# Short Reading Passages

## Conduction

**Big Idea Question: How is thermal energy transferred through conduction?**

When two different materials come into contact, the one with greater thermal energy will pass on some of its energy to the one with less thermal energy through a process called conduction. In conduction, the thermal energy is transferred through objects that are touching. This process can occur in substances that are solids, liquids, or gases.

As the particles touch, they pass on some of their energy. The energy will continue being passed on throughout the substance from one particle to the next. Particles with greater thermal energy also have greater kinetic energy. When they pass on their thermal energy, they will have less kinetic energy and start to slow down. On the other hand, those that are receiving the energy will begin to sp

You can experience conduction and then put it back down, your han particles in your hand were transfer hot cocoa and put it down, your han particles in the mug were transferre

Thermal energy transfer from to ice water

In general, the closer the parti solids, the particles are very close t energy from one particle to the nex particles have more room to move, whose particles are the furthest apa not that great at being conductors.

Materials that are good condu Metals are examples of thermal con metal so that the thermal energy ca the food or liquid in the pot. Materia Styrofoam is a good insulator beca

Metal makes a good thermal co

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## Convection

**Big Idea Question: How is thermal energy transferred through convection?**

The thermal energy that flows throughout fluids is known as convection. In convection, th particles of the fluid move from warmer areas to colder areas within the same material. In a h air balloon, the particles that are closest to the flames gain thermal energy from the radiation the flame. They start to speed up and become less dense, allowing them to rise to the top of balloon. When they reach the top of the balloon, they lose some of their energy and slow dow again. This causes them to be denser, and so they head back down to the bottom of the balloon. The whole process repeats itself in a cycle called a convection current.

Convection currents in our atmosphere faster than the ocean. The air closest to la sea fills in to take its place. At night, the la see gains energy and rises, and the coole we feel a sea breeze during the day, but a

Daytime: Sea Breeze

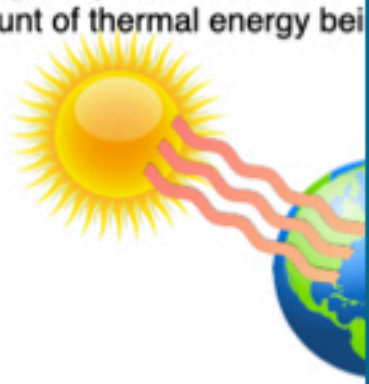
Convection also creates ocean curre south poles is pulled down to the ocean b equator is pulled toward the poles to repla helps distribute heat and nutrients around

## Radiation

**Big Idea Question: How is thermal energy transfe**

Radiation is the only way of transferring thermal en Radiation transfers through electromagnetic waves. W transfers its energy to the object causing the particles t

The sun heats the Earth through radiation. The lig with the particles in the atmosphere and the particles o energy. There is a reason summer temperatures are ho the angle of the Earth. More light rays can reach the E time. This increases the amount of thermal energy bei through radiation.



Radiation is also how thermal energy from the ca thermal energy from the fire reaches the marshmallow their kinetic energy. This, in turn, cooks the marshma

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# Note-taking Templates

**Name:** _____ **Class:** _____

**Topic: Inner Planets** **Date:** _____

**Big Idea Question:** What are they and why are they called Terrestrial and what are some key characteristics?

| Questions | Notes |
| --- | --- |
| What do the inner planets have in common? | |
| What is a unique characteristic about each inner planet? | |
| Which planet is the most similar to Earth? | |

