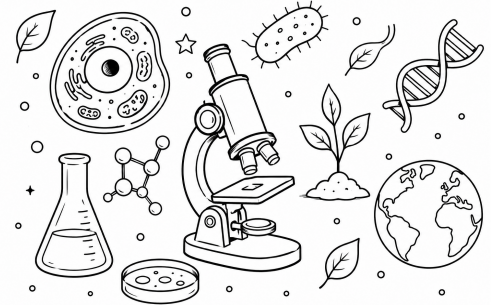


## Discovering Life Science: Your 7th Grade Summer Packet

Congratulations on completing 6th grade! As you prepare to begin 7th grade, get ready to explore some exciting topics in life science.

This summer packet is designed to help you strengthen the skills you will need to be successful in 7th Grade Science. Throughout the year, you will learn about cells, microorganisms, the human body, metabolism, ecosystems, and how living things interact with their environment.



In this packet, you will think like a scientist by reading carefully, analyzing information, interpreting data, and supporting your ideas with evidence. Take your time, challenge yourself, and remember that science is all about asking questions and discovering how the world works.

### Skills You Will Practice:

- Reading informational texts carefully
- Finding and using evidence from a text
- Writing clear and organized responses
- Analyzing and interpreting information
- Answering reading comprehension questions
- Reading and creating graphs
- Explaining your thinking using facts and data

### **Before We Begin...**

*Take a moment to think about the year ahead!*

→ 1. What is something you are excited about as you enter 8th grade?

→ 2. What is one academic goal you would like to achieve during 8th grade?

**What is CER?**

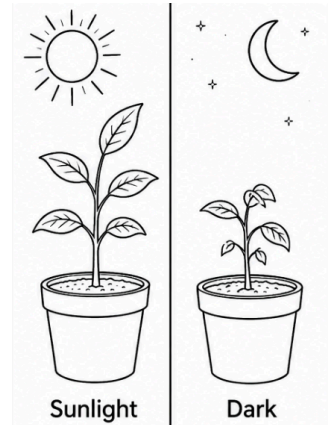
CER is a method used to organize your thinking and support your ideas with clear evidence in science. It helps you explain your answers in a logical and structured way.

**CLAIM:****What is it?**

A statement or conclusion that answers a question or explains what you think is happening.

**Example:**

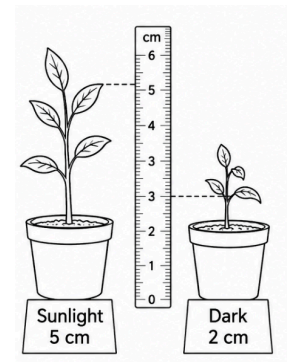
*The plant grows faster in sunlight than in the dark.*

**EVIDENCE:****What is it?**

Facts, data, or observations you have from experiments, research, or real-world experiences that support your claim.

**Example:**

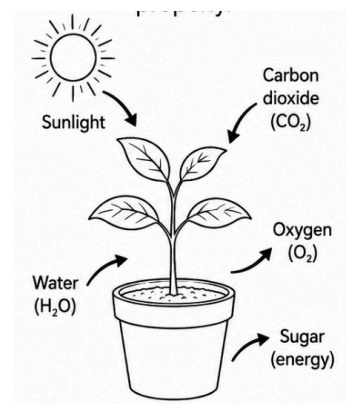
*In an experiment, the plant exposed to sunlight grew 5 cm, while the plant in the dark grew only 2 cm.*

**REASONING:****What is it?**

Explains why your evidence supports your claim. You make connections to scientific concepts or principles.

**Example:**

*Plants need sunlight for photosynthesis, which helps them grow. Without sunlight, the plant cannot produce enough energy to grow properly.*



**HOW TO WRITE A CER STATEMENT:**

**1. Claim:**

Answer the question or state your conclusion.

**2. Evidence:**

Provide data, facts, or observations that support your claim.

**3. Reasoning:**

Explain why the evidence supports your claim, using science concepts.

**EXAMPLE CER RESPONSE:**

**Question:** Does sunlight help plants grow?

**1. Claim:**

Yes, sunlight helps plants grow faster.

**2. Evidence:**

In the experiment, the plant in sunlight grew 5 cm, while the plant in the dark only grew 2 cm.

