Contents

TEACHER GUIDE

STUDENT HANDOUTS

NAME: _____

Before You Read

What Is Waste?

1. Complete each sentence with a word from the list. Use a dictionary to help you.

dispose	toxic	raw materials	manufactured	waste

a) The word _____ describes any part of an object that is not used.

b) You _____ of objects when you throw them away.

c) Objects that are made from machines using many different raw materials are called _____ goods or products.

d) The word _____ describes something that is harmful to living things.

e) Matter from the earth that is used to make products is called _____.

2. Match the product on the left to the waste that usually goes along with it.

1	cereal	plastic container	A
2	markers	bottle or can	B
3	soda	cardboard box, plastic bag	C
4	yogurt	tree scraps	D
5	notebook	cardboard box, plastic tubes	E

3. a) List five things that are often found in your classroom waste basket.

_____

_____

_____

_____

_____

b) What do these five things have in common?

_____

Reading Passage

NAME: _____

What Is Waste?

What do you think of when you hear the word "waste?" You might remember a teacher telling you not to waste paper. Maybe you have seen a program about not wasting water. In these cases, waste means not using more than you need.

Waste has another meaning. Any part of an object that is not used is called **waste**. For example, think about what happens when you eat an apple. Some parts you don't eat, such as the seeds, stem, and core. These are wastes that you might throw away. The part of the apple that you do eat is digested, or broken apart, inside your body. But your body cannot use all of the apple that you eat. The parts that it cannot use are removed from your body as waste.

STOP

Describe the two meanings of the word waste. Have you thrown away any waste today?

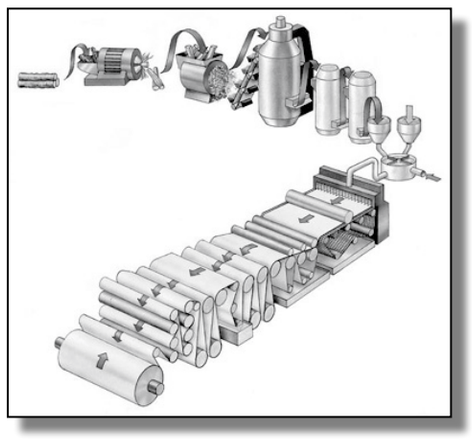
_____

_____

When does waste cause problems?

In our modern world, the use of **manufactured** goods, or products, results in a lot of waste. Waste is produced during several steps:

- getting the **raw materials** to make the product,
- manufacturing the product,
- packaging the product, and
- at the end of the product's use.



Waste from manufactured products can cause big problems for people and the environment. Unlike the apple cores, many parts of manufactured goods do not easily break down in the environment. People must find places to dispose of these wastes, but space is running out.

Some wastes may also be harmful, or **toxic**. When these wastes get into land, water, and air, they can harm living things. People live in the environment, not separate from it. In most cases, there are no completely safe places to dispose of harmful waste. Some of the waste often gets back into the air we breathe, the water we drink, and the food we eat. Finding ways to manage waste is an important part of modern society.

NAME: _____

After You Read

What Is Waste?

1. Circle the word True if the statement is true. Circle the word False if it is false.

a) Parts of a product that are used up are waste.
True **False**

b) Your body gets rid of wastes as part of life processes.
True **False**

c) The packages that products come in are an example of waste.
True **False**

d) Waste is easy for societies to get rid of because of weekly trash collection.
True **False**

e) Toxic waste can be safely disposed of by burying it deep underground.
True **False**

2. Put a check mark (✓) next to the answer that is most correct.

a) Which waste breaks down easily in the environment?
- ○ **A** a banana peel
- ○ **B** a plastic wrapper
- ○ **C** a used battery
- ○ **D** a broken car

b) Jana drinks a box of apple juice. Which of these is NOT waste from this product?
- ○ **A** plastic wrappers
- ○ **B** the apple juice
- ○ **C** apple seeds and stems
- ○ **D** the straw

c) Which of these wastes is toxic?
- ○ **A** tree scraps from a paper mill
- ○ **B** a half-empty box of rat poison
- ○ **C** an empty glass pickle jar
- ○ **D** a broken ceramic plate

d) Which of these is an example of packaging?
- ○ **A** a marker cap
- ○ **B** an orange peel
- ○ **C** a paper cup
- ○ **D** an egg carton

After You Read

NAME: _____

What Is Waste?

