

# Grade 4 Overall Expectations

Overall Expectations	
<b>Language</b>	<p>Writing</p> <ul style="list-style-type: none"><li>❖ Generate, gather, and organize ideas and information to write for an intended purpose and audience.</li><li>❖ Draft and revise their writing, using a variety of informational, literary, and graphic forms and stylistic elements appropriate for the purpose and audience.</li></ul>
<b>Math</b>	<p>Data Management and Probability</p> <ul style="list-style-type: none"><li>❖ Predict the results of a simple probability experiment, then conduct the experiment and compare the prediction to the results.</li></ul>
<b>Science</b>	<p>Understanding Life Systems: Habitats and Communities</p> <ul style="list-style-type: none"><li>❖ Investigate the interdependence of plants and animals within specific habitats and communities.</li><li>❖ Analyse the effects of human activities on habitats and communities.</li></ul>
<b>Social Studies</b>	<p>People and Environments: The Role of Government and Responsible Citizenship</p> <ul style="list-style-type: none"><li>❖ Use the social studies inquiry process to investigate some issues and challenges associated with balancing human needs/wants and activities with environmental stewardship in one or more of the political and/or physical regions of Canada.</li></ul>

**Materials:** Students will need access to the following:

- ❖ A writing utensil (i.e. a pencil) & an eraser
- ❖ five sheets of blank paper
- ❖ colouring utensils (i.e. pencil crayons)

# The Environment Shapes Human Investigation and Innovation

## MATHEMATICS

Motor vehicles use fossil fuels known as carbon fuels. They were formed millions of years ago from the remains of plants and animals. Coal, oil, natural gas, and propane are examples of fossil fuels.

To raise awareness about the harmful effects of fossil fuels, a group of students organize a bike ride. While riding through Toronto they pick up additional students in different neighbourhoods. In the first neighbourhood they pick up 9 students, in the second 13, in the third 17, in the fourth 21, and in the fifth 25.



### CONSIDER

1. Is this problem a growing, repeating, or shrinking pattern? How do you know?
2. What is the pattern rule?
3. If this pattern continues, how many students will they pick up at the 7th stop? What about the 13th stop?

Show your thinking on a sheet of paper.

Would the number 41 appear in this pattern? What about 55? Justify your thinking.

## SCIENCE



### THINK

Did you know that bicycles are a combination of simple machines such as pulleys and gears? How do pulleys and gears make a bicycle move and stay moving?

First, on a sheet of paper, write several questions that you might have about how pulleys and gears make a bike move and stay moving (e.g. What happens when a pedal turns? Which other parts of the bicycle will move if I spin a tire?) Then, for each question write a hypothesis (which is a smart guess), to answer your questions.



### READ

Read: How Do Pulley and Gears Make a Bicycle Move? (p.4).



### EXPERIMENT

Use your own bicycle or the one in the picture to determine the best answer for the question: how do pulleys and gears make a bicycle move and stay moving?



### EXPLAIN

Draw a diagram to show the results of your experiment. Describe the results to someone you know.

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## LANGUAGE

	<b>THINK</b>	How might discrimination (unfair treatment based on race, age, gender, etc.) prevent someone’s contributions from being recognized? What impact have bicycles had on communication, transportation, and the environment?
	<b>READ</b>	Read the article “Black Americans and Bicycle Innovation” (p.4).
	<b>CONSIDER</b>	The Black American Inventors in this article are unsung heroes of cycling history. Unsung means unrecognized. Who might be an unsung hero in your community?
	<b>WRITE</b>	<p>On a sheet of paper, write a paragraph about an unsung hero in your community. Be sure to:</p> <ul style="list-style-type: none"> <li>❖ Identify the person by name and state the important thing(s) they have done.</li> <li>❖ Explain why what they have done is important to you and your community.</li> <li>❖ Include interesting facts and specific events.</li> </ul> <p>Read your paragraph aloud to yourself, a family member or a friend. Consider recording yourself reading it if you have a device. Be sure it flows well from one idea to the next.</p>

