

# Trash Free Gulf

Activity  
Book

AGES 10-14

PRESENTED BY



**Our Texas  
Our Future**

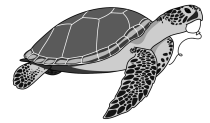
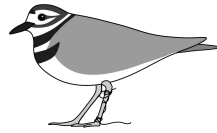


Written by Anne Marie Fayen

Illustrated by Celeste Silling

# About Trash Free Gulf

Trash Free Gulf works to prevent trash from reaching our waterways and the coast and raise awareness of Texas's outsized role in the health of our rivers, lakes, and oceans.

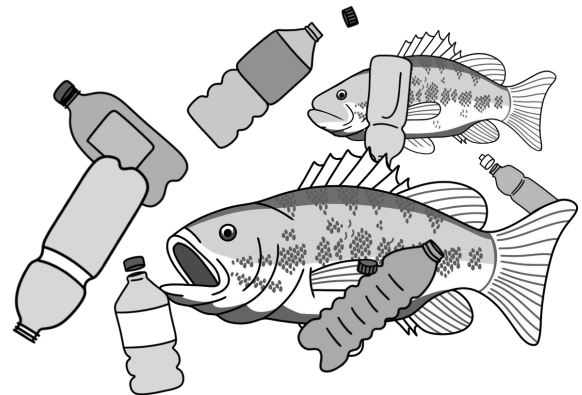


## What's the problem?

- The Gulf of Mexico/America, due to ocean currents and being largely surrounded by land, has some of the highest concentrations of plastics and other trash in the world.
- According to a 2018 study, trash piles up along Texas's coastal areas 10 times faster than any other Gulf Coast state.\*
- ~80% of plastics in the aquatic environment come from land-based sources carried by wind and water.\*\*
- Every Texan lives in a watershed that drains to the Gulf. This means trash that is not disposed of properly across the state, ends up in the Gulf.

## This Activity Book

Complete this activity book to learn about the issue of trash in Texas, how trash impacts wildlife, and steps we can all take to address this problem.



**Curious to learn more? Visit: [trashfreegulf.com](https://trashfreegulf.com)**

\*Source: Marine Pollution Bulletin (2018)

\*\*Source: Science of The Total Environment (2016)

# Trash in Texas



Think: Have you ever seen trash where it was not supposed to be? Trash that is not thrown away properly is called **litter**.



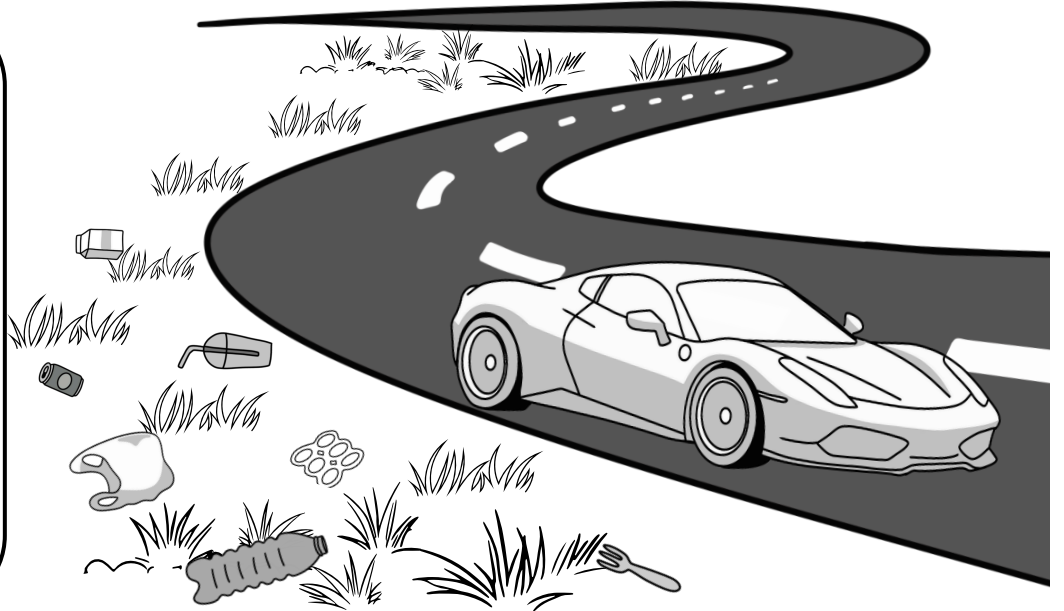
When was the last time you saw litter? Where was it? Tell someone else about the litter you saw recently.



Fill in the blanks. Each possible answer below will be used once.

## POSSIBLE ANSWERS:

- 47
- hot
- 50
- 500
- sports
- 2,000
- soda/pop
- 362
- water



You may see a lot of litter along Texas roadways. Each year, approximately \_\_\_\_\_ (a) million visible pieces of litter are found along Texas roads. \_\_\_\_\_ % (b) of this litter comes from trash that people throw out of their cars.

The most common type of “large litter” (items 2 inches and larger) along our roads are beverage containers like \_\_\_\_\_ (c) bottles, \_\_\_\_\_ (d) cans, \_\_\_\_\_ (e) drink bottles, and \_\_\_\_\_ (f) drink cups. The most common type of “micro litter” (items 2 inches and smaller) is cigarette butts.

In 2021, more than \$\_\_\_\_\_ (g) million was spent to clean up this litter.

You can be fined \$\_\_\_\_\_ (h) for each item you litter in Texas, up to \$\_\_\_\_\_ (i).

**Source:** Don't mess with Texas Litter Facts  
 (a) 362 (b) 47 (c) water (d) soda/pop (e) sports (f) hot (g) 50 (h) 500 (i) 2,000

**Answer Key:** Check your answers!

# Trash in a Bin Can Become Litter

Even trash that is thrown away in a trash can can become litter. How might trash from this bin become litter? Explain:

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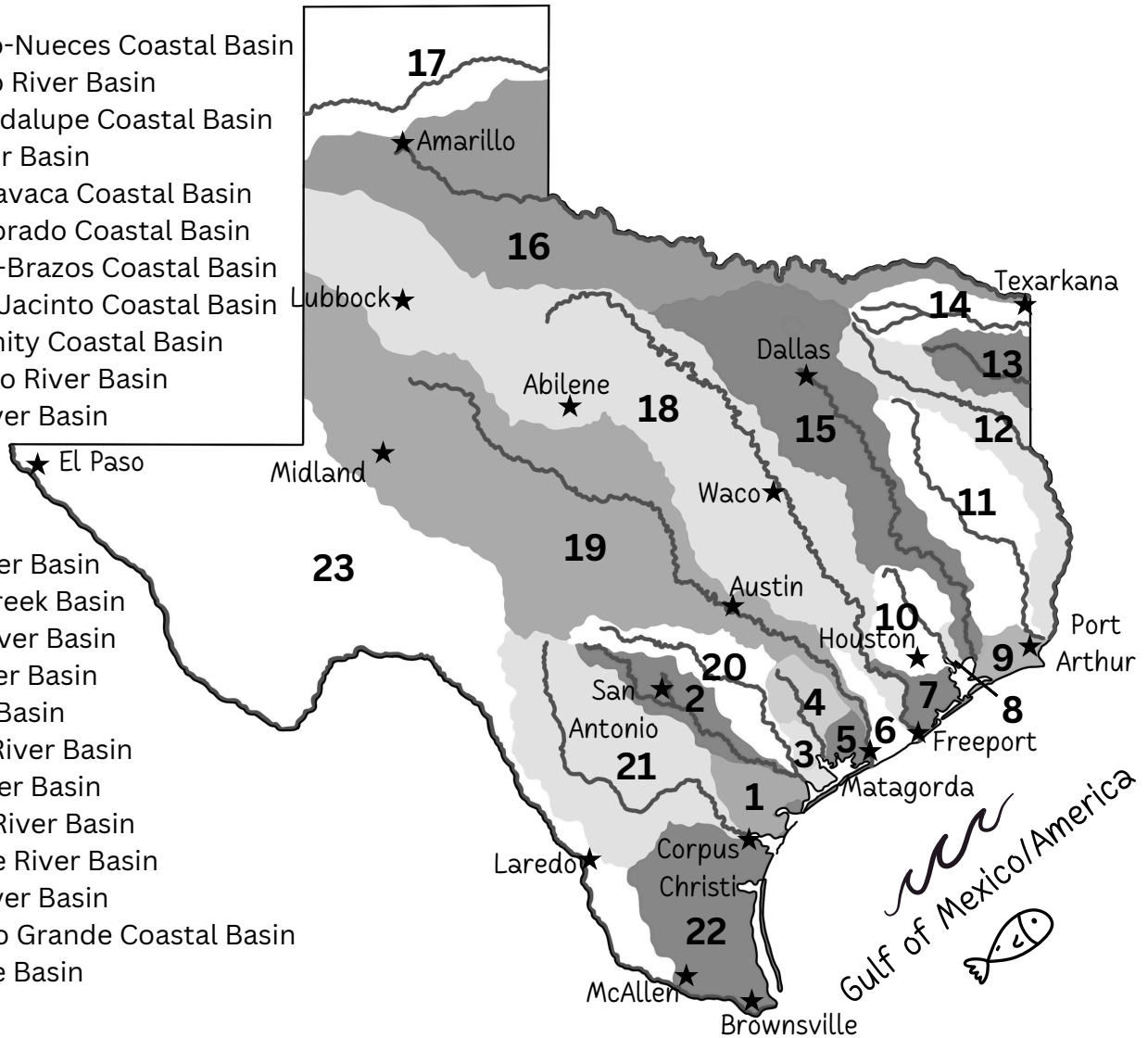
# Where does all the litter go?

No matter where litter lands, it often ends up in a waterway. A **river basin** is an area of land where all the water drains into one river.


Draw  an **X** where you live on the map below.

- 1 San Antonio-Nueces Coastal Basin
- 2 San Antonio River Basin
- 3 Lavaca-Guadalupe Coastal Basin
- 4 Lavaca River Basin
- 5 Colorado-Lavaca Coastal Basin
- 6 Brazos-Colorado Coastal Basin
- 7 San Jacinto-Brazos Coastal Basin
- 8 Trinity-San Jacinto Coastal Basin
- 9 Neches-Trinity Coastal Basin
- 10 San Jacinto River Basin
- 11 Neches River Basin

- 12 Sabine River Basin
- 13 Cypress Creek Basin
- 14 Sulphur River Basin
- 15 Trinity River Basin
- 16 Red River Basin
- 17 Canadian River Basin
- 18 Brazos River Basin
- 19 Colorado River Basin
- 20 Guadalupe River Basin
- 21 Nueces River Basin
- 22 Nueces-Rio Grande Coastal Basin
- 23 Rio Grande Basin



**Which river basin do you live in?** \_\_\_\_\_

If a piece of litter lands in your river basin, wind and rain will push the trash into creeks and streams in this area. The trash will eventually flow into the major river in the basin. All Texas rivers eventually flow into the Gulf. Put a star  on the Gulf in the map above.

**Trash from across Texas flows into the Gulf.**



# A Growing Problem: Marine Debris

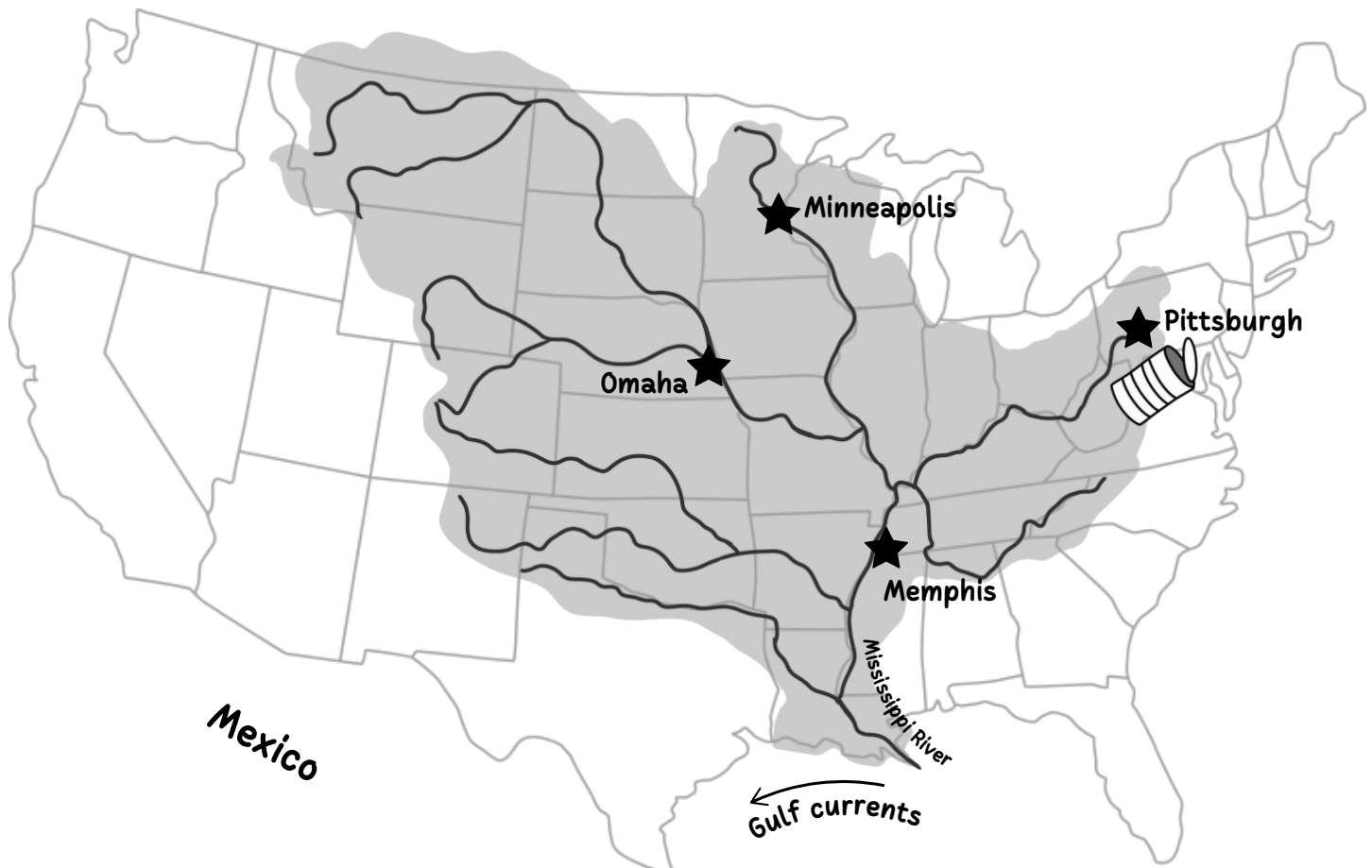
**Marine debris** is the term used to describe trash that is found in the ocean.

