

## GRADE 4 LEARNING EXPERIENCE

# Can a Plastic Bag Live Forever?

### Summary

Students learn about the life cycle of a plastic bag and create a timeline comparing historic events with a plastic bag's lifespan. After learning how long bags last when not recycled or reused, students explore creative ways to reuse plastic bags.

### Objective

This fun and interactive lesson will help students understand the impact of plastic waste on the environment and will highlight the importance of recycling and reusing plastic bags.

### Pre-Activity

## INFOGRAPHIC AND VIDEO

#### DIRECTIONS

### THINK-PAIR-SHARE

Watch the video **The Majestic Plastic Bag – A Mockumentary** to introduce students to the concept of a life cycle of a plastic bag:

[www.youtube.com/watch?v=GLgh9h2ePYw](http://www.youtube.com/watch?v=GLgh9h2ePYw)  
(03:59 / Source: HealTheBay.org)

As a class, brainstorm the impacts plastic bags have on the environment. Discuss how reducing, reusing and recycling bags can reduce these impacts.

Read the **Life Cycle of a Plastic Bag (Appendix 1)** as a class.

**OPTION** Project Appendix 1 on the screen to save paper. Then pair up students and give them time to complete the follow up questions. Correct the answers as a class and discuss the findings.

**OPTION** In small groups, have students investigate online for the correct answers  
Example of a website to research facts on plastic:  
[www.canada.com/en/get-involved/resources/plastics-themed-resources/plastic-facts](http://www.canada.com/en/get-involved/resources/plastics-themed-resources/plastic-facts)

#### MATERIALS

Computer and projector

Appendix 1  
Life Cycle of a Plastic Bag

#### DURATION

30 mins

#### MAIN LEARNING OUTCOME

GRADE:

4

SUBJECTS:

#### Social Studies



Learners will investigate the relationships between humans and the physical environment.

#### SKILLS

##### Investigate

Ask and revise questions; locate several relevant details to support an answer; organize and compare details; identify relationships and communicate findings.

##### Question

Generate broad questions that arise from simple to more complex problems and issues; narrow and begin to revise questions, to create a question to investigate.

#### CROSS-CURRICULAR LINKS

#### English Language Arts



##### Writing and Representing

Learners will create text, independently and collaboratively, using a variety of types of writing for a range of audiences and purposes.

#### Art



##### Outcome 1

Students will explore the creative process, individually and collaboratively, using a range of materials and technologies, to create with respect and sensitivity a variety of artworks that express feelings, ideas, and understandings.

#### Math



##### Measurement: Outcome 2

Students will be expected to read and record calendar dates in a variety of formats.

divertNS.ca





## Activity

### CREATE A TIMELINE

#### DIRECTIONS

Introduce the concept of a timeline—a way to illustrate events that happened in a given time period. It takes 1000 years for a plastic bag to breakdown. To show how long 1000 years is, students will create a timeline poster.

- Students choose **ten** events from the list of **Events from the Last 1000 Years (Appendix 2)**.
- Draw a line across the middle of the bristol board. Place the number “1000” at the far left of the line and the number “2000” at the far right.
- Place the ten events on the timeline, in order.
- In the form of “Did you know?” bubbles, add the following to the poster:
  - The number of years it takes for a plastic bag to break down
  - The number of plastic bags that are used each year
  - A message to encourage people to recycle
  - “It takes the same time for a plastic bag to break down as it did for all these events to happen over the last 1000 years.”

**OPTIONS** Hang timelines around the school to show how long it takes for a plastic bag to break down.

Paste different plastic bags to timeline posters, to add a visual representation of how plastic lasts a long time under the 10 selected dates

Partner with a local grocery store and post the timelines in-store to encourage more people to use reusable bags.

Ask students to track how many plastic bags come into their house in a week or a month. Create a graph to estimate annual plastic bag use.

