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Will you help to strive to plastic free oceans?

Education toolkit for reducing plastic waste in our oceans

Lesson plans for students 6-12 years

Welcome

Welcome, and thank you for participating with the education lessons about plastic pollution.

The oceans are being negatively impacted by human activities and some are even fatal for marine ecosystems. One of the reasons is due to the high risk of plastic pollution. Plastic waste is being found in every ocean and even in the deepest parts of our earth. The health of our oceans is decreasing, and help is needed. More knowledge and awareness need to be created in order to strive to a sustainable living. The next generation of children need to be aware of their plastic use and how to reduce the effects on the marine environment. These lessons will hopefully gain the children more knowledge to make a change.

Thank you for helping and please share with others!



Lesson 1: Understanding plastic waste problem

Explanation

The first lesson teaches the children everything that they need to know about plastic waste in our oceans. Firstly, it is important for the students to understand the plastic problem, and secondly about how much plastic comes into our oceans every year. This lesson begins with a story and afterwards there are some questions and games.



Story

In a city called Semarang in Indonesia, there are two best friends living. Their names are Adinda and Boy, and have been friends for as long as they can remember. Every weekend they are meeting up to go play in the suburbs. One day they went playing on the beach and played a game who is the fastest. While they were running Boy fell over a plastic bottle. "Ouch, that hurts" screamed Boy. "What is this doing here?" he asked. Adinda told him that many people throw their plastics out on the beach and in the water. What Boy didn't realize is that when he looked around, he saw plastic everywhere. He saw plastic bags, straws, bottles, cigarette buds and even lost flipflops. Adinda saw him looking and said; "around 8 million metric tons of plastic are coming into our oceans each year. Which is more than the weight of every blue whale in the ocean combined!".

"Wow" said Boy surprised. "That is a lot of plastic but why does it stay here on the beach and not just disappear?" he asked. Adinda told him plastic is not biodegradable which means it doesn't just vanish. The plastics floats on the ocean currents around the world and appears in every ocean. It is found in the Atlantic, Indian and even Pacific Ocean. It is even found in the ice of Antarctica and Antarctic and on the seafloor as far as 11 kilometres deep! "It can stay there for centuries" says Adinda.

They continued walking along the coastline. Boy found a really tiny piece of plastic. He asked; "how does it come one is big and the other really small? Adinda told him those small plastics are called micro plastics. Microplastics are particles smaller than 5 millimetres and are being found in the water column and on the seabed. Plastic never totally disappears it is only getting smaller." added Adinda.

While Adinda and Boy continued walking on the beach, there was a huge pipe laying in the sand which comes from the city. A lot of water mixed with plastics are coming out of the drain. Boy looked surprised. "How does the plastic end up in there?" he asked. Adinda said; "many people throw their plastic rubbishes such as bags and bottles out on the streets and it ends up in the storm drains. This could lead to clogging and cannot manage with a huge amount of water. Due to climate change huge amount of rainfalls enter our city. This can damage our homes." Boy was really quiet. Adinda asked; "what is wrong?" Boy said; "I... I... I don't know what to say, I feel really sad that this is happening". This is a recent experience from the two friends and occurs every day.



Questions:

1. What is the most common littered plastic product in the world?

2. What is plastic waste?

3. Where does all the plastic end up in?

4. What are microplastics?

How long until it's gone?

How long will it take for different types of litter to decompose? Put in the timeline the correct types of litter under each bar.

Plastic bottle

Tin can

Cigarette filter

Milk cartons

Plastic bag

Banana peel

Glass bottle

Bus ticket

Disposable diaper

Batteries bottle

2 weeks

4 years

20 years

100 years

500 years

5 weeks

5 years

50 years

450 years

1 million years

Crossword puzzle

Every year an estimate of 8 million metric tons of plastic waste is disposed into our oceans. In this game there are multiple objects hidden which are disposed into our oceans. Find them all!