As you learned on the previous page, trash from across the state of Texas ends up in the Gulf. But that's not all. Water flows from many parts of the United States into the Mississippi River which eventually makes its way to the Gulf. This water also carries trash. Ocean currents carry the water from the mouth of the Mississippi into the Gulf and over to Texas.

So, trash from many parts of the United States often washes up on Texas beaches.

How could a piece of litter from Pittsburgh, PA end up on a Texas beach?

 Draw a line to trace the path this piece of trash  travels on the map below.



# Well Traveled

Ocean currents can bring trash to Texas from across the globe. We sometimes find items from distant places on our beaches! To see where these drink cans came from, unscramble the letters to reveal the names of countries.



otSfrhiciaaA

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trPualgo

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dlaNaZeewn

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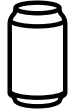
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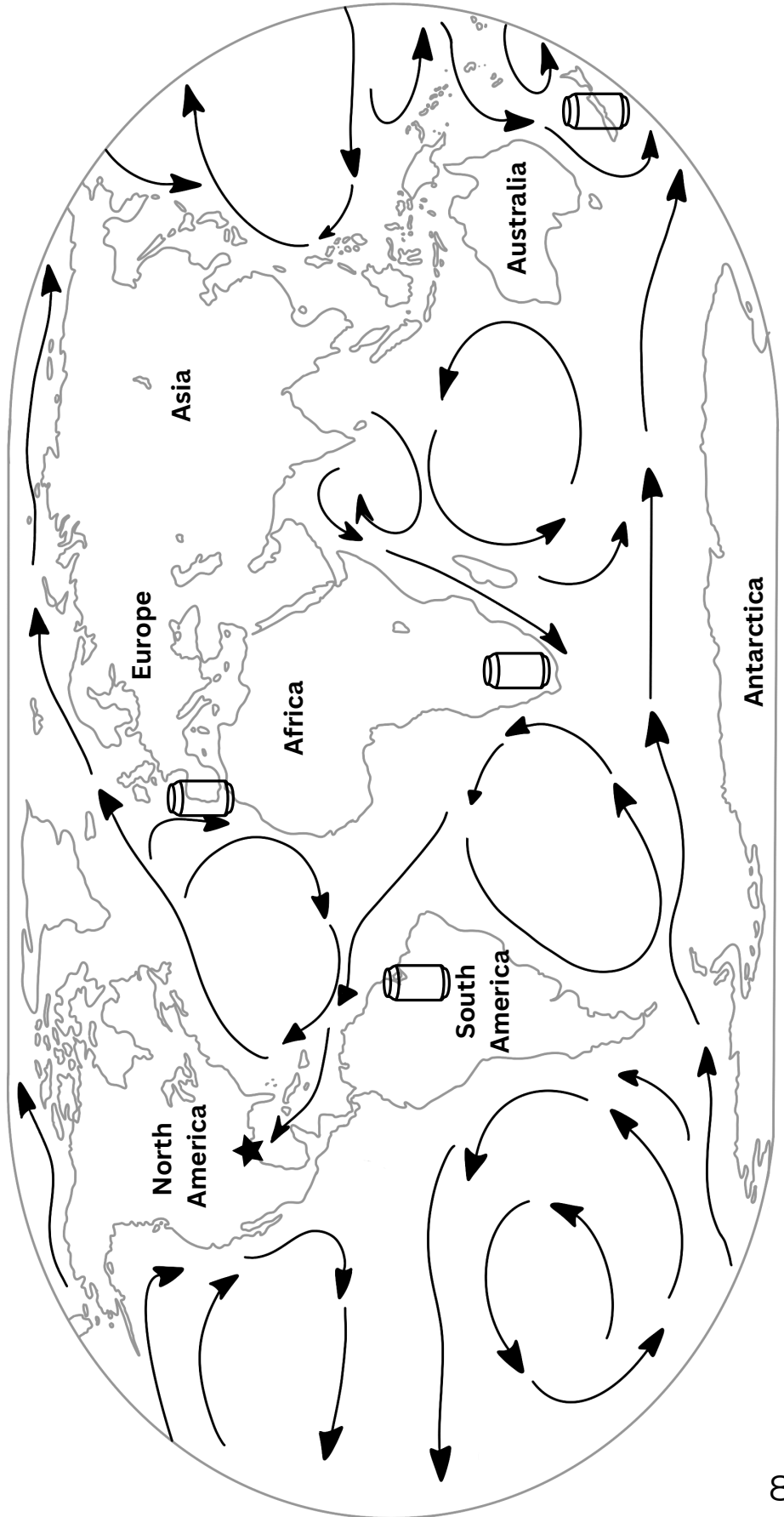
Answer Key: Check your answers! South Africa, Portugal, New Zealand, Brazil

# Swept Away

On the previous page, we discovered trash items from South Africa, New Zealand, Brazil, and Portugal that traveled all the way to Texas! Find these 4 countries on the map below. (Hint: Look for the can icon.)