**3. Reasoning:**

Sunlight is essential for photosynthesis, which is how plants make energy. Without sunlight, the plant cannot produce enough energy to grow efficiently.

**WHY IS CER IMPORTANT?**

- It helps you build strong, evidence-based arguments.
- It teaches you how to explain your thinking clearly.
- It shows you how science concepts connect to the real world.

**Remember:** CER is a tool to help you think like a scientist. Practice using it to improve your scientific explanations!

## The Human Microbiome: Tiny Organisms, Big Impact

Did you know that trillions of tiny living things live in and on your body? These organisms are called **microorganisms**, or microbes for short. They are so small that most can only be seen with a microscope. The collection of all the microbes living in and on your body is called the **human microbiome**.

The human microbiome includes bacteria, fungi, and other microorganisms. While some microbes can cause illness, many are actually helpful. Scientists estimate that trillions of bacteria live in the human digestive system, especially in the large intestine.

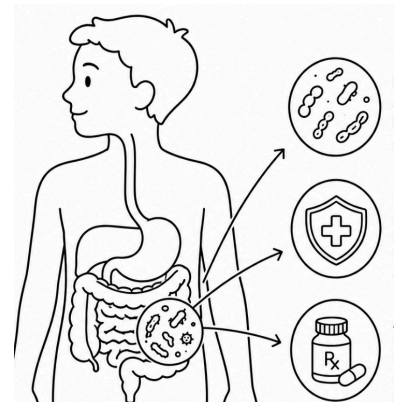
Helpful bacteria play an important role in digestion. When you eat food, your body breaks it down into nutrients that can be used for energy, growth, and repair. Some foods contain substances that your body cannot fully digest on its own. Helpful bacteria help break down these materials and make additional nutrients available to your body.

The microbiome also helps protect you from harmful bacteria. Beneficial bacteria compete with harmful microbes for space and resources. By taking up space in the body, helpful bacteria can make it more difficult for disease-causing microorganisms to grow and spread.

Scientists have also discovered that the microbiome can affect overall health. Research suggests that a healthy microbiome may support the immune system and help the body respond to infections.

Sometimes, medications called **antibiotics** are needed to kill harmful bacteria that cause disease. However, antibiotics cannot always tell the difference between harmful bacteria and helpful bacteria. As a result, antibiotics may reduce the number of beneficial bacteria in the microbiome. This is one reason doctors encourage people to take antibiotics only when they are necessary.

Scientists continue to study the human microbiome and learn more about how these tiny organisms affect our health. Although they are microscopic, the bacteria living in our bodies play a major role in helping us stay healthy.



**CER Activity:** The Human Microbiome

Remember:

- **Claim:** Answer the question.
- **Evidence:** Use facts and details from the text.
- **Reasoning:** Explain how the evidence supports your claim.

→ Why are many bacteria in the human body considered helpful rather than harmful?

**CLAIM:**

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**EVIDENCE:**

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**REASONING:**

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→ Why should antibiotics only be used when they are necessary?

**CLAIM:**

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**EVIDENCE:**

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**REASONING:**

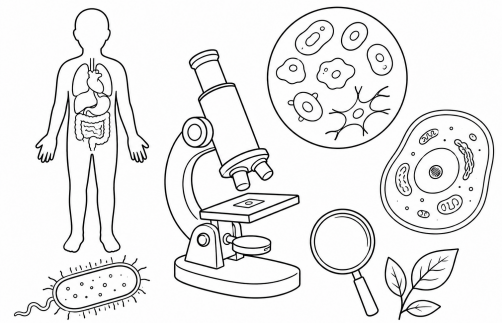
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## Tiny but Mighty: Cells and the Scale of Life

Have you ever wondered what your body is made of? Every living thing, from a tiny bacterium to a giant blue whale, is made up of cells. Cells are often called the **basic units of life** because they are the smallest structures that can carry out the processes needed for life.

The human body contains **trillions of cells**. These cells work together to help you grow, move, think, and stay healthy. Although there are so many cells in your body, most are far too small to see without a microscope.



Cells are considered **microscopic**, which means they are too small to be seen with the naked eye. To understand how small cells are, imagine a grain of sand. Hundreds of human cells could fit across the width of a single grain of sand. Some cells are even smaller.

Not all cells are the same. Different types of cells have different jobs. For example, muscle cells help your body move, nerve cells send messages throughout your body, and blood cells carry oxygen to your tissues. Even though these cells look different and perform different tasks, they all work together to keep your body functioning properly.