#### MATERIALS

**Appendix 2:**  
Timeline of events of the last 1000 years

Bristol board  
or chart paper

#### DURATION

2 hours

## Post-Activity

### “PLARN” BRACELETS

#### DIRECTIONS

#### INTRODUCTION

Ask students to bring in one or two plastic bags from home to prepare for this activity. (Bags of different colours will make the project more interesting.)

Have students discuss ways to reuse plastic bags. Ask students if they are familiar with “plarn” (plastic+yarn).

#### How to make Plarn:

Read the handout **How to Make Plarn (Appendix 3); and/or**

Watch the video: [www.youtube.com/watch?v=4EnR6JMe1Jc](http://www.youtube.com/watch?v=4EnR6JMe1Jc)

(04:14 / Source: Leisure Arts, Inc.)

You can use plarn for a variety of craft projects. Some projects require long strands of plarn; others, like braided friendship bracelets, need only two loops knotted together.

#### MATERIALS

**Appendix 3:**  
How to Make Plarn  
OR  
Internet and  
projector

#### DURATION

5 min

## PLARN BRACELETS (cont'd)

### MAKING BRACELETS

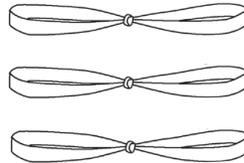
#### DIRECTIONS

Review the instructions for **How to Make Plarn (Appendix 3)**. Ask students to complete **Steps 1, 2 and 3**, then stop.

After students have cut their plastic loops, they can trade with other students to have a variety of colours. Each student will need **six** loops to create a bracelet.

#### PREPARING LOOPS TO BRAID

Have students take **two** loops and complete **Steps 5 and 6**, three times—so they have **three** double loops to braid.



Stands can be used single thickness for a long braid (to wrap around twice), or folded in half for a thicker, shorter bracelet. Tape the end of the strands to the table or desk, and braid. Secure the finished end and close the loop with tape.

**OPTIONS** Connect this activity with local history. Scots reused old flour bags to make quilts. Acadians in Cheticamp reused old wool to make rugs to keep floors warm in the winter.

Student can watch a quick tutorial on plastic bag bracelets for more help:

[www.youtube.com/watch?v=70sGbmUrw\\_w](http://www.youtube.com/watch?v=70sGbmUrw_w)

### Assessment

**FORMATIVE** Observe students as they answer the follow up questions to the infographic and as they make their timeline.

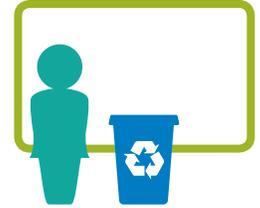
**SUMMATIVE (OPTIONAL)** Evaluate follow up questions to the infographic and/or their timeline.

#### MATERIALS

Appendix 3:  
How to Make  
Plarn

#### DURATION

20 min



#### WASTE REDUCTION EDUCATORS

Divert NS provides funding to municipalities to deliver waste reduction education to schools across the province. Your local waste reduction educator(s) provides the following services, and more, free of charge!

- classroom presentations
- green team set up
- advice on bins and signage
- tours of local waste facilities
- school waste audits

To find out more, visit [divertns.ca](http://divertns.ca)

[divertNS.ca](http://divertns.ca)



Share on social media!  
#NothingWasted

### ABOUT DIVERT NS

Divert NS is a not-for-profit organization championing recycling in Nova Scotia. For over 20 years we've helped build a culture of recycling through environmental stewardship, education, and innovation. Divert NS operates the **Beverage Container Deposit-Refund Program** and the **Used Tire Management Program**. In addition, we work in collaboration with government,

industry, and academia to divert waste-resources from landfill. Divert NS, in partnership with municipalities, delivers education and awareness programs to schools, businesses, and community groups. Divert NS also works to develop stewardship agreements and funds innovative research and development initiatives.

