

_____

_____

_____

_____

_____

2 **State the main idea of the book. Create a new title for the book that restates the main idea. Support the title choice using at least two key ideas from the book.**

MI MAIN IDEA Th THEME ___/4

_____

_____

_____

_____

3 **Select two key ideas, events, or characters from the book. Explain the relationship between the two key ideas, events, or characters. How do they contribute to your understanding of the central theme of the book?**

Rel RELATIONSHIPS CSE CHARACTERS SETTING EVENTS ___/4

_____

_____

_____

_____

4 **Select 2 words or phrases from the book that are important to you as a reader. Explain why you selected these words or phrases. Describe how you would use them in the future.**

Wo Ph WORDS & PHRASES ___/4

1. _____ _____

_____

_____

2. _____ _____

_____

_____

5 Explain how the author organized the book. Identify the primary text structure. Cite evidence from the book to support your answer.

TS TEXT STRUCTURE

/4

6 Identify the primary purpose and point of view of each writing form: narrative, poetry, and expository. Explain how each point of view contributes to the overall understanding of the theme.

PoV POINT OF VIEW

/4

7 Select a visual image from the book. Explain how it contributes to or clarifies your understanding of the text. Quote from the text.

VI VISUAL INFORMATION

/4

8 In paragraph 31, the author claims the name *Discovery* was approrpiate for the shuttle that launched the space telescope. Quote statements from the text that provides evidence or reasons to support that opinion or claim.

RE REASONS & EVIDENCE

/4

9 Compare and contrast the topic presentation of the writing forms. Identify the topic addressed by the texts. What is common to the texts? Explain how they differ in information presentation.

CC COMPARE CONTRAST

/4


SNAP!
LEARNING


ISBN 978-1-63260-324-1
EAN
9 781632 603241