

# Colonel NTI Packet

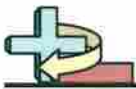
2024 – 2025

4<sup>th</sup> Grade

Day 11

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Solve each problem.

$$\begin{array}{r} 1) \quad 4,270 \\ - 1,819 \\ \hline \end{array}$$

2) Round 7,533 to the nearest hundred.

3) 40 is 8 times as many as \_\_\_\_\_.

4)  $9,222 + 4,653 =$  \_\_\_\_\_

5) Sarah bought 6 boxes of candy on sale. Since each box had 8 pieces of candy inside of it, she decide to give Billy 15 pieces. How many pieces of candy would Sarah have left after giving Billy his pieces?

6) On the home screen of Vanessa's tablet she had 8 rows of apps with 10 apps on each row. If she deleted 10 apps, how many would she have left on her home screen?

7) Convert 2,741 to expanded form.  
\_\_\_\_\_

$$\begin{array}{r} 8) \quad 3,098 \\ \times \quad 8 \\ \hline \end{array}$$

$$\begin{array}{r} 9) \quad 67 \\ \times 17 \\ \hline \end{array}$$

10) Each house a carpenter builds needs seven sinks. If he bought three hundred twenty-four sinks, how many houses would that cover?

**Answers**

1. \_\_\_\_\_

2. \_\_\_\_\_

3. \_\_\_\_\_

4. \_\_\_\_\_

5. \_\_\_\_\_

6. \_\_\_\_\_

7. \_\_\_\_\_

8. \_\_\_\_\_

9. \_\_\_\_\_

10. \_\_\_\_\_

# The Simple Physics of Soccer

by ReadWorks



Everyone knows that kicking a soccer ball causes it to roll across the grass. But what makes this happen? What is required to make the ball move faster? What's the difference, in other words, between passing the soccer ball to a teammate and shooting for the goal?

Kicking a ball may seem simple, but physicists spent years trying to figure out why objects move the way they do. What they discovered is that kicking a soccer ball requires applying force to the surface of the ball. The greater the force, the faster the ball will go, and the further it will travel. How much force you apply to the ball, that is, will often determine whether you score a goal or not.

The combination of force and distance equals what is called "work." In this case, we don't mean the noun form of work, like a job. We are talking about work as a verb, as a form of action. Work can be taking out the trash or cleaning dishes in your house. Furniture movers work by carrying chairs and tables out of one apartment and into another. If the first apartment is on the second floor and the second apartment is on the fourth floor, carrying the furniture into the second apartment will require about twice as much work as the first.

Keep in mind that force and work are not the same things as energy. Energy comes in several forms. But the best way to understand it is as something that creates the ability to do work. When someone says, "I don't have any energy," what do they usually mean? Often, they

mean they don't have the strength or motivation to work.

Without energy, it is hard to play soccer or lift furniture. In fact, it may even be difficult to get out of bed. Energy is what allows us to do work. The more energy we have, the more work we can do.

Mathematicians use the following simple equation to define the meaning of work:  $\text{force} \times \text{distance} = \text{work}$ . The heavier an object is, in other words, the more force it exerts in the form of gravity. Picking an anvil up off the ground requires more energy than picking up a feather. If you're interested in building muscles, though, keep in mind that lifting heavier things will make you stronger over time. And the stronger you are, the more likely you are to win at soccer.

# Vocabulary

## apply

verb

definition: When you apply something, it means that you use it to do something. If you apply force to open a stuck door, you use the force of your body to open it. If you apply your skill to a task, you use your skill in trying to do that task.

*David's brother had to apply every bit of his knowledge of computers to solve the problem.*

*You can't go very fast on your bike unless you apply more force to the pedals.*

Spanish: aplicar

forms: applied, applies, applying

## combination

noun

definition: When you mix or put things together, what you get is called a combination.

*The soup had a combination of chicken and vegetables.*

Spanish: combinación, mezcla

## determine

verb

definition: When something determines something else, it decides what will happen with it. How much money you have in your pocket, for example, will determine what you can buy.

*Good training will determine who wins the championship.*

Spanish: determinar, definir, fijar

forms: determined, determines, determining

## exert

verb

definition: to push into effort or action; strain.

*Don't exert yourself if you're feeling sick.*

Spanish: ejercer, emplear, esforzar

forms: exerted, exerting, exerts

**1. Before you start reading...**

Here are the vocabulary words that will be in this reading. Let's see how well you already know them.