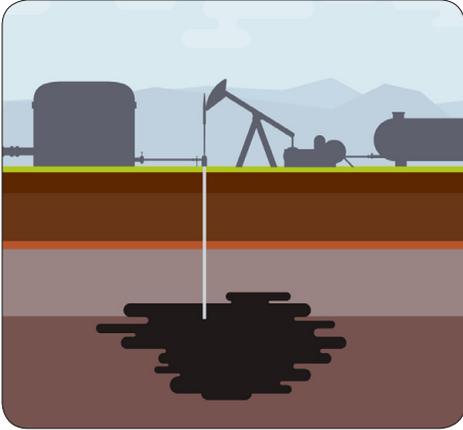
Toll-free 1.877.313.7732 • [info@divertns.ca](mailto:info@divertns.ca) • [divertNS.ca](http://divertNS.ca)



## APPENDIX 1

### CAN A PLASTIC BAG LIVE FOREVER?

# Life Cycle of a Plastic Bag

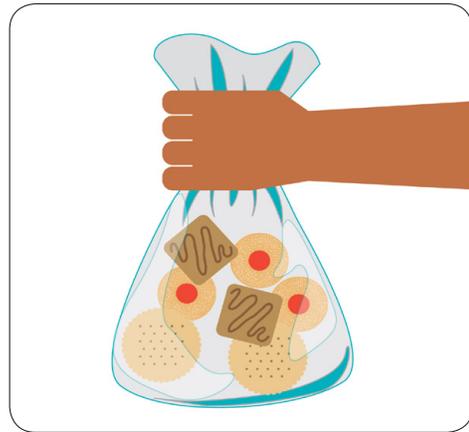


Plastic bags start as oil that is pumped up from deep within the earth. The oil has been in the earth for 100s of millions of years.

The oil is then sold to a plastic factory where it is transformed into plastic bags, which are then sold to stores.

People use plastic bags to carry things like groceries or other goods.

The average plastic bag is used for only 20 minutes before it is tossed in the trash or the recycling bin.



Plastic bags that end up in landfills take an estimated 1000 years to break down. But they never really disappear—they turn into a plastic dust.

In the ocean, if the plastic bag isn't eaten by a sea creature, the water and the sun help to break down plastic much faster, in about 50 years. The plastic dust is then eaten by fish. Humans catch and eat the fish, and then the plastic dust ends up inside of us!

Nova Scotia recycles less than 50% of plastic bags. Although that is one of the highest recycling rates in the country, a large quantity of bags end up in landfills or on the ground as litter.

So there is still a lot of work to do, to **reduce**, **reuse** and **recycle** plastic bags!



## APPENDIX 1

### CAN A PLASTIC BAG LIVE FOREVER?

# Comprehension Questions

## Life Cycle of a Plastic Bag

After reading “Life Cycle of a Plastic Bag,” answer the questions below:

- 1) **Five trillion bags** are made each year. Fill in the zeros below to show five trillion.  
(How many zeros does it have? \_\_\_\_\_ Hint: 3 x 4)

5, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_

- 2) What are plastic bags made of?  
a) Water                      b) Oil                      c) Cookies
- 3) **True or False:** The average plastic bag is reused. (Circle your answer)
- 4) How many years does it take for a plastic bag to breakdown in a landfill?
- 5) What happens to plastic that ends up in the ocean? (List **two examples**)
- 6) What percentage of plastic bags are recycled in Nova Scotia?
- 7) What are **two ways** you can describe 1000 years?

# Comprehension Questions

## Life Cycle of a Plastic Bag

After reading “**Life Cycle of a Plastic Bag**,” answer the questions below:

- 1) **Five trillion bags** are made each year. Fill in the zeros below to show five trillion.  
(How many zeros does it have? \_\_\_\_\_ Hint: 3 x 4)

5, 0 0 0, 0 0 0, 0 0 0, 0 0 0

- 2) What are plastic bags made of?  
a) Water      **b) Oil**      c) Cookies

- 3) **True** or **False**: The average plastic bag is reused. (Circle your answer)

- 4) How many years does it take for a plastic bag to breakdown in a landfill?