**Summary:**

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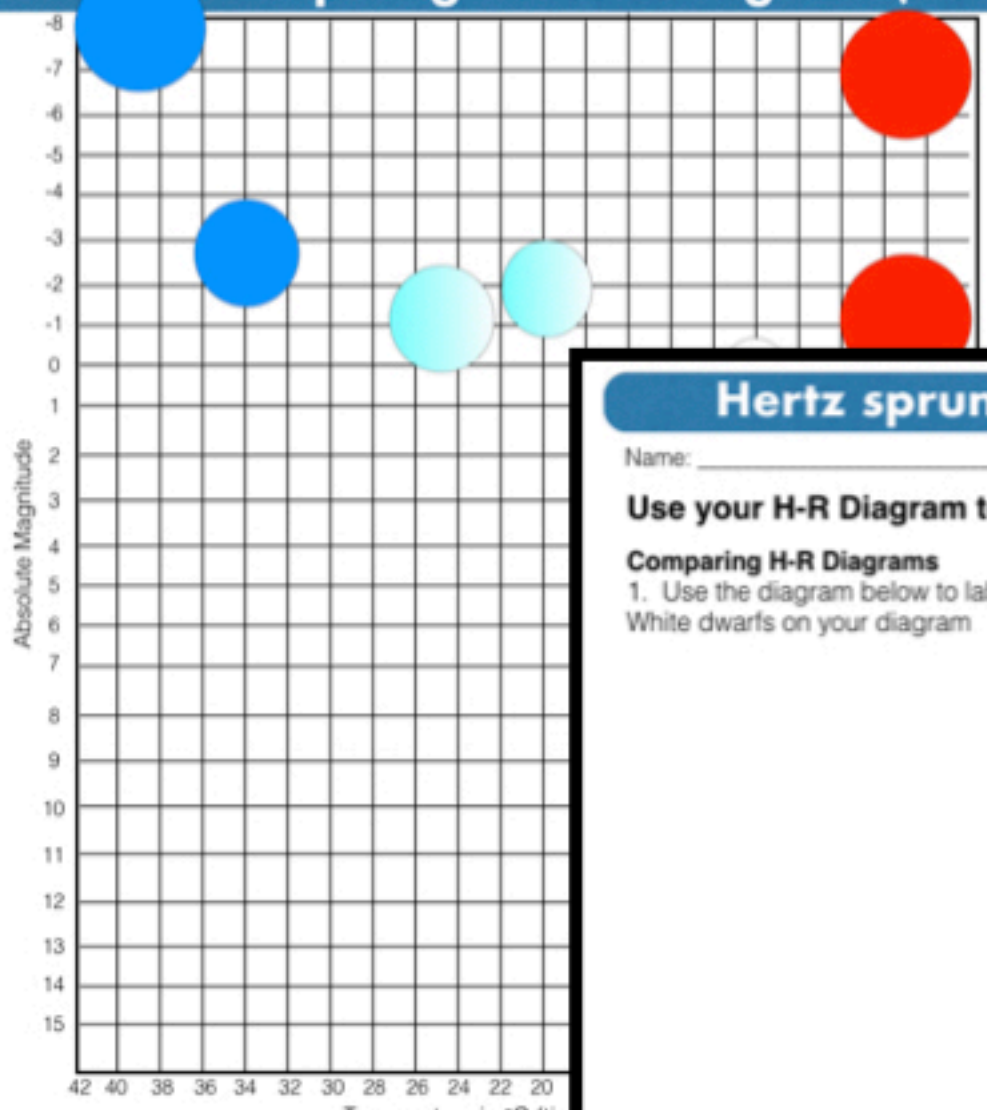
# Comprehension Worksheets with answer key

## ertz sprung-Russell Diagram (Version C




Label the stars

| Identification Letter | Stars | Temperature |
|---|---|---|
| A | Sun | 6,000 |
| B | Sirius A | 12,000 |
| C | Epsilon Eridani | 4,000 |
| D | Zeta Eridani | 40,000 |
| E | Betelgeuse | 3,500 |
| F | Barnard's star | 3,000 |
| G | Procyon | 8,000 |
| H | Regulus | 25,000 |
| I | Spica | 35,000 |
| J | Mizar | 10,000 |
| K | Alpha Centauri B | 5,000 |
| L | Van Maanen's Star | 11,000 |
| M | Alpha Centauri A | 5,500 |
| N | Sirius B | 10,000 |
| O | Algol | 20,000 |
| P | Aldebaran | 3,500 |

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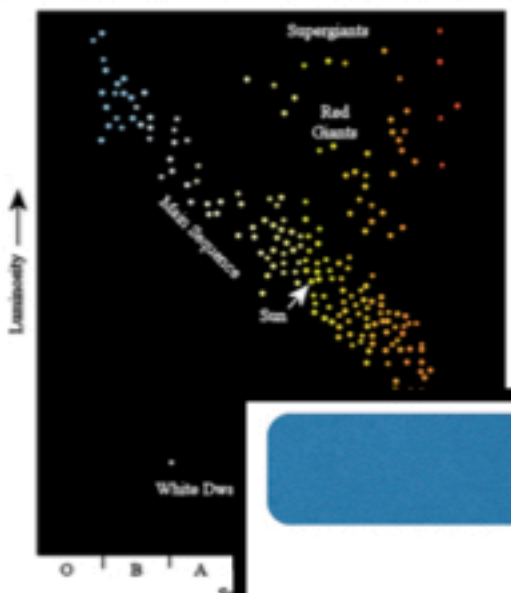
## Hertz sprung-Russell Diagram (Version C)

Name: _____ Class: _____

**Use your H-R Diagram to Answer the Questions**

**Comparing H-R Diagrams**

1. Use the diagram below to label the Super Giants, Red Giants, Main Sequence, Red Dwarfs, and White dwarfs on your diagram