Cigarettes **Fishing nets** **Shoe** **Trash bag** **Doll**
Bottles **Diaper** **Soda can** **Straw** **Cup**

W	A	R	T	S	K	G	H	E	S
O	N	C	L	H	D	B	I	E	O
S	B	U	F	M	Q	O	T	O	D
R	H	P	U	V	E	T	L	R	A
T	D	O	W	Z	E	T	B	L	C
K	S	J	E	R	V	L	D	M	A
R	E	P	A	I	D	E	A	S	N
E	N	G	I	N	C	S	W	G	P
F	I	S	H	I	N	G	N	E	T
C	J	G	A	B	H	S	A	R	T



Lesson 2: Understanding and analyzing the effect of plastic waste on marine ecosystems and humans

Explanation

In this lesson, the students will learn about the effects of plastic waste in marine ecosystems. The children need to understand the circumstances and what it will do to marine species. But, also what about us? Plastic waste is also dangerous for the human health. The students need to analyse the problem. This lesson begins with a story and after that there are some questions and games.



Story

Adinda and Boy are walking along the shoreline and suddenly they see something small moving in the distance in the sand. When they get closer, they released that it is a baby turtle. Boy noticed that the baby turtle has something around its neck. "What is that, Adinda?" asked Boy. "Oh no, that is a plastic wrap from a tin can around his neck. We have to remove it because the turtle is stuck and barely breathing." says Adinda concerned. Adinda gently lifts the baby turtle up and removes the plastic and puts him down. The turtle looks really happy and he quickly moves to the water and swims away. "Luckily we saved that turtle" says Boy proud. Adinda says; "but the baby turtle needs to watch out because they regularly ingest plastic bags because of the resemblance to jellyfishes, which are a common prey for these predators".

"How do birds get plastic in their stomach? They are flying in the sky and there is no plastic." asks Boy confused. Adinda smiles and says; "plastic waste is buoyant which means it floats on the ocean's surface. Sea-birds feed from these surfaces and have a higher chance of ingesting plastic waste. "Oh no that is awful" says Boy.

Adinda's father is a fisherman who leaves every morning to go fishing for the mini market. Fish is a main source of food around the world. "Did you know that we eat plastic too?" asks Adinda. "What! No we don't eat that, I don't like plastic" says Boy. "Well, fish ingest microplastics and we eat the fish, so yeah you eat plastic too Boy" says Adinda. Plastic pollution is also putting the human health in danger. "Microplastics are also being found in tap water, beer and even sea salt" adds Adinda.

"Also, my dad teaches me to not lose my fishing gear" says Adinda. Each year, almost 13,000 fishing nets are lost in our oceans. These are also called ghost nets. "Because when they are in the water, they still entangle turtles, whales, dolphins and fish" says Adinda disappointed.



Did you know?
25% of fish in Indonesian market
are contaminated by plastic



Questions:

1. Why do marine animals eat plastic?

2. How can plastic harm marine animals?

3. How can plastic enter human bodies?

Find the differences

Look for the 10 differences in the right picture. Search for items that does not belong in the ocean or the animals that disappeared.



Credits: Damlanur Bilgin

Questions:

Put a circle around the correct answer.

- How many percent of seabirds have plastic in their stomach?
 - 50%
 - 70%
 - 90%
- In which year is it predicted that there will be more plastic than fish in the ocean?
 - 2030
 - 2050
 - 2100
- How much percent of all plastic waste in the ocean comes from fishing gear such as nets and ropes?
 - 10%
 - 20%
 - 40%

Lesson 3: Acting to make a change about plastic waste

Explanation

In this lesson, the students will learn what they can do about all the plastic. They will learn about the three R's; reduce, reuse and recycle. What can the children do to reduce plastic pollution? They need to act to make a change. This lesson begins with a story and after that there are some questions and games.

Story

Adinda tells Boy that plastic production will continue to grow which means the pollution to the marine environment will continue to increase. "If plastic waste is going to grow at this rate, the estimate plastic pollution will be three times bigger in 2060" says Adinda. "Wow that is a lot" says Boy while drinking his juice.