Draw lines to show the paths each piece of trash took to get to Texas. Begin on the country of origin then follow the ocean currents (the arrows) to draw the path a piece of trash could take to get to Texas. If possible, use a different color to mark each path.

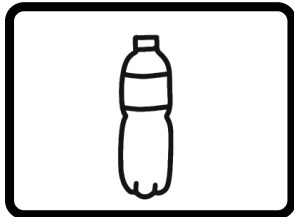


# A Serious Trash Problem

Recent research tells us that Texas faces a serious trash pollution problem. Trash accumulates on the Texas Coast 10 times faster than it does on the coasts of other Gulf states. Texas also has the highest average weight of trash debris per mile surveyed of any state in the nation, according to a report from the National Oceanic and Atmospheric Administration (NOAA) and Ocean Conservancy.

**Marine debris** is anything long-lasting, solid, man-made, and abandoned in the marine environment. **Marine** is an adjective that means having something to do with an ocean or sea. Using this description, decide whether or not these items found in the ocean qualify as marine debris.

Plastic Bottle



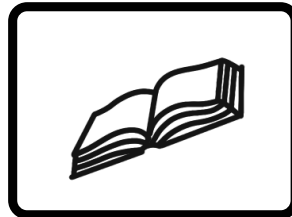
Marine Debris?  
 Yes  No

Carrot



Marine Debris?  
 Yes  No

Book



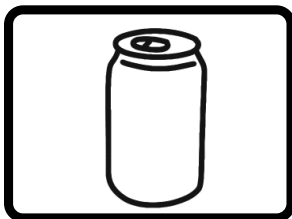
Marine Debris?  
 Yes  No

Boat



Marine Debris?  
 Yes  No

Aluminum Can



Marine Debris?  
 Yes  No

Ship Wreck



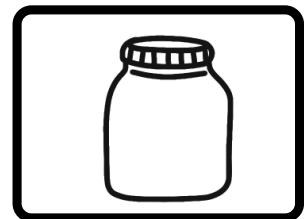
Marine Debris?  
 Yes  No

Leaf



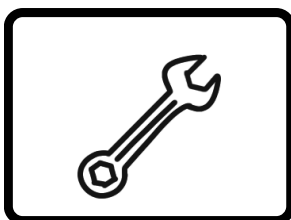
Marine Debris?  
 Yes  No

Glass Jar



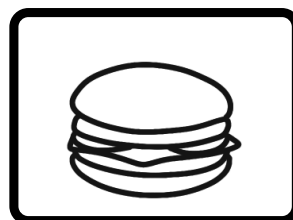
Marine Debris?  
 Yes  No

Wrench



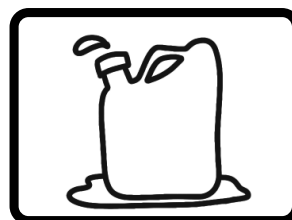
Marine Debris?  
 Yes  No

Hamburger



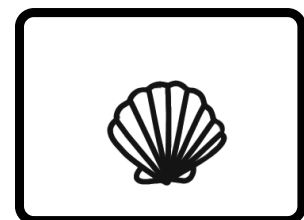
Marine Debris?  
 Yes  No

Gasoline



Marine Debris?  
 Yes  No

Seashell



Marine Debris?  
 Yes  No

# Visual Litter Survey

A **Visual Litter Survey** is the collection of data about the litter a person can see on the ground in a specific area. **Try it out!** Identify the items of trash in the illustration and record the number of each type of trash you see below.



**Number of trash items along 5 meters of the riverbank:**

Metal: \_\_\_\_\_ Plastic Film\*: \_\_\_\_\_ Hard Plastic: \_\_\_\_\_ Paper/Cardboard: \_\_\_\_\_

The numbers you wrote above show how much of each type of trash was found along 5 meters of the riverbank. Based on these numbers, estimate how much of each type of trash would be found along 100 meters of the riverbank.

**Number of trash items along 100 meters of the riverbank:**

Metal: \_\_\_\_\_ Plastic Film\*: \_\_\_\_\_ Hard Plastic: \_\_\_\_\_ Paper/Cardboard: \_\_\_\_\_

**\*Plastic film** is thin plastic such as plastic bags and cereal bags.

Row 1 Answers: Metal = 5, Plastic Film = 2, Hard Plastic = 19 Paper/Cardboard = 3  
 Since 5 meters x 20 = 100 meters, multiply the number of pieces of trash found along 5 meters by 20 to estimate how much trash would be found along 100 meters of the river bank.



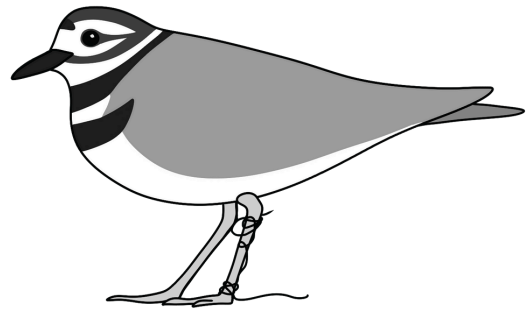
# Trash Impacts Texas Wildlife

Litter and marine debris look ugly and can get in our way when we head outside to enjoy nature.

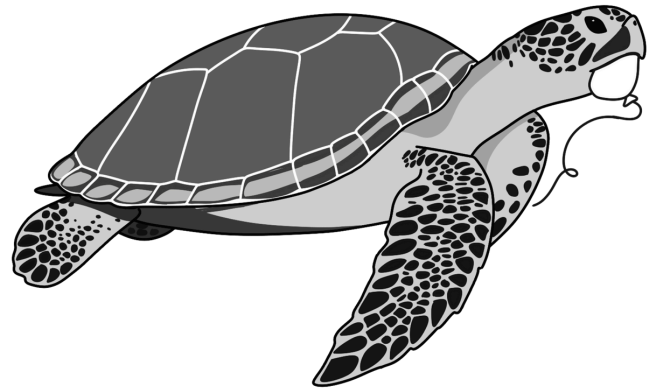
Litter and marine debris also significantly impact wildlife in 3 main ways.