3. How would you state the meaning of **waste** in your own words?

_____

_____

4. Do all types of wastes create the same problems? Use examples to explain your answer.

_____

_____

Extension & Application

5. Take a look at the wastes thrown away in your CLASSROOM. Write a list of each item placed in your classroom trash bin for one day. Sort the wastes using the chart below.

Food Scraps	Packaging	Used School Supplies	Other

What is the most common type of waste that is thrown away in your classroom?

_____

Were you surprised by the amount of waste or the type of wastes thrown away in your classroom? Explain.

_____

_____

6. Now take a look at the wastes thrown away in your HOME. Write a list of each item placed in your household trash bin for one day. What are the three main groups of trash in your home?

_____

_____

_____

How does your household waste compare to the classroom waste? Are there differences in the types of amounts of waste? Explain.

_____

_____

Hands-On Activity # 1

Chart Your Waste

You will need:

- Mass balance
- Graph paper
- Pencil or marker

Set up a table like the one below.

Today's Waste

Description	Category	Mass, in grams

You are now going to **record each piece of waste you throw away for one whole day.** Write a short description of each piece of waste, for example, "plastic wrapper". Then, in the category column, write one of the following:

- packaging
- product

Products include all used or broken items, such as an empty pen.

At the end of the day, add up the total mass of waste for the day. Then, calculate the percent of your waste that was packaging and the percent that was used or broken products. Use the following equations:

percent PACKAGING waste = mass of all packaging waste ÷ total mass waste

percent PRODUCT waste = mass of all product waste ÷ total mass waste

Set up a pie chart to display your results.

After You Read

NAME: _____

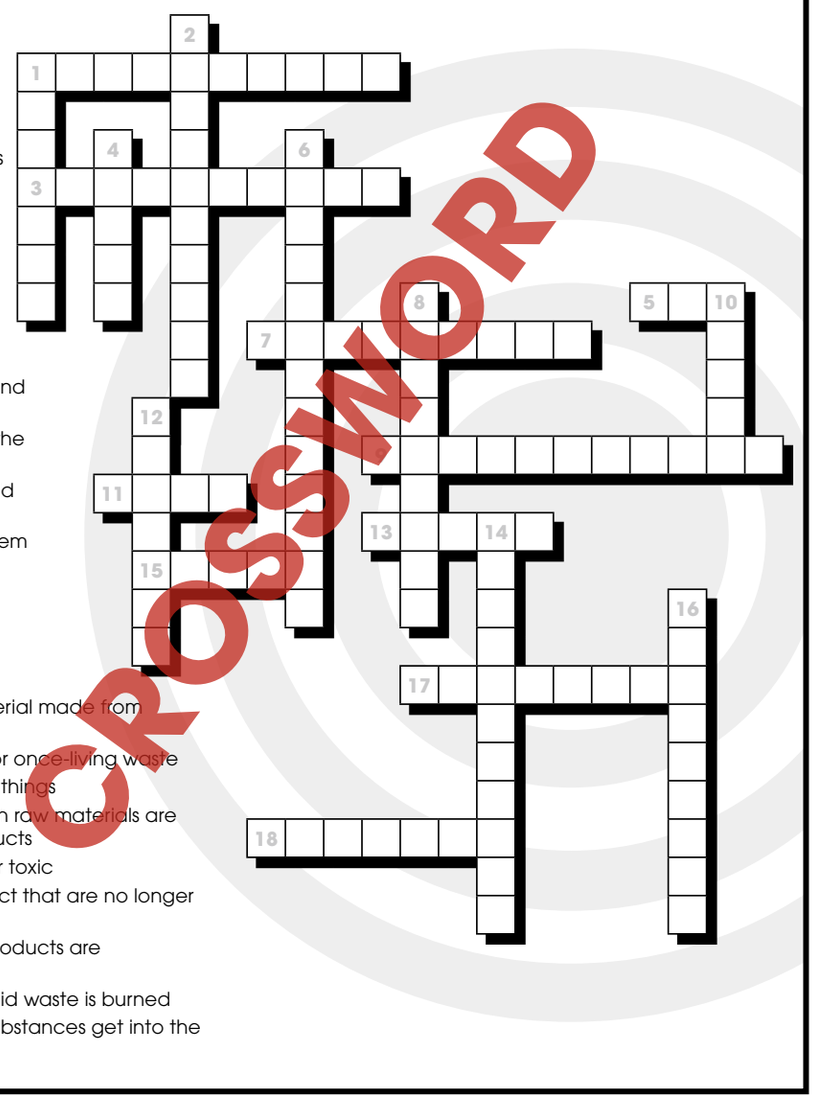
Crossword Puzzle!