## SOCIAL STUDIES

	<b>READ</b>	As you read the article “Inuksuk: A Stone Structure” (p.5), ask yourself, what does the Inukshuk tell you about the relationships between Inuit societies, individuals, the land, and the environment.
	<b>RESPOND</b>	<p>On a sheet of paper, answer the following questions:</p> <ul style="list-style-type: none"> <li>❖ What is the purpose of an Inuksuk? How did these structures assist people and communities in early Inuit societies?</li> <li>❖ Some people believe that Inuksuit and Inunnguaq are important Inuit cultural symbols and should not be recreated and sold in stores or used to market events like the Olympics. What do you think?</li> <li>❖ Inuksuit were used to communicate important messages. What important messages do they send to us today?</li> <li>❖ If you were to mark an important site, what site would it be?</li> </ul>

# The Environment Shapes Human Investigation and Innovation

## How Do Pulley and Gears Make a Bicycle Move?

**Pulleys** and gears make it possible for a small amount of input force to output a large amount of force. We can see them in elevators, the pull cord on blinds and many exercise machines.

**Gears** are specialized wheels and axles that are used in many machines such as bicycles and wheelchairs.



Bicycle Pulleys and Gears. Toronto, Ontario. May 17, 2020

## Black Americans and Bicycle Innovation

In the late 1800s, Matthew Cherry, Isaac Johnson, and Jerry Certain, three Black Americans, played key roles in the construction and design of the modern-day bicycle. Mathew Cherry made improvements to the design of the velocipede (a bike without pedals). He is also known for inventing the tricycle, which many people all over the world still use today. Isaac Johnson was not the first person to invent the bicycle frame, but he was the first Black American to invent a bicycle frame that could be folded or taken apart for easy storage. Jerry Certain invented the “parcel carrier”, a kind of bag that could be attached to a bike. The “parcel carrier” made it easier for riders to carry items on their bikes. Because of racism and discrimination, very little is known about the lives of these three inventors but records of their patents (documents showing ownership of their ideas) help to tell a piece of their story and of their contributions to transportation and innovation.

**Source:**

Fernandez, E. (2019, February 22). African American Contributions to Cycling Still Felt Today. Indego. <https://www.rideindego.com/blog/african-american-contributions-to-cycling-still-felt-today/>.

# The Environment Shapes Human Investigation and Innovation

## Inuksuk: A Stone Structure



Image licensed under Creative Commons: "Inukshuk" by Martin Tuchscherer "[File:Inuksuk - panoramio \(6\).jpg](#)" by [Martin Tuchscherer](#) is licensed under [CC BY-SA 3.0](#)

### What is an Inuksuk?

Inuksuits have been found at sites that date from as long ago as 2400 BCE (Before the Common Era). They are innovative rock structures which were used by Inuit Peoples across the Arctic to mark travel routes, kayaking spots, good hunting and fishing sites, and locations of celebrations.

### What is an Inunnguaq?

*Inunnguaq* are stones piled up to look like human beings. They might mark a spot for people to meet or have spiritual significance. *Inunnguaq*, means "imitation of a person," or "pretend person."

### How are the structures made?

They are made of stacked stones that are picked because they fit well together. There is no glue or cement that holds them together. They stay up because they are balanced one on top of the next. They come in many sizes and, like snowflakes, each one is unique.

### Interesting facts

In Inuit tradition, it is forbidden to destroy these structures. Many of them have been standing for hundreds of years. So if you ever see one, leave it standing for the next person. At Inuksuk Point, on Baffin Island in Nunavut, there are 100 Inuksuits! It's considered a National Historic Site of Canada and is an important representation of the history and enduring presence of Inuit Peoples.

### Source:

CBC/Radio Canada. Do you know what an inukshuk is? | CBC Kids. CBCnews. <https://www.cbc.ca/kidsCBC2/the-feed/do-you-know-what-an-inukshuk-is>.