**Match:** Draw a line  from each word to the image that shows each issue.

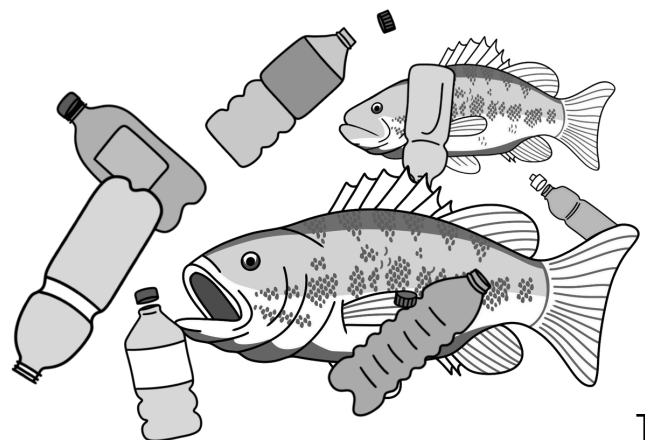
- **Ingestion:** animals can accidentally eat trash



- **Entanglement:** animals can become tangled or trapped by trash




- **Habitat Degradation:** an animal's habitat may become less useful because of the trash



# Plastics in the Food Chain

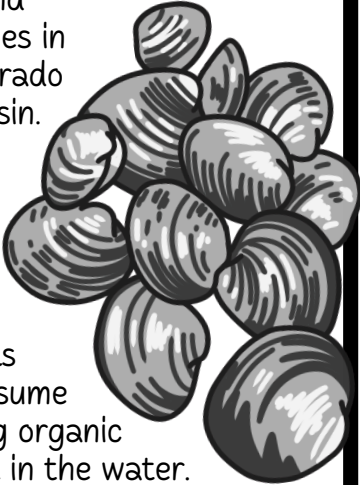
Plastic doesn't decompose but instead breaks down into smaller and smaller pieces. Plastic pieces smaller than 0.2 inches (about the size of a pencil eraser or smaller) are called **microplastics**. Animals often ingest microplastics accidentally and the plastics tend to accumulate up the food chain.

**1** Tiny pieces of plastic are found throughout waterways and oceans.




**2** The Texas pimpleback is a freshwater mussel that lives in rivers and tributaries in the Colorado River Basin.


Mussels filter water through their gills and consume decaying organic material in the water.



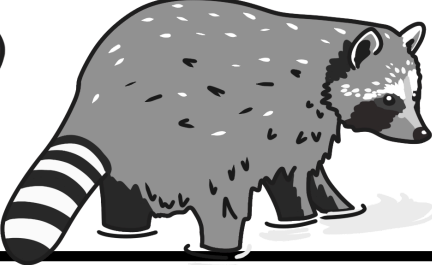
**3** This means they also ingest tiny plastic particles floating in the water. They can't digest plastic so it remains inside of them.




**4** This raccoon wades into the river to eat mussels, ingesting the microplastics in the mussels.



**5** Raccoons cannot digest plastic so the plastic remains in its digestive tract.



**6** This coyote manages to capture the raccoon, eating it and ingesting the microplastics that are inside.



If each mussel contains 2 pieces of microplastic and a raccoon eats 3 mussels, how many microplastics would end up in the raccoon's body? \_\_\_\_\_

If a raccoon ate 3 mussels per day for 2 weeks, how many pieces of microplastic would be in its body at the end of the 2 weeks? \_\_\_\_\_

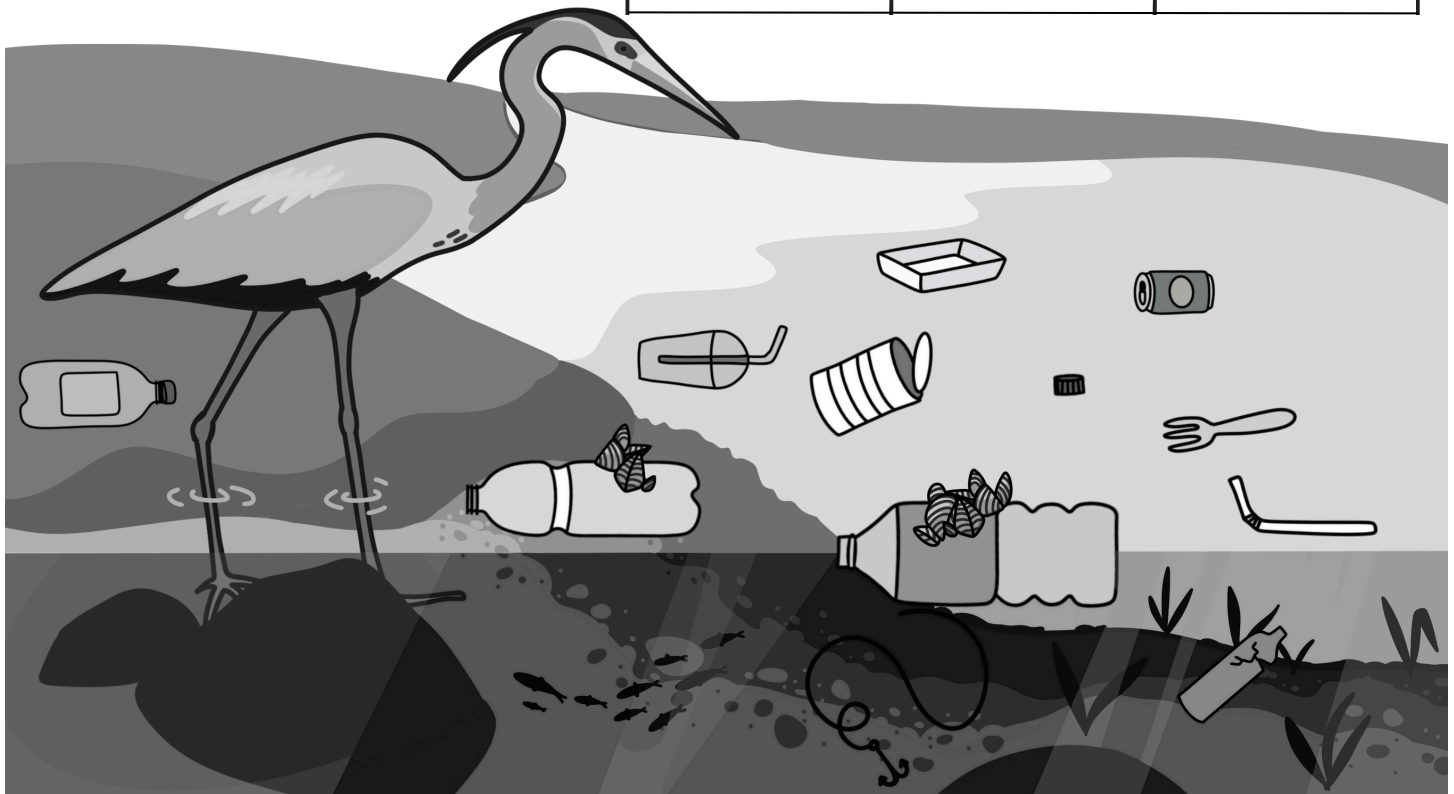
If a coyote eats 3 raccoons who all had been eating 3 mussels per day for 2 weeks, how many pieces of microplastics would be transferred to the coyote? \_\_\_\_\_

# A Habitat Mess

A Great Blue Heron is a large bird that can grow to be almost 5 feet tall! Great Blue Herons wade into water to hunt. When a Great Blue Heron sees a fish, it dives its head below the water to grab the prey with its beak. Trash in waterways can make it more difficult for animals like this to find food.

