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Understanding Life Systems

Students will understand that the human body is made up of a number of organs that work together in different systems. They will learn about the structures and functions of the digestive, skeletal, respiratory, circulatory, and nervous systems. They will be able to identify the major organs and parts of these systems, and examine how they work. In addition, students will investigate the effects of some social and environmental factors on their health. They will also learn to make healthy choices in their daily lives.

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Section
2

Understanding Structures and Mechanisms

Students will examine the impacts of external forces, caused by natural occurrences and human activities, on structures, and investigate how structures can be strengthened. They will also explore how different types of internal and external forces act on structures, like different types of bridges in particular. In addition, students will discover how simple machines work together to make mechanical systems and how these systems provide mechanical advantages. They will also understand how protective equipment protects people during certain activities.

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Section 3

Understanding Matter and Energy

Students will explore the properties of matter and the characteristics of the three states of matter, as well as the different ways of measuring and describing matter. They will examine how heat changes the states of matter, which are either physical or chemical changes, and learn that these changes can be reversible or irreversible. Moreover, students will investigate the environmental impacts of the production, use, and disposal of different materials.

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Understanding Earth and Space Systems

Students will learn about the different forms of energy and how they are used in their everyday lives. They will investigate the various energy sources and understand that these sources are either renewable or non-renewable. Moreover, they will explore the transformation of energy from one form to another. The impacts of energy use on the environment will also be studied. In addition, students will understand the importance of conserving energy and learn ways to reduce energy consumption.

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5 Impacts of Human Energy Use

The use of technology and consequently energy use have increased over the years. People nowadays rely heavily on the energy that is readily available to them. However, the use of energy has great impacts on our environment. In this unit, you will look at how our energy use impacts us and the Earth.

After completing this unit, you will

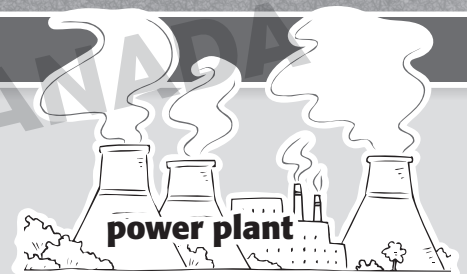
- know how energy improves our standards of living but also has negative impacts.
- know the environmental impacts of power plants.



Mom, there's a blackout tonight. How can I do my assignment?





Vocabulary

power plant: place where electricity is generated from other forms of energy



Extension

We have become accustomed to having electricity and hot water at our disposal whenever we need them. We turn on the lights when it gets dark, hop in the car when we need to get somewhere, and turn on the heat when we are cold. Think about a time before there was electricity and imagine how people lived then. Candles were their source of light in the dark. Horses were what they hopped onto to get to places, and fireplaces gave them warmth in winters. Can you come up with more differences between the lives of people in the past and people nowadays?

Then	Now
candles 	lights 
horses 	cars 

A. Draw the happy or sad face in the circles to indicate whether the impacts of energy use are positive or negative.

Positive and Negative Impacts of Energy

1. Energy provides us with a more convenient way of life than before.
2. Being highly dependent on electricity leads to serious problems when a power outage occurs.
3. Many power plants emit waste gases which are harmful to our health and the environment.
4. Energy makes instant communication across the globe possible.
5. Energy helps reduce the amount of time needed to travel.

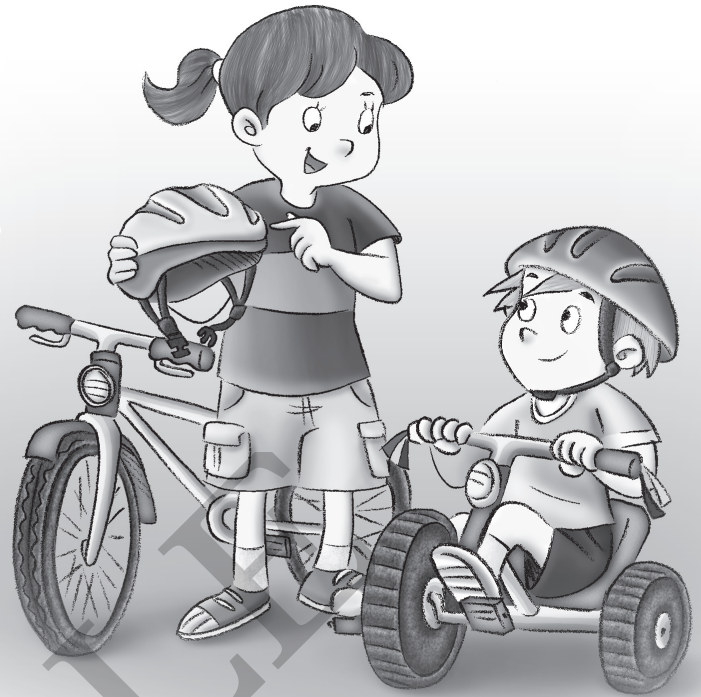




Experiment

Introduction

Protective equipment must be carefully designed so that it does its job of protecting the wearer. The materials used and the way the equipment is assembled are factors that we should consider when we design safety equipment. How does assembly affect the degree of protection?



Hypothesis

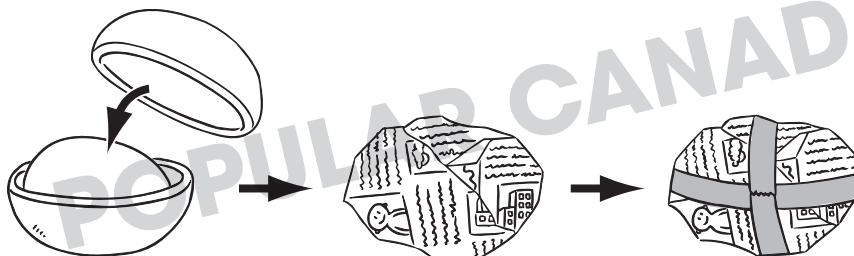
Differences in the way protective equipment is assembled **change / do not change** the degree of protection.

Steps

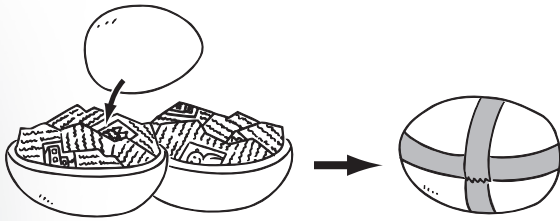
- Put one egg into a plastic container and cover it with another one. Then seal the containers with tape.
- Wrap the containers with the newspaper. Then put the tape around the newspaper and set it aside.

Materials

- 2 raw eggs
- 4 small see-through plastic containers, such as pudding cups, apple sauce cups, fruit cups, and plastic eggs
- newspaper
- masking tape



3. Put some crumpled newspaper inside the bottom of the other two containers. Fit the egg into the containers. Then seal the containers with tape.



(Write "broke" or "did not break".)



4. Drop the eggs at different levels starting with your knee level. Check the eggs to see if they break. If they are not broken, reassemble and test them at the next level. Keep testing until one of the eggs breaks.

Knee level		
Hip level		
Waist level		
Shoulder level		
Above your head		

Result

Which assembly of materials better protected its egg?

Conclusion

The hypothesis was: _____

My experiment _____ the hypothesis. _____ supported/did not support