Check the box that shows how well you know each word. It's ok if you don't know them yet (this is not graded)!

|                    | Don't know it | Have heard of it but not sure of its meaning | Know something about its meaning | Know it well |
|--------------------|---------------|--|----------------------------------|--------------|
| <b>combination</b> |               |  |                                  |              |
| <b>determine</b>   |               |  |                                  |              |
| <b>exert</b>       |               |  |                                  |              |

**2. Word Changer**

Words have different forms when we use them in different ways. Write the correct vocabulary word, in its correct form, in each blank.

The soup had a \_\_\_\_\_ of chicken and vegetables.

The flowers that we choose to plant are important. They will \_\_\_\_\_ what our garden will look like.

He hurt his back because he \_\_\_\_\_ himself too much.

**3. After reading and exploring the words through some activities...**

Do you know these words better? Check the box that shows how well you know each word. It's ok if you don't know them yet (this is not graded)!

|                    | Don't know it | Have heard of it but not sure of its meaning | Know something about its meaning | Know it well |
|--------------------|---------------|--|----------------------------------|--------------|
| <b>combination</b> |               |  |                                  |              |
| <b>determine</b>   |               |  |                                  |              |
| <b>exert</b>       |               |  |                                  |              |

Name: \_\_\_\_\_ Date: \_\_\_\_\_

1. Which sport does the passage use to examine physics?

- A. baseball
- B. football
- C. hockey
- D. soccer

2. What does the author describe in the passage?

- A. how to score a goal in soccer
- B. the relationship between work, force, and distance
- C. physics experiments that led to important discoveries
- D. different types of energy

3. A soccer ball will travel a greater distance the harder it is kicked. What evidence from the text best supports this statement?

- A. Physicists spent years trying to figure out why objects move the way they do.
- B. Kicking a soccer ball requires applying force to the surface of the ball.
- C. The greater the force, the faster the ball will go, and the further it will travel.
- D. How much force you apply to the ball will often determine whether you score a goal or not.

4. What is the difference between passing the ball to a teammate and shooting a goal?

- A. the amount of force applied to the ball
- B. the way that the ball rolls
- C. the distance the ball has to travel
- D. it is more difficult to pass the ball

5. What is this passage mostly about?

- A. geometry
- B. biology
- C. physics
- D. chemistry

6. Read the following sentences: "Everyone knows that kicking a soccer ball causes it to roll across the grass. But what makes this happen? What is **"required"** to make the ball move faster?"

What does **required** mean?

- A. allowed
- B. needed
- C. ordered
- D. stopped

7. Choose the answer that best completes the sentence below.

The tired soccer player does not have any energy left; \_\_\_\_\_, he is unable to do any more work.

- A. however
- B. finally
- C. specifically
- D. therefore

8. Define "work."

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9. Why does carrying furniture up four flights of stairs require twice as much work as carrying furniture up two flights of stairs?

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10. Imagine three different soccer players are shooting at the goal. Player A has a lightweight ball and is close to the goal, Player B has a heavy ball and is close to the goal, and Player C has a heavy ball and is far from the goal. Which player will need the most energy to score a goal, and which player will need the least energy? Support your answer using the text.

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Name: \_\_\_\_\_ Date: \_\_\_\_\_

**Directions:** Read the text, and study the chart. Then, answer the questions.

If you roll a ball down a one-meter ramp, the height of the ramp affects the energy of the ball. The faster the ball rolls, the more energy it has.



| Height of Ramp (cm) | Speed of Ball (meters per second) | Time to Reach the Bottom (s) |
|---------------------|-----------------------------------|------------------------------|
| 3                   | 0.61                              | 1.65                         |
| 6                   | 0.8                               | 1.25                         |
| 9                   | 1.03                              | 0.97                         |
| 12                  | 1.28                              | 0.78                         |

- At which height will the ball have the most energy?
  - 3 cm
  - 12 cm
  - 9 cm
  - 6 cm
- At which height will the ball have the least energy?
  - 3 cm
  - 12 cm
  - 9 cm
  - 6 cm
- When the ball has more energy, what is happening?
  - The ball is rolling faster.
  - The ball is rolling slower.
  - The ball is rolling at the same speed.
  - It is stopped.
- What is the connection between the speed of the ball and the time to reach the bottom of the ramp?  
 \_\_\_\_\_  
 \_\_\_\_\_