**Using the H-R Diagram:**

2. Based on your H-R diagram name a star that is cool

3. Based on your H-R diagram which star is the brighte

4. Based on your H-R diagram which star is the hottest

**Comparing Stars**

5. What are some similarities and Differences between
- A similarity between Regulus and Aldebaran is that t _____ which is _____.
- A difference between Regulus and is that Regulus _____. Whe _____

**Looking for Patterns**

6. Which color represents the hottest stars? _____

7. Which color represents the coolest stars? _____

8. Where are the hottest and brightest stars found on th _____

9. Where are the coolest and dimmest stars found on th _____

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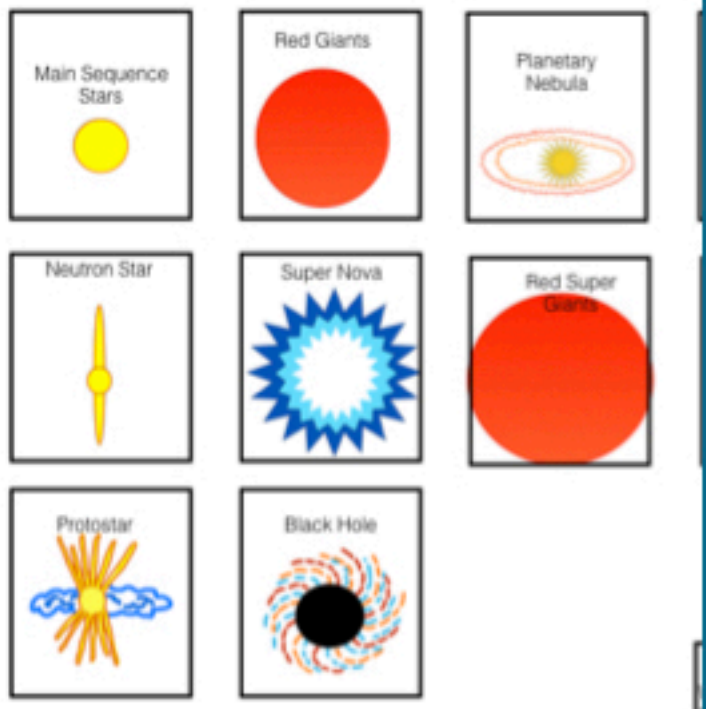
## Life of Sta

**Directions:**

1. Cut out the Star Pictures and des
2. Glue them into the appropriate s represents the life cycle of a star Sun and massive stars




What is left when all the energy from a star is gone and no light is produced

When hydrogen is used up and carbon is produced

Tiny leftover core of a supernova that spins rapidly and gives off radio waves

a ball of gas and

A time in a stars life when hydrogen is

leftover center of a

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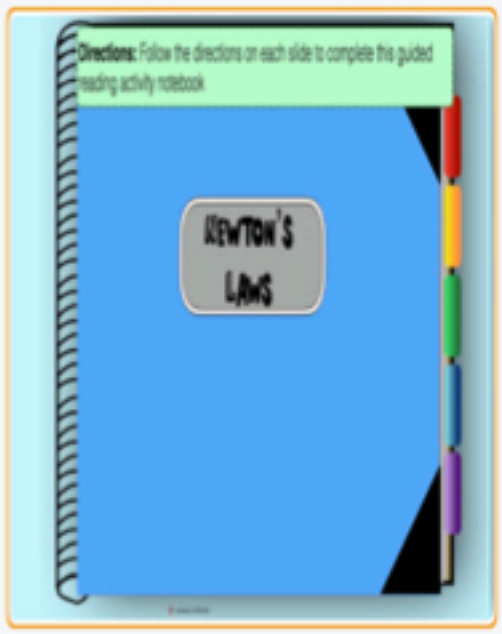
# Digital Version

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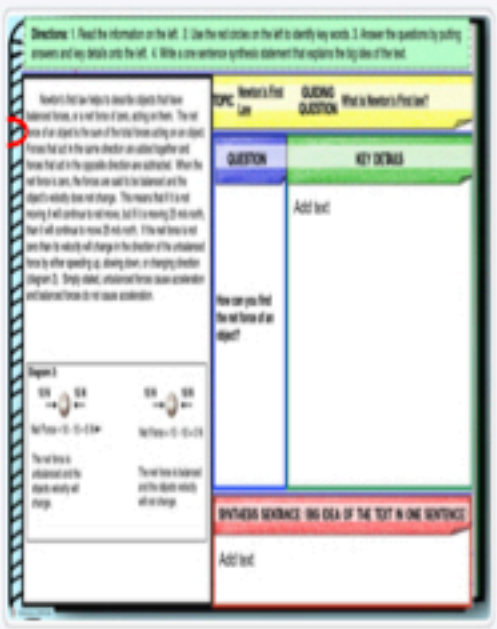