Fill in the blanks below to learn about how trash can negatively impact an ecosystem. Use the word bank to help you.

<b>NOUNS</b>	<b>ADJECTIVES</b>	<b>VERBS</b>
wildlife photosynthesis species	floating non-native native	filters smother disrupt



Litter can make habitats less suitable for \_\_\_\_\_ (noun). Floating trash can reduce the amount of sunlight that \_\_\_\_\_ (verb) through the water.

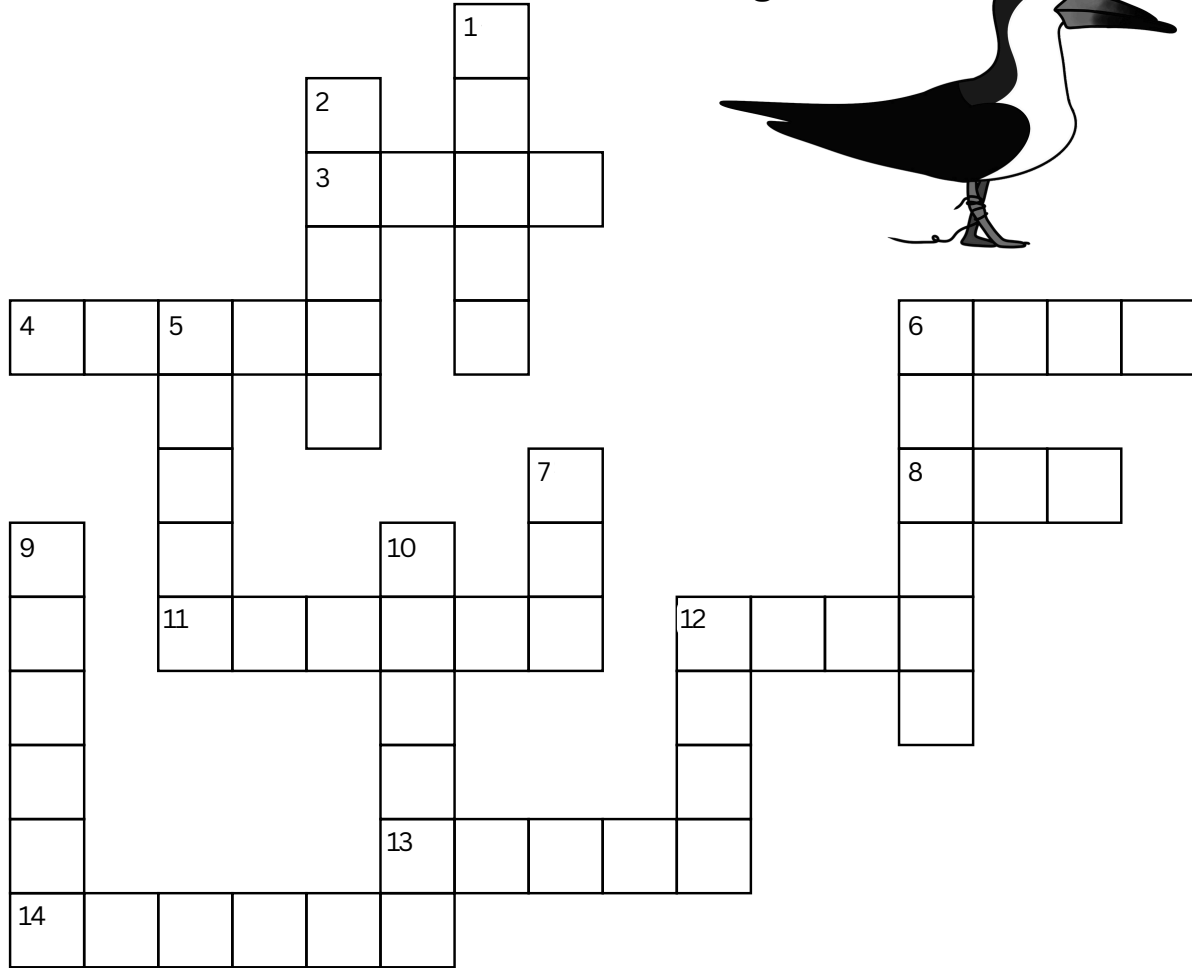
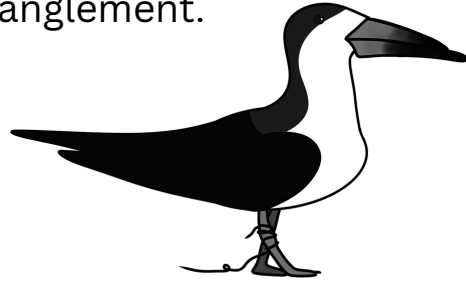
This can negatively impact underwater plants that need sunlight for \_\_\_\_\_ (noun). Trash can \_\_\_\_\_ (verb) aquatic plants and interfere with plant growth. \_\_\_\_\_ (adjective) trash can carry \_\_\_\_\_ (adjective) species into a new ecosystem. These introduced species may \_\_\_\_\_ (verb) food chains and outcompete native \_\_\_\_\_ (noun) for resources. This could eventually cause \_\_\_\_\_ (adjective) species to become threatened or extinct.

# Entanglement Crossword









Wildlife can get tangled in litter as they swim through the water or walk along shorelines.











Complete the crossword below to identify types of litter that can cause entanglement.



## Across:

- 3. Fishing 
- 4. Charging 
- 6. Fishing 
- 8. Fishing 
- 11. Balloon 
- 12. Packing 
- 13. Crab 
- 14. Bed 

## Down:

- 1. Rubber 
- 2. Dental 
- 5. Six-pack 
- 6. Clothes 
- 7. Plastic 
- 9. Backpack 
- 10. Christmas 
- 12. Twist 

# What do you throw away?

The best way to reduce the amount of trash that ends up as litter and marine debris is to cut down on the amount of things we throw away in the first place.

It can be helpful to take a look at what you throw away and then decide how you can reduce the amount of trash you produce.

## Conduct a Trash Audit

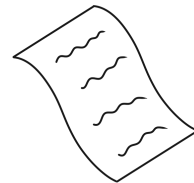
In this activity, you will first collect data about the trash that accumulates in your home or classroom. You will then use this information to commit to **1 action** that will reduce the amount of trash you produce.