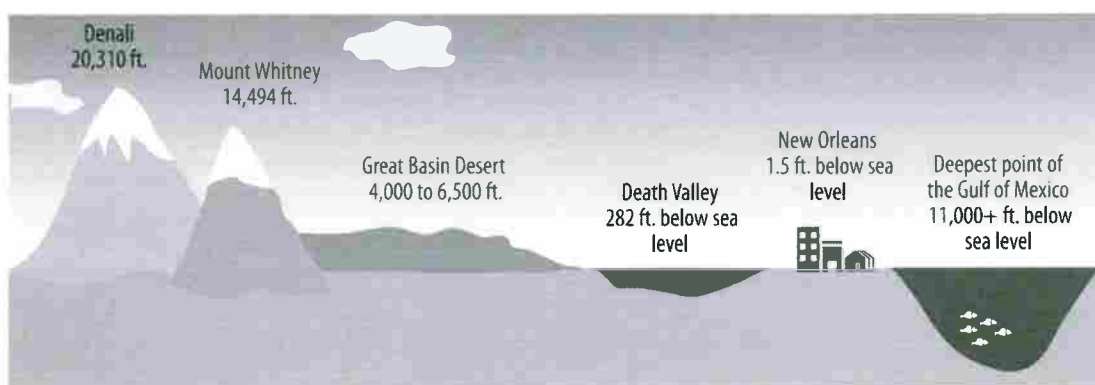


Name: \_\_\_\_\_ Date: \_\_\_\_\_

**Directions:** Read the text, study the image, and answer the questions.

The United States is the third largest country in the world by area. The lowest point in the country is Death Valley in California. The highest point is Denali in Alaska. Denali is the highest mountain in North America.

There are five Great Lakes. They have the largest amount of fresh water in the world. You can remember the names of the lakes by thinking of H.O.M.E.S. This stands for: Huron, Ontario, Michigan, Erie, and Superior.



1. What is the highest point in the United States?
  - a. Death Valley
  - b. Appalachian Mountains
  - c. Denali
  - d. Mount Whitney
2. What is the lowest point in the United States?
  - a. New Orleans
  - b. Death Valley
  - c. Gulf of Mexico
  - d. Great Basin Desert
3. The Great Lakes are famous because they have the largest amount of what?
  - a. salt water
  - b. sea weed
  - c. fresh water
  - d. jelly fish

Colonel NTI Packet

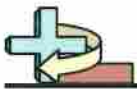
2024 – 2025

4<sup>th</sup> Grade

Day 12

Table of Contents

| <b>Subject</b> | <b>Assignment</b>                         |
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| Math           | Fourth Grade Math Review 2 (Mixed Review) |
| Language Arts  | Why Does the Sun Burn Us?                 |
| Science        | Physical Science Week 1, Day 3            |
| Social Studies | Geography Week 7, Day 2                   |



Solve each problem.

1) Round 431,266 to the nearest ten thousand.

2) Round 1,445 to the nearest hundred.

3) 6 times as many as 5 is \_\_\_\_\_.

4) Use  $>$ ,  $<$  or  $=$  to compare the two numbers.  
3,497 \_\_\_\_\_ 3,479

5) Rewrite in standard form.

$$20,000 + 7,000 + 800 + 60 + 3$$

6) For a grocery store's 10 year anniversary sale they ordered 9 crates of grapes with each crate containing 10 bags of grapes. After the anniversary sale they had sold all but 10 bags. How many bags of grapes did they sell during the anniversary?

7) 
$$\begin{array}{r} 5,356 \\ \times \quad 9 \\ \hline \end{array}$$

8) 
$$\begin{array}{r} 95 \\ \times 19 \\ \hline \end{array}$$

9) Haley had saved up four hundred quarters and decided to spend them on sodas. If it costs three quarters for each soda from a soda machine, how many more quarters would she need to buy the final soda?

10) Tom was doing sit-ups. He did fourteen on Tuesday and seven on Monday. How many more sit-ups did he do on Tuesday than he did on Monday?