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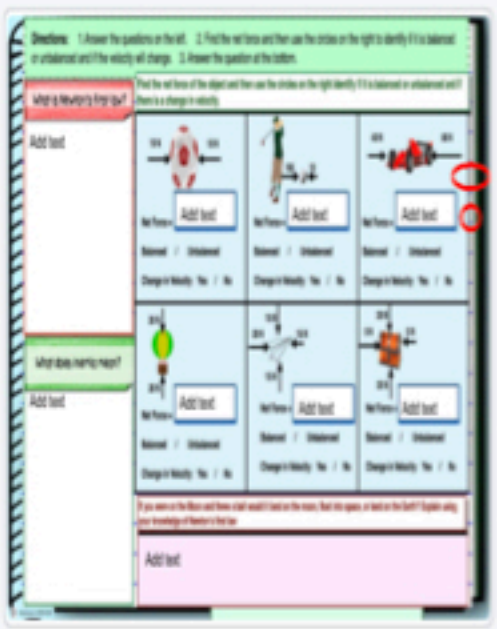

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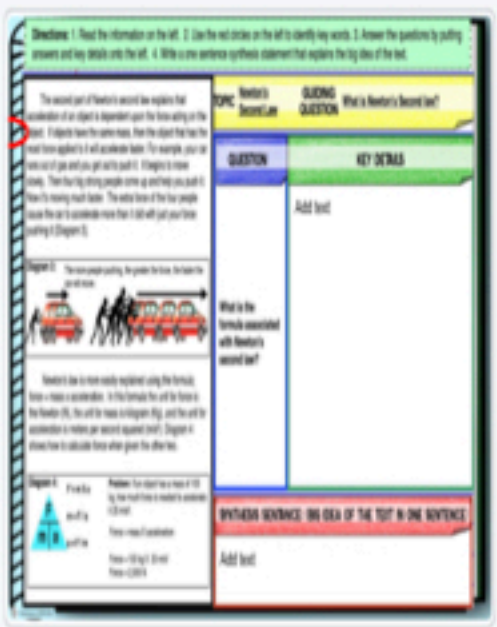

6

7

8

9

10

11

12

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# Extension Task Cards

## Task 1

Why do large semi truck
have to pull over and sto
driving when there are
high winds?

## Task 2

Why are astronau
able to jump high
on the moon than
Earth?

## Task 3

Why do sharks float in
the middle of the
water?

## Task 4

Using your knowled
of friction, explain
why they smooth th
ice before a hocke
game?