Scientists also study bacteria, which are living organisms made of just one cell. Bacteria are much smaller than most human cells. In fact, many bacteria are so tiny that thousands of them could fit on the head of a pin. Some bacteria can cause disease, but many are helpful and live in places such as your digestive system.

Because cells and bacteria are so small, scientists use microscopes to study them. Advances in microscope technology have allowed scientists to learn more about how living things function and how diseases affect the body.

Although cells are incredibly small, they play a huge role in life. Every living organism depends on cells, proving that even the tiniest structures can have a big impact.

## Reading Comprehension: The Force That Holds the Universe Together

<p><b>1. Why are cells called the basic units of life?</b></p> <p>A. They are the largest structures in living things.</p> <p>B. They are the smallest structures that can carry out life processes.</p> <p>C. They are only found in animals.</p> <p>D. They can be seen without a microscope.</p>	<p><b>2. Approximately how many cells are in the human body?</b></p> <p>A. Hundreds</p> <p>B. Thousands</p> <p>C. Millions</p> <p>D. Trillions</p>
<p><b>3. What does the word microscopic mean?</b></p> <p>A. Very large</p> <p>B. Able to be seen from space</p> <p>C. Too small to be seen without a microscope</p> <p>D. Made of many cells</p>	<p><b>4. Which type of cell helps carry oxygen throughout the body?</b></p> <p>A. Muscle cells</p> <p>B. Nerve cells</p> <p>C. Blood cells</p> <p>D. Skin cells</p>
<p><b>5. According to the passage, how do scientists study cells and bacteria?</b></p> <p>A. Telescopes</p> <p>B. Microscopes</p> <p>C. Binoculars</p> <p>D. Satellites</p>	
<p><b>True or False:</b></p> <p>6. _____ All cells in the human body have exactly the same job.</p> <p>7. _____ Bacteria are generally smaller than most human cells.</p> <p>8. _____ Hundreds of human cells could fit across the width of a grain of sand.</p>	

9. Explain why different types of cells are important to the human body. Use information from the reading in your answer.

10. The title of the passage is "Tiny but Mighty: Cells and the Scale of Life." Why do you think the author chose this title? Use evidence from the text to support your answer.

## Why Do Scientists Use Graphs?

Scientists collect large amounts of information, called **data**. Graphs help organize data so it is easier to understand, compare, and analyze. Astronomers use graphs to study planets, stars, weather patterns on other worlds, and much more.

Different types of graphs help us answer different questions.

### ★ Bar Graphs:

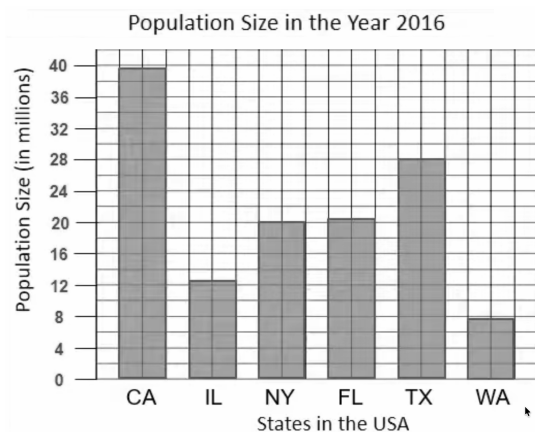
A **bar graph** is used to compare different categories or groups.

For example, if scientists want to compare the sizes of the planets, a bar graph can show which planets are larger or smaller than others.

A bar graph:

- Uses rectangular bars
- Compares categories
- Helps readers quickly see differences

Use a bar graph when comparing things.



## ★ Line Graphs:

A **line graph** is used to show change over time.

For example, scientists could track the number of exoplanets discovered each year. A line graph would show whether discoveries are increasing or decreasing.

A line graph:

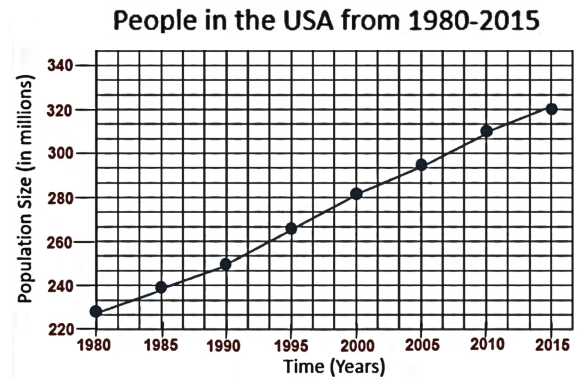
- Uses points connected by lines
- Shows trends and changes
- Helps readers identify patterns over time

Use a line graph when showing change over time.