Answers

1. \_\_\_\_\_

2. \_\_\_\_\_

3. \_\_\_\_\_

4. \_\_\_\_\_

5. \_\_\_\_\_

6. \_\_\_\_\_

7. \_\_\_\_\_

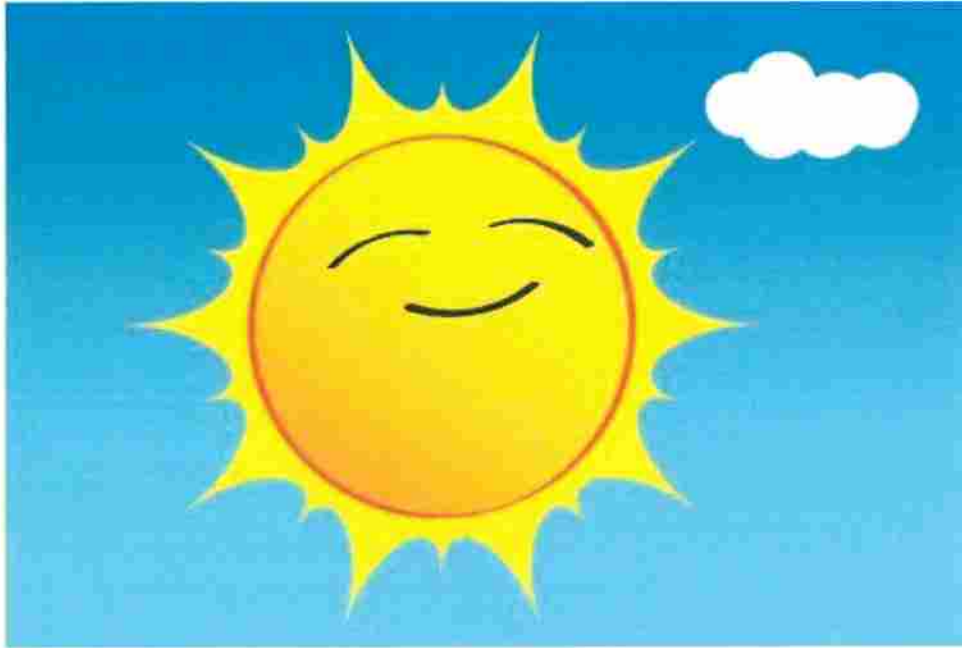
8. \_\_\_\_\_

9. \_\_\_\_\_

10. \_\_\_\_\_

# Why Does the Sun Burn Us?

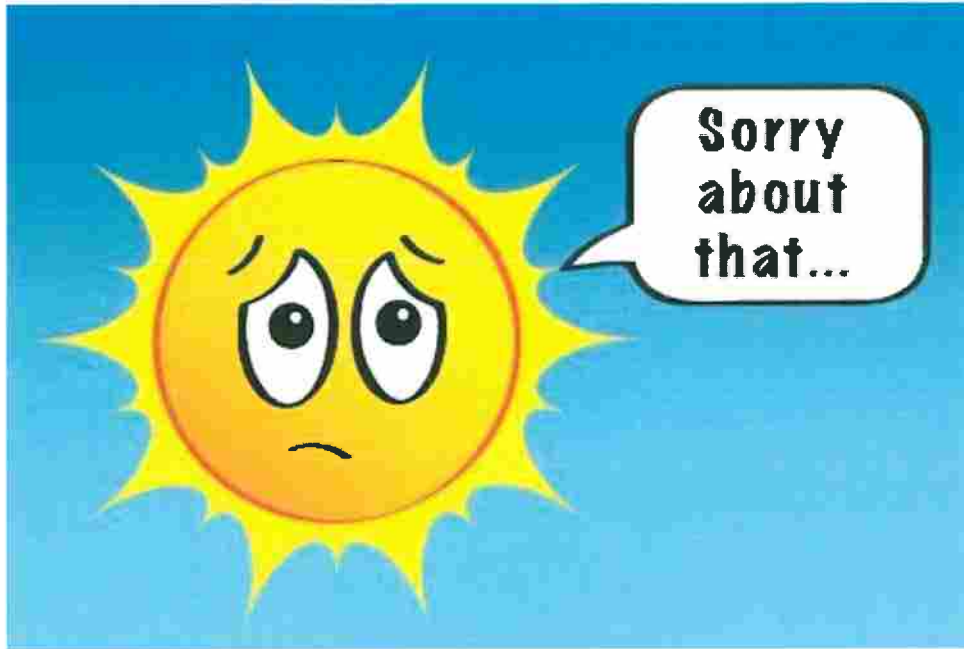
The text and images are from NASA Space Place.