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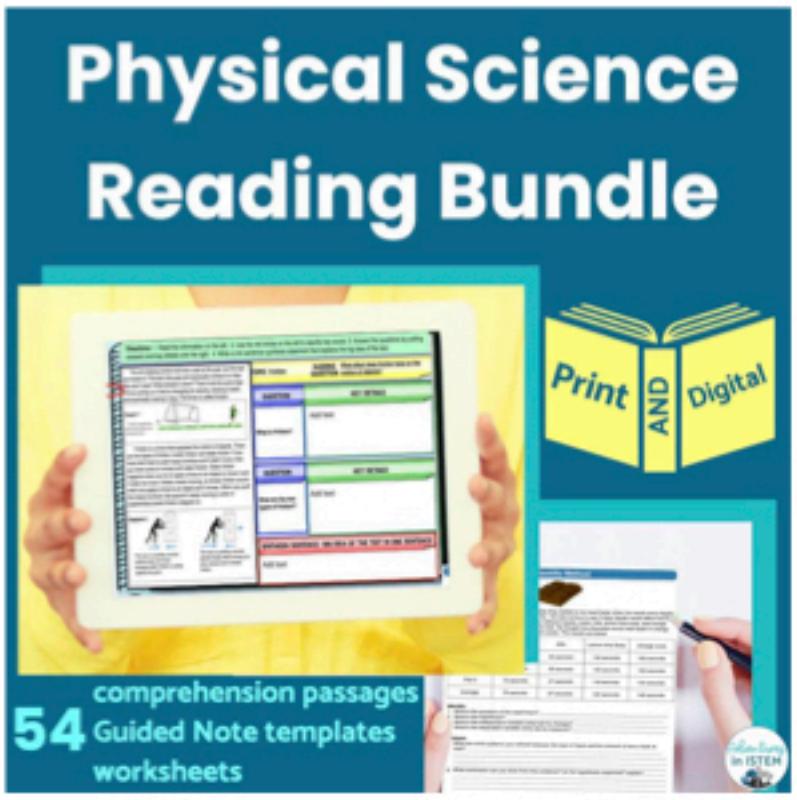
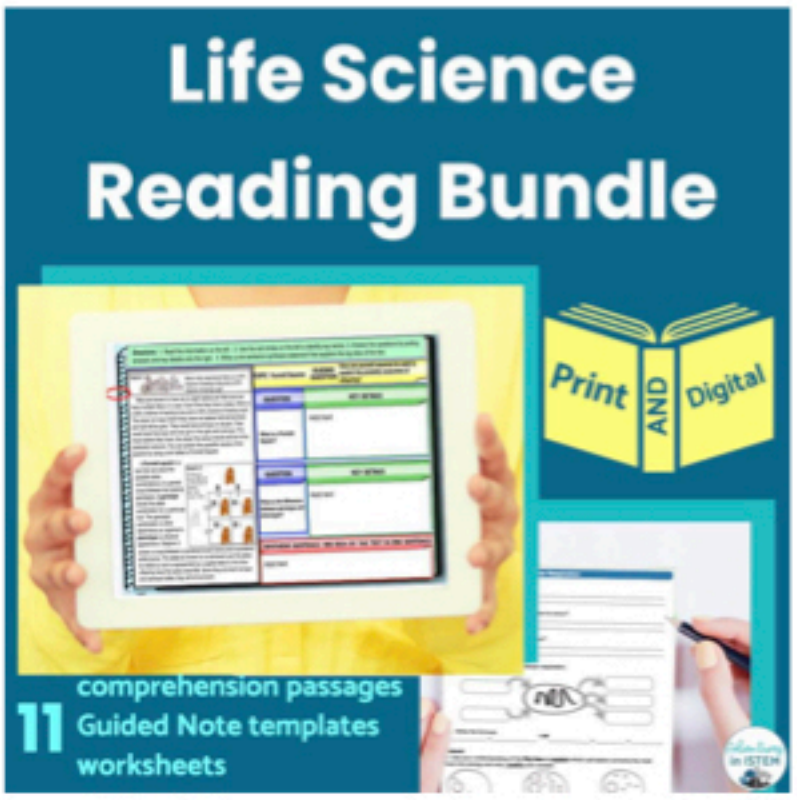
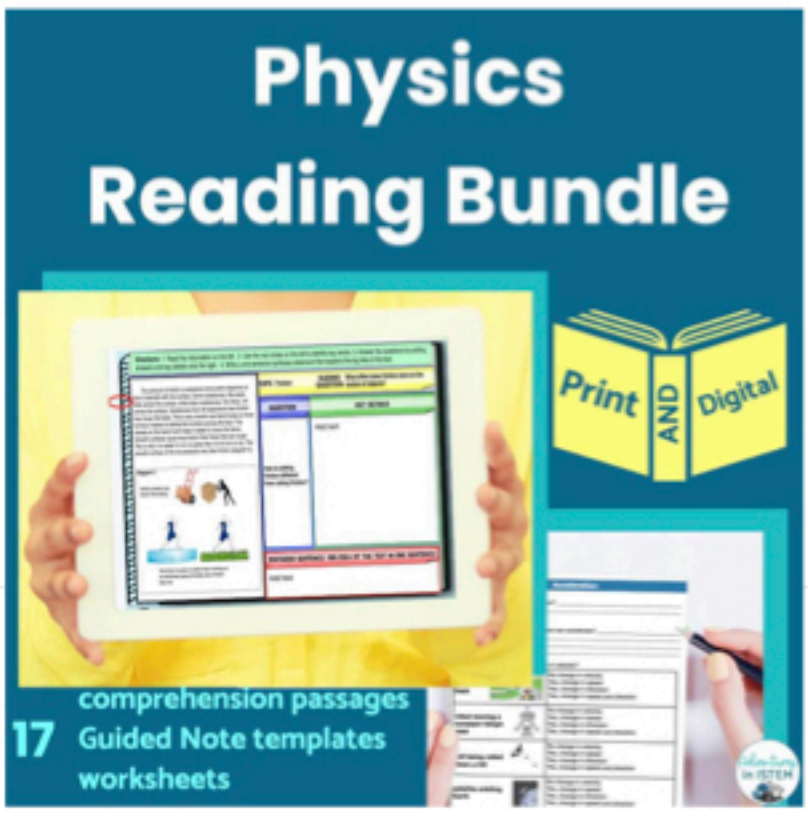