**Note:** Before you begin, get permission from an adult.

## Materials Needed



- A tarp or plastic table covering (empty trash bags also work)
- Thick, washable gloves with rubber palms and fingers, sometimes called “rubberized garden gloves” or leather work gloves
- Handouts from your city or county that describe what materials can be composted and recycled (visit your city’s or county’s website to download)
- A pen or pencil



## Collect Data

1. Save 1 day’s worth of trash (including recycling and/or compost) in your home or classroom.

### Important:

- Do not save bathroom trash. 
- Make sure everyone participating wears at least 1 thick glove with rubber palms and fingers or a leather work glove. Only touch trash when wearing safety gloves. 

2. Dump all the trash onto a tarp on the ground or a table covered in plastic.

**Tip:** You could do this outside.




3. Look carefully at the trash and make initial observations.

4. Sort the trash into the 4 categories listed below. Use handouts from your city or county to help you decide what belongs in each category. (Look for these handouts online.)

- a. Compost
- b. Recycling
- c. Reuse
- d. Landfill



5. Count how many pieces of trash you have in each category and record your data below.

	<b>Number of pieces of this type of trash</b>
<b>Compost</b> 	
<b>Recycling</b> 	
<b>Landfill</b> 	

Look over all the trash items you collected. What can you do to reduce the amount of trash you produce? Brainstorm at least 5 ideas here:

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Look over your list above. What is **1 action** you can take next week to reduce the amount of trash you produce? **For the next week I will:**

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# Reduce

Be mindful of ways you can reduce how many items you throw away each day. Below is a list of things you can use to reduce waste.

✓ Put a check next to each item you already have:

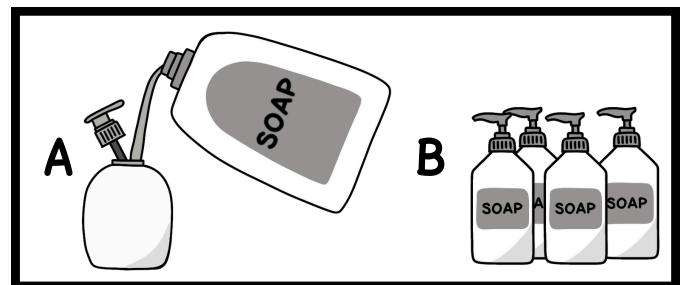
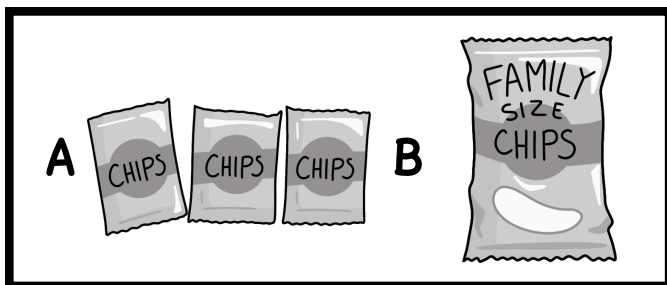
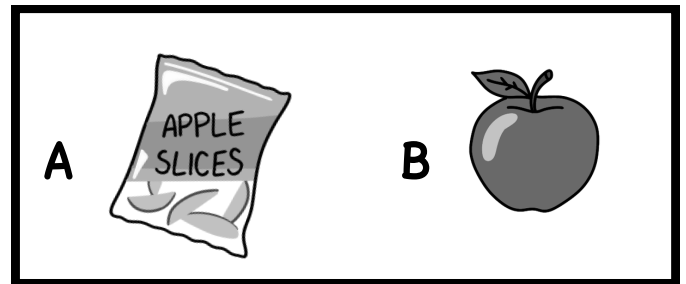
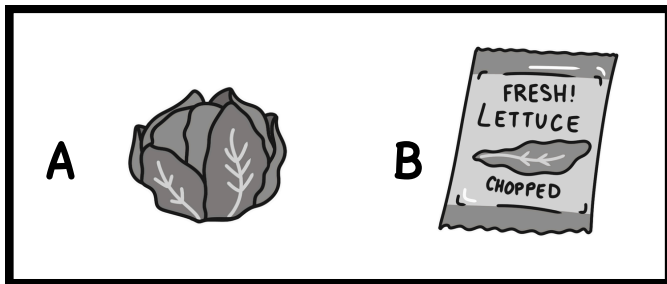
- |   |   |
|---|---|
| <input type="checkbox"/> Reusable grocery bag  | <input type="checkbox"/> Reusable cup for hot drinks             |
| <input type="checkbox"/> Reusable straw        | <input type="checkbox"/> Reusable water bottle                   |
| <input type="checkbox"/> Reusable plates       | <input type="checkbox"/> Reusable food containers                |
| <input type="checkbox"/> Cloth napkins         | <input type="checkbox"/> Cleaning rag (instead of paper towels)  |
| <input type="checkbox"/> Reusable silverware   | <input type="checkbox"/> Bar soap (instead of bottled soap)      |

What is one thing you can do to make sure you use at least one of the things listed above regularly?

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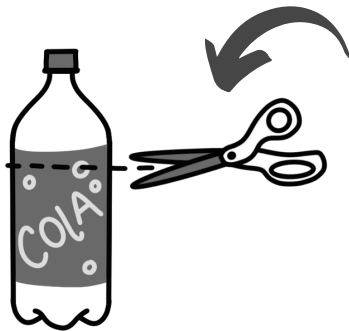
Thinking about packaging is another way to reduce the amount of trash you produce. For each option below, circle  the option that uses less packaging (and creates less trash).



# Create Planters

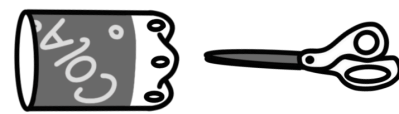
Instead of throwing something away, find another use for it! Creating planters is a great way to reuse items. It also saves you from buying a new pot! Follow the directions below to create a planter out of a 2-liter bottle.

**Step 1:** Gather your materials: 1 2L bottle, scissors, soil, seeds, a plate

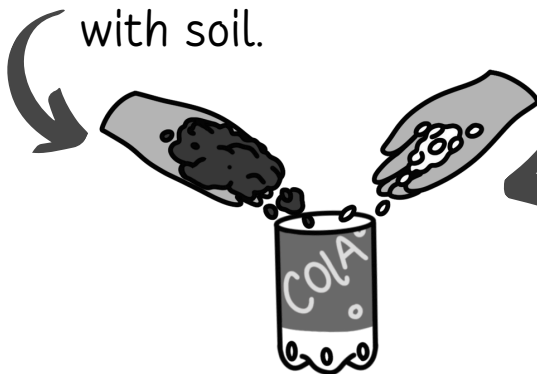


**Step 2:** Cut off the top of the 2L bottle.

**Step 3:** With the scissors closed, poke a few holes in the bottom of the bottle.



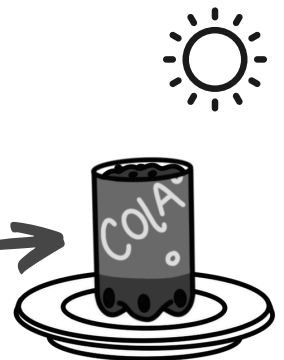
**Step 4:** Fill it with soil.