**about 1000**

- 5) What happens to plastic that ends up in the ocean? (List **two examples**)

**It might be eaten by sea creatures or fish.**

**After 50 years it and breaks down into tiny plastic dust.**

**If humans eat the fish, the plastic dust ends up in us.**

- 6) What percentage of plastic bags are recycled in Nova Scotia?

**50%**

- 7) What are **two ways** you can describe 1000 years?

**Examples: 2 x 500; 10 x 100, etc.**

**one millennium; ten centuries, etc.**

## APPENDIX 2

### CAN A PLASTIC BAG LIVE FOREVER?

# Events from the Last 1000 Years

Choose **ten** of these major events over the last 1000 years, and place them on a timeline.

1068	Construction begins on the Leaning Tower of Pisa in Italy	1867	The Dominion of Canada is created (uniting Ontario, Quebec, New Brunswick and Nova Scotia)
1150–67	University of Paris and University of Oxford are founded	1871	Canada's population is 3,689,257
1211	Genghis Khan invades China	1876	The first telephone call is made by inventor Alexander Graham Bell
1347–51	At least 25 million people die in Europe's "Black Death" (bubonic plague)	1904	Canada competes in the Olympics for the first time
1428	Joan of Arc leads the French against the English	1909	The first airplane flight in the British Empire happens at Baddeck, NS
1438	The Incas rule in Peru	1914	Canada enters World War I
1497	John Cabot lands on the shores of what is now the east coast of Canada	1917	The Halifax Explosion happens
1501	The first enslaved Africans are brought to the New World	1918	Canadian women win the right to vote in federal elections
1503	Leonardo da Vinci paints the Mona Lisa.	1918	Gabriel Sylliboy becomes with the first elected Mi'kmaw Grand Chief
1510	Mi'kmaw Grand Chief Membertou was born	1918	The First World War ends; Canada has lost 60,000 troops
1534	First record of trade between the Mi'kmaq and the Europeans (Jacques Cartier)	1932	The CBC (Canadian Radio Broadcasting Commission) is created
1610	Galileo sees the moons of Jupiter through his telescope	1939	Canada declares war on Nazi Germany
1643	Taj Mahal completed	1941	The federal government allows women to enlist in the army
1660	Canada's first census records the population at 3418 people	1964	A new Canadian flag is introduced
1725	The Mi'kmaq and Maliseet signed their first treaty with the British to establish a peaceful alliance	1967	Canada celebrates its 100th birthday
1739	Canada's population is 42,701	1976	Montreal hosts the Summer Olympics
1749	Halifax is founded	1980	Terry Fox runs his Marathon of Hope
1752	Canada's first newspaper, the Halifax Gazette, is published	1983	Mi'kmaw petroglyphs were found in Bedford, NS
1775	The American Revolution begins	1987	The \$1 coin, or "loonie," is introduced
1782–85	Black Loyalists come to NS and NB after fighting for the British in the American Revolution	1988	First African Heritage Month in Nova Scotia
1833	Slavery is officially abolished in the British Empire	1997	The Confederation Bridge opens linking Prince Edward Island to the mainland
1851	Canada's first official postage stamp, the three-penny beaver, is issued	1999	Canada's newest territory, Nunavut, is created

## APPENDIX 3

### CAN A PLASTIC BAG LIVE FOREVER?

# How to Make PLARN

Plarn is short for “plastic yarn.” Plarn is made by cutting plastic grocery bags into strips, which are then strung together into a single long strand.

## INSTRUCTIONS

1. Lay bag flat and fold it in half, lengthwise.
2. Fold bag in half again.
3. Cut folded bag into loops about 2 cm wide, discarding handles and bottom into the recycling bin.
4. Trade some loops with classmates, to mix up colours.
5. Knot loops together to form a single strand.
6. Pull the knot very gently. (For small projects, like braided bracelets, stop when two loops are knotted together.)
7. Keep adding loops to make your plarn long enough for your project.
8. Wind the strand into a ball and it is ready for your project.