The sun keeps our planet warm enough for living things to thrive. It gives us light so we can see. But it can also burn us. What causes these burns?

## All About Energy

The sun sends lots of energy toward us all the time. There are a few different kinds of energy. There is infrared radiation, which is heat. There is visible light, which is what our eyes can see. There is also ultraviolet light. We can't see ultraviolet with our eyes, but it's there. And it can burn our skin.

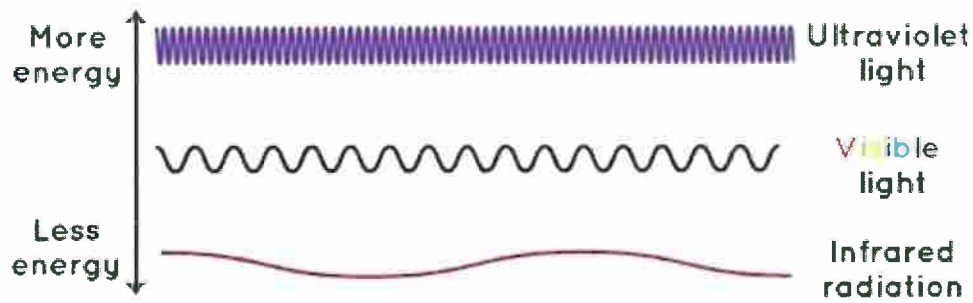


## Waves, Waves, Waves

Infrared radiation, visible light, and ultraviolet light are all types of waves in the electromagnetic spectrum. They're all energy. But these energy waves aren't all the same. Some have more energy than others.



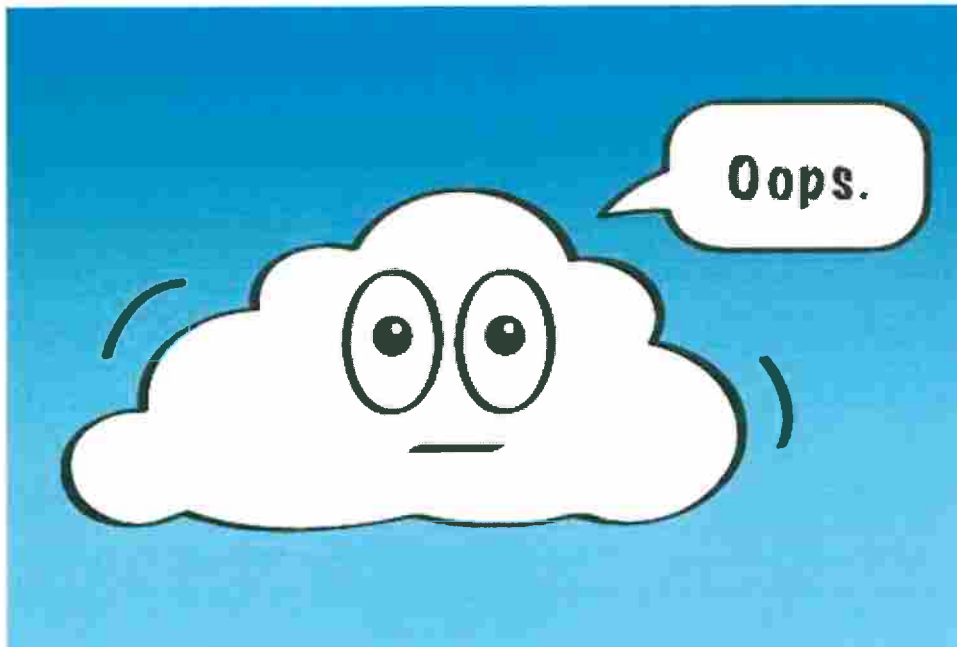
Infrared waves have less energy than visible light waves. Infrared waves are longer with more space between each high and low. Ultraviolet waves have more energy than visible light does. It's this energy that can hurt us.



## Feel the Burn

If too much ultraviolet light hits our skin, over time it can hurt our skin cells. The cells can die, and our bodies react. The skin gets red, and it can hurt a lot.

Ultraviolet light comes from the sun, but it can also bounce off of other surfaces like water, snow, and concrete. That means that even if you're under an umbrella, you can still get a sunburn. Ultraviolet light can also go through clouds, so you can get burned on an overcast day. No fair!