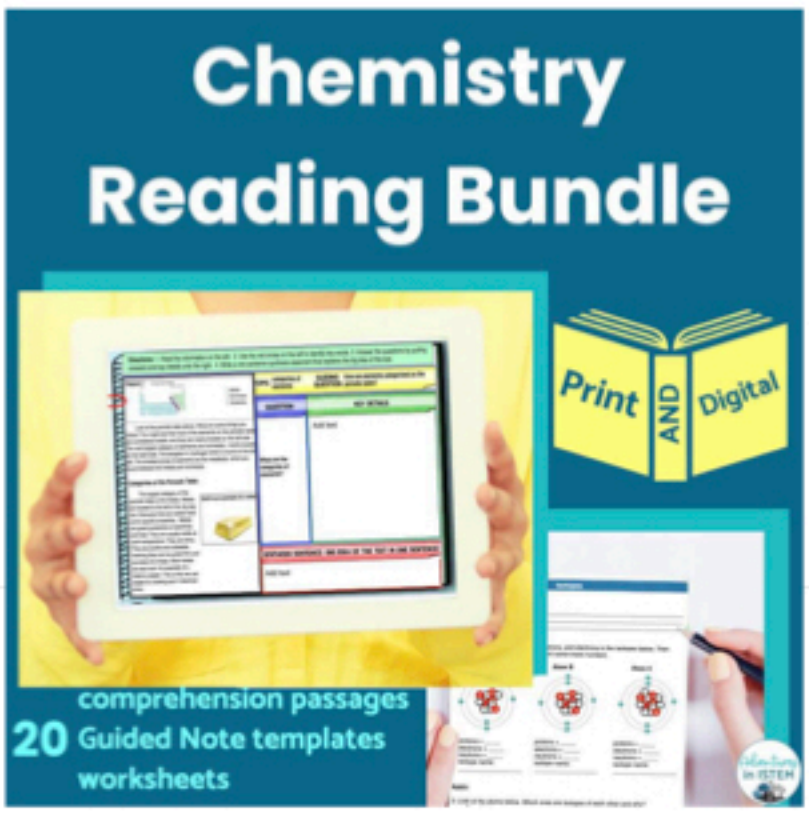

Years worth of science reading:
54 Comprehension passages,
note-taking templates,
worksheets




11 Comprehension passages,
note-taking templates,
worksheets covering cells,
genetics, and evolution




17 Comprehension passages,
note-taking templates,
worksheets covering forces,
motion, waves, and energy.




20 Comprehension passages,
note-taking templates,
worksheets covering matter,
chemical reactions, conservation
of energy, atoms, periodic table,

# Free Sample

You can print the following pages for a free sample of what a science reading looks like and how you could use it in your classroom.  Click the title in the red box for the digital version of the reading.

**What You Will Need To Get Started:**

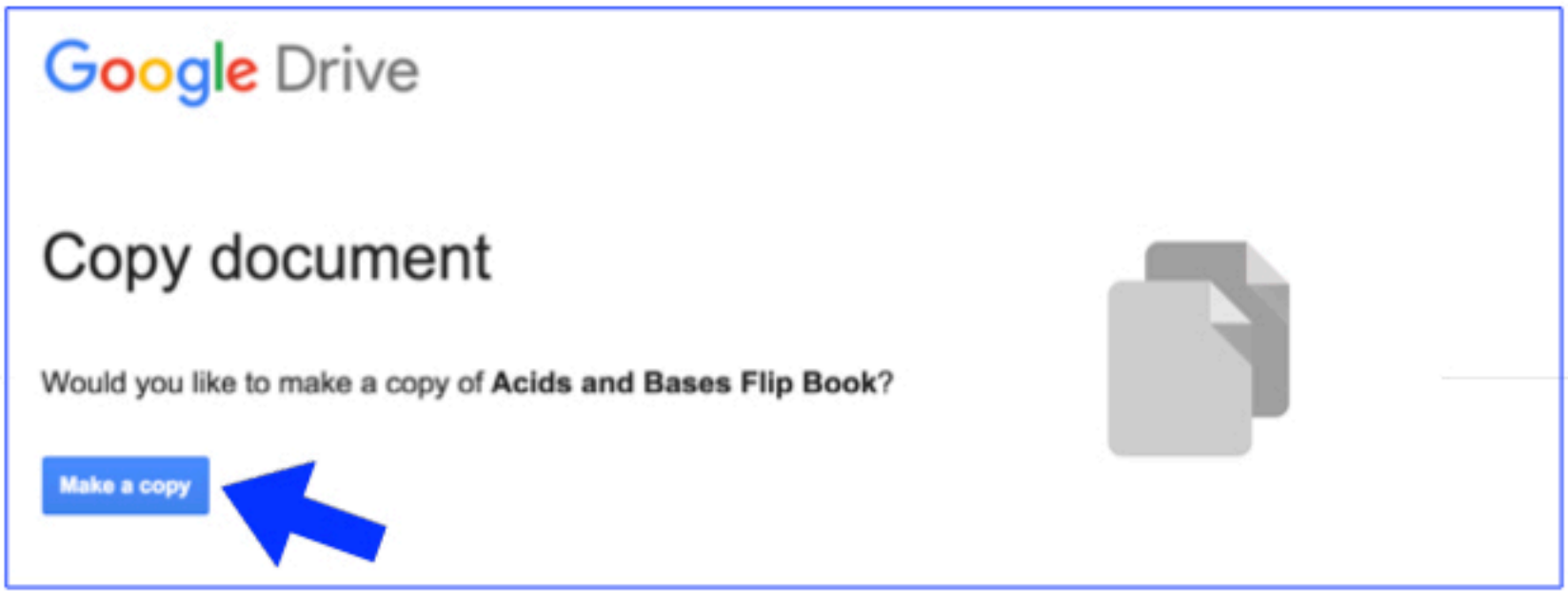
1. Download link for the Google Resource by clicking on the titles in the red box