### Parts of Every Graph

Every graph should have:

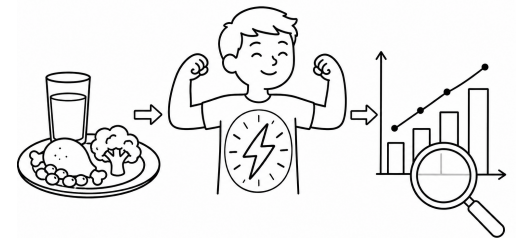
✓ A title	✓ A labeled y-axis (vertical)	✓ Accurate data
✓ A labeled x-axis (horizontal)	✓ A scale that is easy to read	



## Fueling Your Body

Every cell in your body needs energy to do its job. Whether you are running, reading, sleeping, or even breathing, your cells are constantly working. Your body gets this energy from the food you eat.

The process of breaking down food and turning it into energy is called **metabolism**. Different foods provide different amounts of energy. Scientists often measure food energy in **calories**.



Scientists use graphs to organize data and identify patterns. For example, they might compare the energy in different foods or track how a person's energy intake changes over time. Graphs help scientists understand information quickly and communicate their findings to others.

In this activity, you will create graphs using data related to food and energy, just like scientists do.

Graphs are important tools in astronomy because they help scientists organize information, identify patterns, and communicate discoveries. Whether comparing planet sizes or tracking discoveries over time, graphs allow scientists to make sense of complex data.

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### Graphing Activity 1: Create a Bar Graph

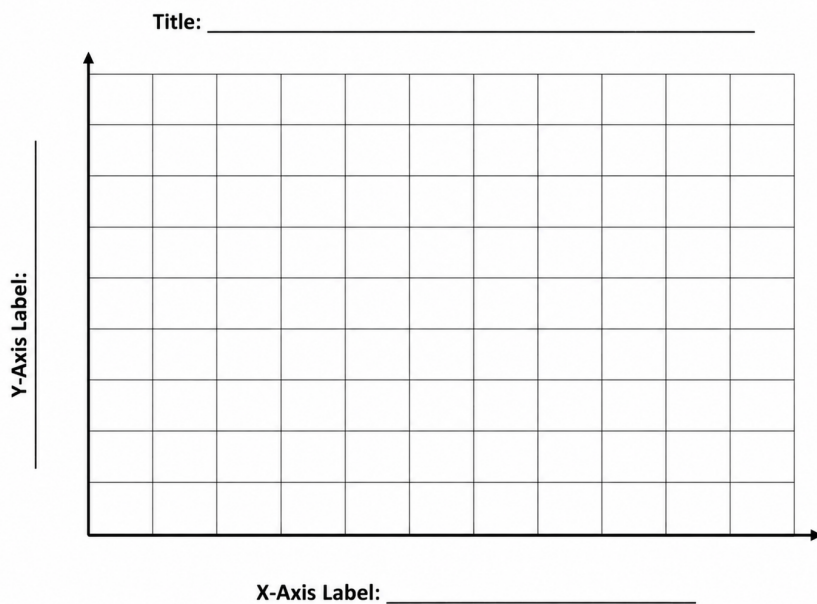
Use the data table below to create a **bar graph** comparing the calories found in different healthy snacks.

#### Remember to:

1. Give your graph a title.
2. Label the x-axis and y-axis.
3. Choose an appropriate scale.
4. Draw each bar carefully.

#### Calories in Healthy Snacks

Snack:	Calories:
Apple	100
Yogurt	120
Granola Bar	154
Banana	108



Answer the following questions using your completed graph:

1. Which snack contains the most calories?

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2. Which snack contains the fewest calories?

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3. How many more calories does a granola bar contain than an apple?