**Step 5:** Plant a few seeds.



**Step 6:** Place the planter on the plate in the sun.




**Step 7:** Water the seeds. Continue watering as needed so the soil stays damp.




**Step 8:** Wait for the seeds to sprout and enjoy your plant! 18

# Match!

What should go in the trash can? What should be recycled?  
 Draw lines  to the bins below to show where each item belongs.

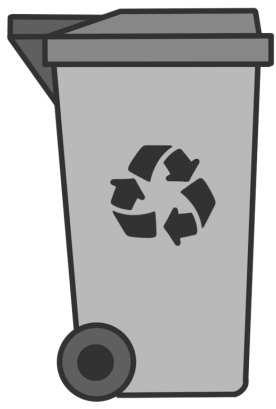


### Recyclable Items:

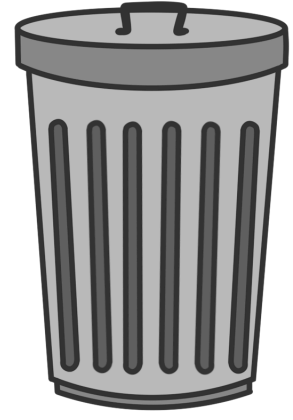
- Plastics with the Symbol  & #1-7
- Glass Bottles & Jars
- Cartons
- Metal
- Paper
- Clean Cardboard

### Trash Items:

Everything else!



**MIXED RECYCLING**



**TRASH**

**Answers:** Recyclables - soda can, glass jar, juice carton, water bottle, cereal box, newspaper, tuna tin, tissue box  
 Trash - pizza box, plastic bag, to-go container, cookie wrapper, toothpaste tube, used tissues

# Anyone Can Pick Up Trash, Anytime, Anywhere



Create a simple trash clean-up kit that you can keep in your car or bookbag. With this kit, you will be ready to pick up litter anytime!



Where have you seen trash recently?

Describe an area where you could go to pick up trash.

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## THINGS YOU'LL NEED:

A bag that can hold the trash (any size)



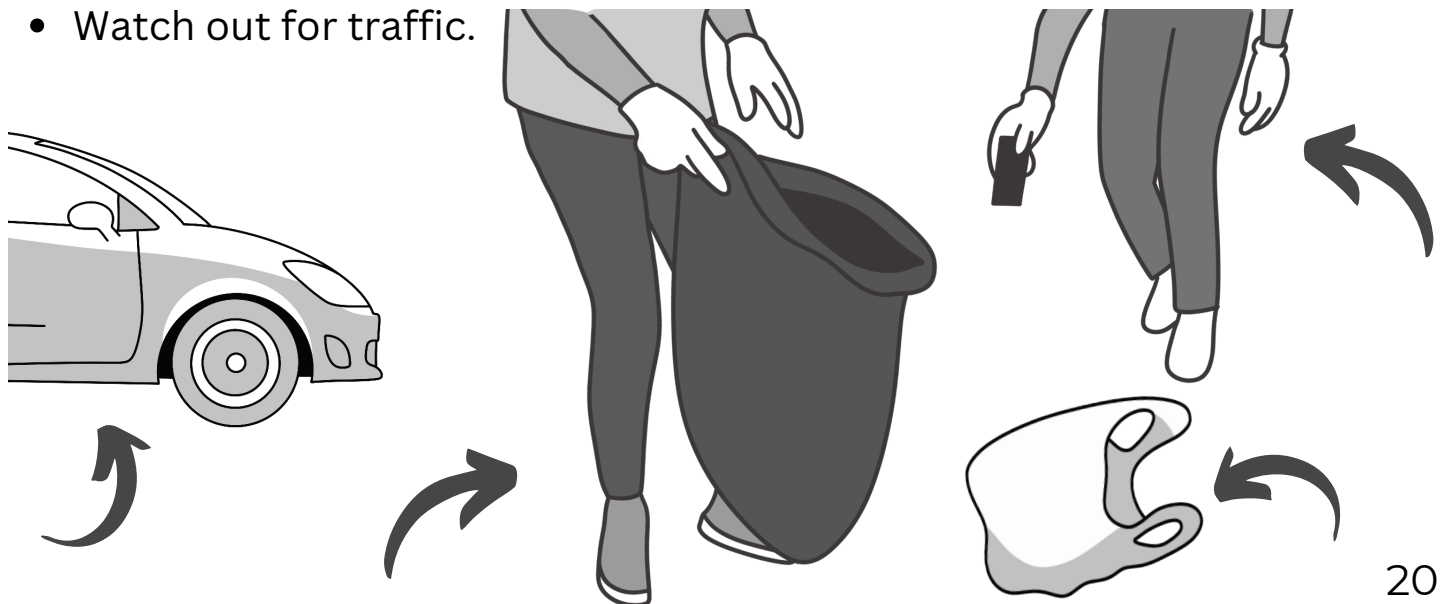
1 or 2 gloves with a rubberized palm or a leather work glove



The next time you see litter, use your trash clean-up kit to pick it up!

## WHEN YOU PICK UP TRASH, MAKE SURE YOU ARE SAFE:

- Tell an adult what you plan to do and where you plan to be.
- ONLY touch litter when wearing a glove.
- If an object looks sharp or unsafe, ask an adult for help.
- Watch out for traffic.



# What do you want to remember?

By completing this activity book, you learned A LOT about the issue of trash. You also learned about many actions you can take to help reduce the amount of trash that ends up where its not supposed to be.

What are 3 things you want to remember?

1. \_\_\_\_\_  
\_\_\_\_\_
2. \_\_\_\_\_  
\_\_\_\_\_
3. \_\_\_\_\_  
\_\_\_\_\_

# What do you want to learn?

There is always more to learn. What else would you like to learn about the issue of trash? Write down 3 questions:

1. \_\_\_\_\_  
\_\_\_\_\_
2. \_\_\_\_\_  
\_\_\_\_\_
3. \_\_\_\_\_  
\_\_\_\_\_

# Sketch Page

Draw and color whatever you'd like here!



# Sketch Page

Draw and color whatever you'd like here!



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**GULF  
TRUST**