**Outer Planets Guided Reading Digital Notes**

2. Access to the Internet and a Google Account (Free)

3. Google accounts or Microsoft OneDrive accounts for your students to save their work

4. Open the file on your Google Drive.  The link will prompt you to make a copy




5. This new copy is now yours to edit and share with your students

6. Printer access if you choose to print the finished product as an actual flip book

# Outer Planets

**Big Idea Question:** *Why are they called gas giants? What are some key characteristics?*

The outer solar system is made up of four gas giants. They are Jupiter, Saturn, Uranus, and Neptune. Since they are so far away from the Sun, they are able to hold onto their gas atmospheres and are made up mostly of gas but have solid rocky cores. Because they are so massive, they have a greater gravity than the terrestrial planets. They are also much colder than the terrestrial planets since they are so far away from the Sun. They also all have rings, and many planetary satellites.

**Basic facts:**

**Jupiter:** Largest planet in our solar system. Its mass is twice as much as the other seven planets combined. Now that's massive! It is made up mostly of hydrogen gas, and it is know for its massive storm—which is more like a hurricane that is the size of three Earths put together. Since it is made up of mostly gas, it is able to spin around pretty quickly. In one Earth day, Jupiter will have had three days. Now that's fast! It also has the most planetary satellites. To date, the number is at 67. It has the most gravity of all the planets.

**Saturn:** This planet is known for its many rings that circle it which are made of gas and ice. It is the least dense of all planets. In fact, if you put Saturn in a tub of water, it would actually float. It's amazing that something that massive could actually float. Crazy. Its atmosphere is mostly helium and hydrogen and its gravity pull could tear a comet apart if one got close enough.

**Uranus:** This planet does not reflect much light since it is so far from the sun. We know about it from our space probes that we sent out into space. The methane gas in its atmosphere is what gives it its greenish color. The rotation of Uranus is unique because it is so tilted it actually spins on its side. Its poles would be found in the same location as our equator, weird. This rotation causes one pole to be in complete darkness for half of its revolution. Could you imagine having night last half a year and a day lasting the other half?

**Neptune:** The outermost planet in the solar system. Its blue color is caused by its methane gas in its atmosphere. There is a hurricane-like storm that is the size of Earth. It has the fastest winds of any of the planets moving at more than 1,000 km/h (a high wind on Earth is considered 100km/hr).

| | | | | |
|---|---|---|---|---|
| **Distance from Sun** | 5 AU | 9 AU | 19 AU | 30 AU |
| **Rotation (day/night)** | 9 hours | 10 hours | 17 hours | 16 hours |
| **Revolution (year)** | 11 Earth years | 29 Earth years | 83 Earth years | 163 Earth years |
| **Diameter (size)** | 142,984 km | 120,536 km | 51,118 km | 49,528 km |
| **Density** | 1.33 g/cm$^3$ | 0.69 g/cm$^3$ | 1.27 g/cm$^3$ | 1.64 g/cm$^3$ |
| **Gravity** | 236% of Earth's | 92% of Earth's | 89% of Earth's | 112% of Earth's |
| **Planetary Satellites** | 67 | 62 | 27 | 14 |

The planet information is current as of April 2015

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**Name:** _____ **Class:** _____

**Topic:** Outer Planets **Date:** _____

**Big Idea Question:** Why are they called gas giants? What are some key characteristics?

| Questions | Notes |
| --- | --- |
| What do the outer planets have in common? | |
| What is a unique characteristic about each outer planet? | |
| Which planet is the most similar to Jupiter? | |

**Summary:**

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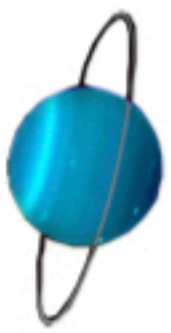
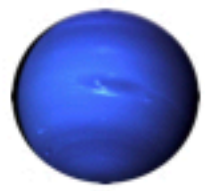
# Outer Planets

## 1. Comparing the planets: Fill in the data table

| | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| place the planets in order from closest to the Sun to furthest from the Sun | | | | |
| place the planets in order from shortest day to longest day | | | | |
| place the planets in order from shortest year to longest year | | | | |
| place the planets in order from smallest size to largest size | | | | |
| place the planets in order from least dense to most dense | | | | |
| place the planets in order from least amount of planetary satellites to most amount of planetary satellites | | | | |





2. **Using Patterns:** Compare the number of planetary satellites to the diameter, location from the Sun, and the density. Which characteristic do you think has the most influence on how many planetary satellites an outer planet will have?