You can protect your skin by doing things that keep ultraviolet waves from reaching you. Clothing and hats are a great way to keep away those waves. Sunblock contains chemicals that can reflect or absorb the ultraviolet light, leaving your skin sunburn free.



That way you can enjoy the *other* energy from the sun, visible light and infrared warmth.



## Vocabulary

### burn

verb

definition: When you burn your hand, or when something else burns your hand, it means that your hand gets hurt by touching something that is too hot.

*My mom picked up a hot pot from the stove and burned her finger.*

*The hot sand at the beach burned our feet.*

Spanish: quemar

forms: burned, burning, burns, burnt

### protect

verb

definition: When you protect a person or animal, you keep them safe from danger or harm. When you protect a thing, you prevent it from being damaged or lost.

*A fence protects us from our neighbor's mean dog.*

*If people don't protect tigers, someday soon there will be no more tigers.*

*I wear a hat to protect my face from the sun.*

Spanish: proteger

forms: protected, protecting, protects

### react

verb

definition: When something reacts, it responds to something outside it. If your fingers touch something hot, they react by pulling away. When a person reacts to something, they feel or act in a certain way because of something that happened. When people hear a joke that is funny, they usually react by laughing. When people hear something very sad, they might react by crying.

Spanish: reaccionar

forms: reacted, reacting, reacts

### thrive

verb

definition: to grow strong and healthy.

*This plant thrives in the shade.*

Spanish: prosperar, crecer con fuerza

forms: thrived, thriven, thrives, thriving, throve

**1. Before you start reading...**

Here are the vocabulary words that will be in this reading. Let's see how well you already know them.

Check the box that shows how well you know each word. It's ok if you don't know them yet (this is not graded)!

|                | Don't know it | Have heard of it but not sure of its meaning | Know something about its meaning | Know it well |
|----------------|---------------|--|----------------------------------|--------------|
| <b>burn</b>    |               |  |                                  |              |
| <b>protect</b> |               |  |                                  |              |
| <b>thrive</b>  |               |  |                                  |              |

**2. Word Matcher**

Every word has other words that have similar meanings or even the exact same meaning (these are called synonyms!). Draw a line from each similar word or synonym to the vocabulary word that it matches!

consume

sunburn

scar

defend

secure

**burn**

**protect**

**thrive**

preserve

flourish

bloom

wax

**3. After reading and exploring the words through some activities...**

Do you know these words better? Check the box that shows how well you know each word. It's ok if you don't know them yet (this is not graded)!

|                | Don't know it | Have heard of it but not sure of its meaning | Know something about its meaning | Know it well |
|----------------|---------------|--|----------------------------------|--------------|
| <b>burn</b>    |               |  |                                  |              |
| <b>protect</b> |               |  |                                  |              |
| <b>thrive</b>  |               |  |                                  |              |

Name: \_\_\_\_\_ Date: \_\_\_\_\_

1. What type of energy from the sun can burn our skin?

- A. infrared radiation
- B. visible light
- C. ultraviolet light
- D. micro waves

2. How are the energies of different waves contrasted in the section "Waves, waves, waves?"

- A. Infrared waves have more energy than ultraviolet rays but less energy than visible light rays.
- B. Visible light rays have more energy than both ultraviolet waves and infrared waves.
- C. Visible light waves have more energy than ultraviolet waves, while ultraviolet rays have less energy than infrared waves.
- D. Infrared waves have less energy than visible light waves, while ultraviolet waves have more energy than visible light rays.

3. Read the following sentences from the passage.

"If too much ultraviolet light hits our skin, over time it can hurt our skin cells. The cells can die, and our bodies react. The skin gets red, and it can hurt a lot."

What can you conclude about ultraviolet light from this information?

- A. Ultraviolet light hurts our skin by killing or damaging our skin cells.
- B. Ultraviolet light is fine if you drink a lot of water.
- C. Ultraviolet light only hurts small children.
- D. Ultraviolet light is less dangerous than infrared radiation.

4. Why doesn't visible light burn our skin, while ultraviolet light does?

- A. because visible light doesn't reach our skin
- B. because ultraviolet light has more energy than visible light
- C. because ultraviolet light has less energy than visible light
- D. because ultraviolet light is more common than visible light

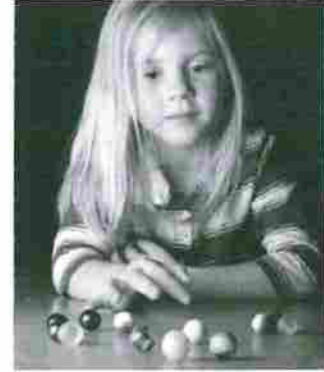
5. What is the main idea of this passage?