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### Graphing Activity B: Create a Line Graph

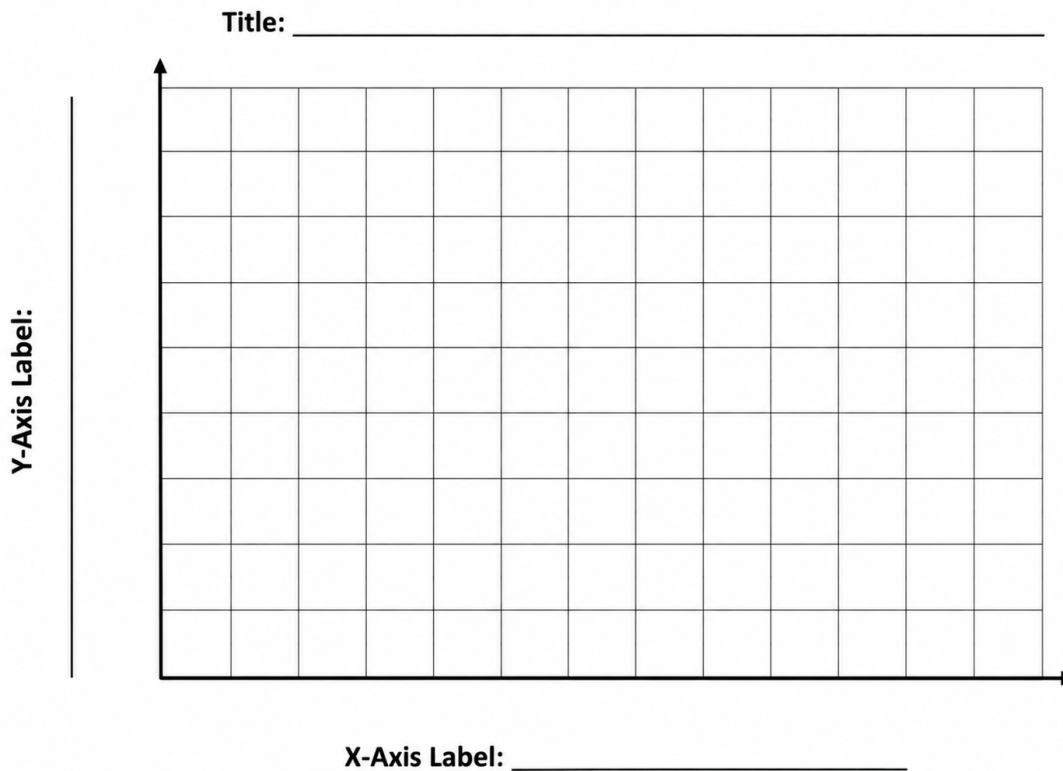
#### Distance Traveled by a Space Probe

Use the data table below to create a **line graph** showing how many glasses of water a student drank during one week.

Remember to:

- Give your graph a title.
- Label the x-axis and y-axis.
- Plot each point carefully.
- Connect the points with straight lines.

Day:	Glasses of water
Monday	5
Tuesday	4
Wednesday	6
Thursday	6
Friday	7
Saturday	8
Sunday	10



### Analysis Questions

1. What overall trend do you notice in the graph?

\_\_\_\_\_

2. On which day did the student drink the most water?

\_\_\_\_\_

3. Why is a **bar graph** a better choice for comparing snacks, while a **line graph** is a better choice for showing water consumption throughout the week?

\_\_\_\_\_

\_\_\_\_\_

## BONUS ASSIGNMENT [optional] :

### Your Challenge

Choose **ONE** of the following options:

★ **Option A: Visit Your Local Library**

Visit a public library and select a science-themed book that interests you.

★ **Option B: Read From the Recommended Book List**

Choose and read **one** book from the recommended list below. You may borrow it from a library, purchase it, or access it as an e-book or audiobook, or on SORA.

## Written Report Requirements

After finishing your book, write a well-organized essay of **2–3 pages (500–750 words)** that includes the following:

### Introduction

- Title and author of the book
- Why you selected this book
- What science topic(s) it explores

### Summary

- Briefly summarize the main ideas, events, or discoveries presented in the book.
- Avoid retelling every detail.

### Science Connections

Explain at least **three scientific concepts** you learned from the book.

For each concept:

- Describe it in your own words.
- Explain why it is important.
- Give an example from the book.

### Personal Reflection

Answer the following questions:

- What surprised you most while reading?
- What was the most interesting fact or discovery?
- Did this book change the way you think about science? Why or why not?
- Would you recommend this book to another student? Explain.