Across

1. used to kill insect pests
3. lets pollutants pass into air
5. _____ materials
7. containers, labels, etc.
9. waste from a product before it is bought
11. substance that tastes sour
13. matter that has definite shape and volume
15. rivers drain into the _____
17. place where solid waste is buried
18. manufactured item

Down

1. packaging material made from petroleum oil
2. type of landfill for once-living waste
4. harmful to living things
6. process by which raw materials are made into products
8. another word for toxic
10. parts of a product that are no longer useful
12. facillity where products are manufactured
14. facility where solid waste is burned
16. when harmful substances get into the environment



After You Read

NAME: _____

Comprehension Quiz

30

Part A

8

Circle the word True if the statement is true. Circle the word False if it is false.

1) Parts of a product that you throw away are waste.
   True **False**
2) Pre-consumer waste is not as much of a problem as post-consumer waste.
   True **False**
3) Post-consumer waste is any waste made during the manufacturing of goods and products.
   True **False**
4) The usual packaging of toothpaste includes a metal tube, plastic cap, and cardboard box.
   True **False**
5) A landfill is a facility where solid waste is burned to produce fuel for energy.
   True **False**
6) The best way to dispose of paint, bleach, and other liquid hazardous waste is to pour it down a drain and run hot water for at least ten minutes.
   True **False**
7) Fertilizers used on farms are an example of nonpoint source pollution.
   True **False**
8) Oceans are so large that they cannot be harmed by human waste; therefore, they are a good place for dumping.
   True **False**

Part B

6

Look at the package of loose paper to the right.

In the boxes below, describe each type of waste made by the package of paper.

a) pre-consumer	b) post-consumer

SUBTOTAL: /14

Waste in Our Oceans

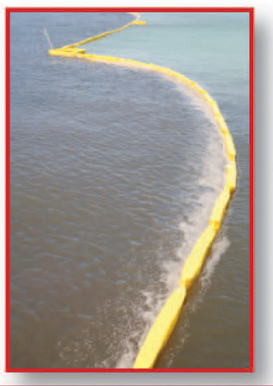
Fertilizer Leaching

Beach Pollution

Shipwreck

Leak from Oil Barge

Chemical Waste



Pollution Control Barrier

After You Read

NAME: _____

Post-Consumer Waste

4. Explain the difference between **pre-consumer waste** and **post-consumer waste.**

_____

_____

5. Explain the difference between **durable goods** and **nondurable goods.**

_____

_____

Extension & Application

6. Keep track of your post-consumer waste. Use the chart below to classify everything you throw away for one week. Multiple use items are products that you use more than one time before throwing them away.

DURABLE	NONDURABLE	
	Multiple Use	Disposable

Which column had the most entries after one week? _____

Brainstorm a list of ways that you could lessen the amount of disposable waste that you throw away.

_____

_____

_____

EASY MARKING ANSWER KEY

4.

pre-consumer: created before a product gets to a consumer;
post-consumer: created after a product gets to a consumer

5.

Durable goods last much longer than nondurable goods

6.

Answers will vary

1.

Materials in which a product is packed or wrapped

2.

1. C
2. F
3. B
4. A
5. D
6. E

3.

Answers will vary

Materials that contain or protect products; bottles, jars, juice boxes

1.

a) Styrofoam
b) glass jar
c) tin can
d) cardboard box
e) plastic wrapper
f) plastic bottle

2.

a) trees **b)** petroleum oil
c) metal **d)** petroleum oil
e) trees **f)** glass

3.

Uses more raw materials, adds to transportation cost

4.

Getting raw materials can cause pollution and take away wildlife habitat, creates more waste

5.

Answers will vary