3. Why do you think the characteristic you choose in question 2 has more influence on the number of planetary satellites than the other characteristics? Explain.

4. Thinking beyond the table, what is another factor that could be influencing the number of planetary satellites the outer planets have? Explain.

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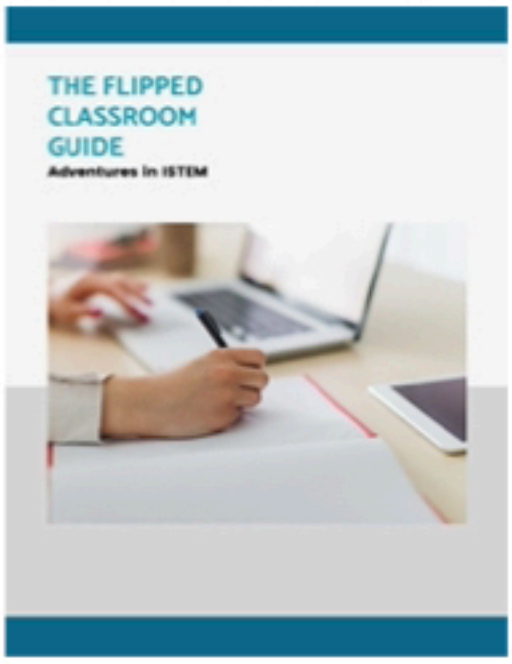


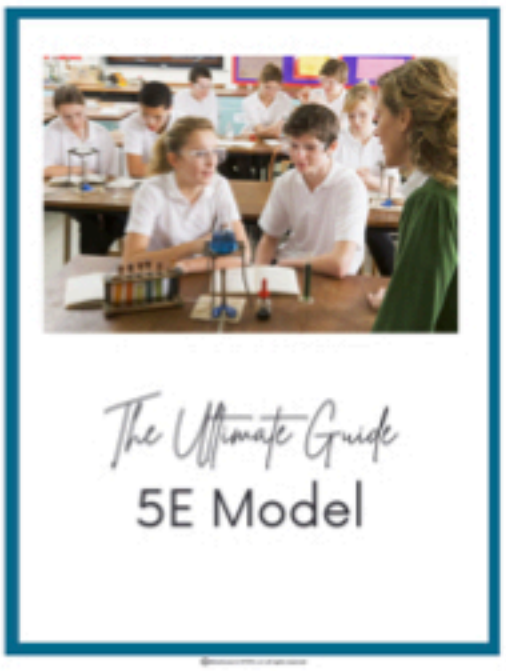


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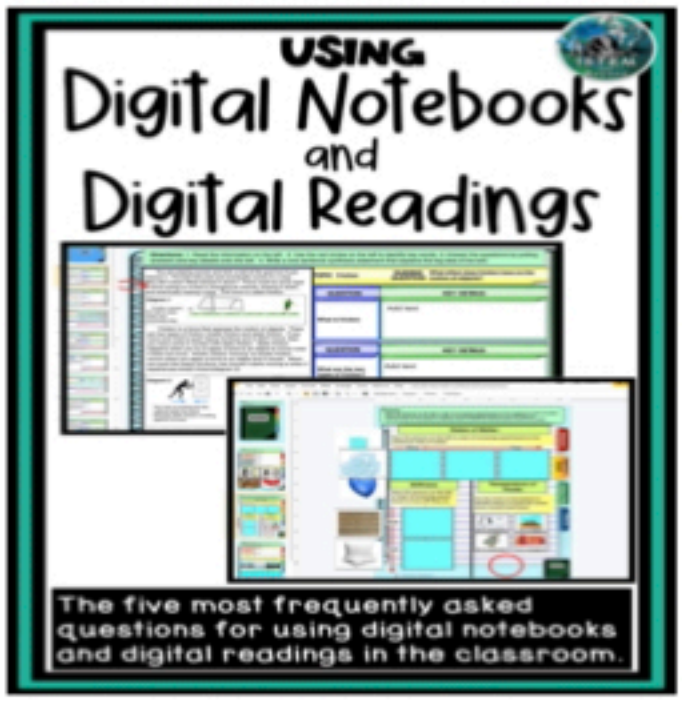


I would also recommend checking out my Google Slide videos that demonstrate how to drag and drop pieces, write in the text boxes, add  objects, and more. These are short videos that can easily be shared  with students and parents. Click the picture for the link