- A. Infrared radiation and visible light are two types of electromagnetic waves.
- B. Infrared waves have less energy than visible light waves, and their waves are longer and slower.
- C. The sun sends out different kinds of energy, and one of them, ultraviolet light, can burn your skin.
- D. You can protect your skin from harmful energy from the sun by wearing a hat and sunscreen

Name: \_\_\_\_\_ Date: \_\_\_\_\_

**Directions:** Read the text, and answer the questions.

Beth is building a track for marbles. The marble will start high up and then roll up and down over hills. She wants the marble to travel all the way to the end. She builds small hills on her first try. She tests the track, and the marble reaches the end.



1. How was the marble able to reach the end?
  - a. It had enough energy from rolling down the track.
  - b. It did not have enough energy.
  - c. Beth put it at the end.
  - d. The marble made its own energy.
2. If the marble started from the ground instead of up high, would it have rolled up the hills? How do you know?

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3. What is a question Beth can ask about the height of the hills in her roller coaster?

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4. When the marble sits at the top of the roller coaster, does it have potential or kinetic energy?

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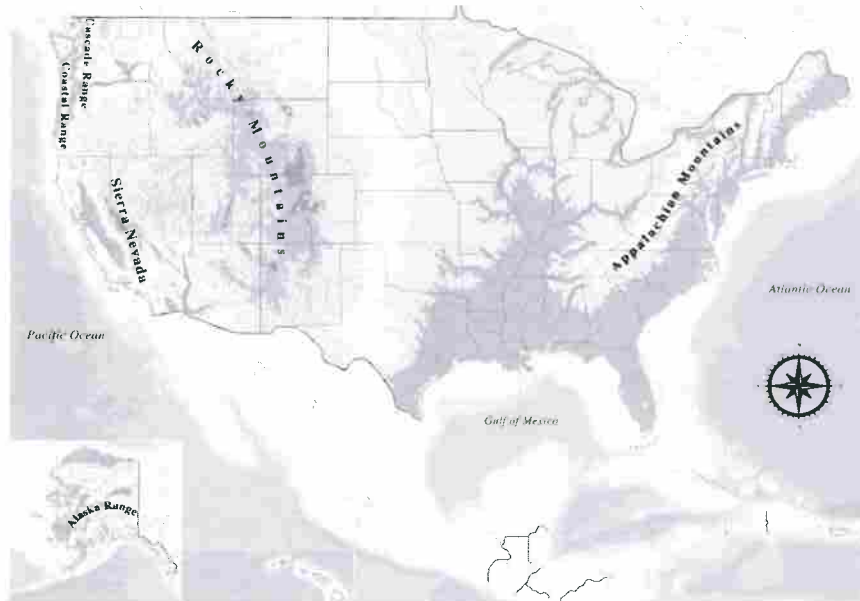
## Developing Questions

Name: \_\_\_\_\_ Date: \_\_\_\_\_

**Directions:** Read the text, study the map, and answer the questions.

This map shows the mountain ranges in the United States. The main ones are the Rocky Mountains, Cascade Range, Coastal Range, Sierra Nevada, Appalachian Mountains, and Alaska Range.

The Rocky Mountains are over 3,000 miles long. The water on the east side of the mountains flows to the Atlantic Ocean. The water on the west side flows to the Pacific Ocean. The mountains are covered with pine, fir, and spruce trees. Some of the animals living there are bighorn sheep, bears, badgers, and deer.



1. Which one is NOT one of the major mountain ranges in the United States?
  - a. Rocky Mountains
  - b. Appalachian Mountains
  - c. Alaska Range
  - d. Himalayas
2. Where does the water on the west side of the Rockies flow to?
  - a. Atlantic Ocean
  - b. Gulf of Mexico
  - c. Pacific Ocean
  - d. Lake Superior
3. What trees cover the Rocky Mountains?
  - a. maple, oak, and chestnut
  - b. elm, birch, and ash
  - c. pine, fir, and spruce
  - d. aspen, pine, and walnut