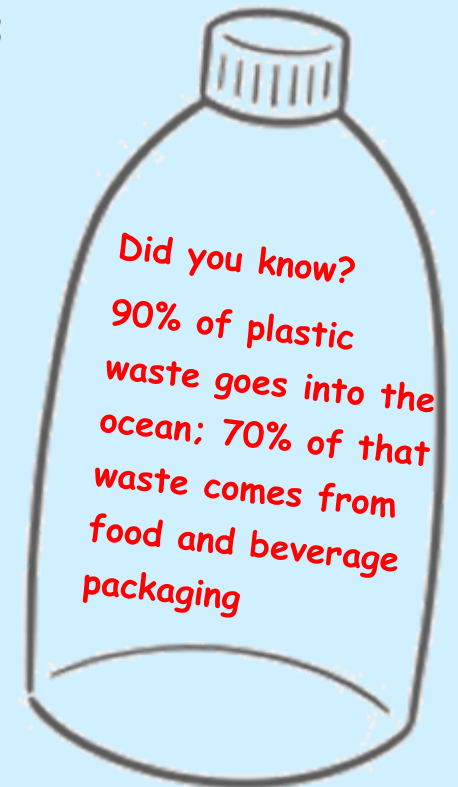
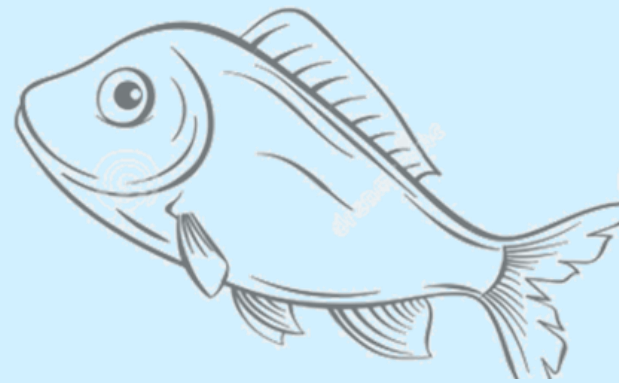
"What am I supposed to do with my straw that I used for my drink"? asks Boy. "Put it in the trash can because there are already 8.3 billion plastic straws on the all beaches around the world. If you throw it on the beach it can get stuck in the nose of a sea turtle" says Adinda.



"Why is there so much plastic in Semarang?" asks Boy. "Semarang is ranked as the world's largest producers of plastic waste into the ocean, almost 3.2 million metric tons. Waste from houses is the largest source of inorganic waste because not much plastic is being collected or there aren't many containers." says Adinda. "How can I help? What can we do to reduce the plastic waste?" asks Boy. Adinda says; "There are many solutions to fix the plastic waste problem".

"We can burn the plastic" yells Boy. "Yes, that is a solution!" says Adinda excited. She continues; "But you have to be careful. You cannot be around the fire because when plastic waste is being burned, toxic substances are being released. Exposure to these types of chemicals can get you really sick". "Oh no, what else can we do?" asks Boy. "A good method are the three R's; Reduce, Reuse and Recycle. You have to reduce your plastic use. If you use less plastic, there will be less plastic waste. And if you use plastic, make sure that you can use that again.

If that is not possible you can recycle. Recycling is an excellent method for conservation of resources and disposal of plastic waste. It is a way to reuse plastic waste" says Adinda.



"I can make it easy for you." adds Adinda. She grabs a piece of paper from her schoolbag and starts writing. "I will make you a list on how to reduce plastic waste. You can share this with everyone so that they can help too. Here are ten ways for you to make a difference!" she says.

1) Use a reusable drinking bottle. You can buy it in many colours and you can use this all the time. You can refill it with drinks from the shop or with water and it will produce less plastic waste.

2) Eat a lot of fruit. Instead of eating sweets or chips that is wrapped in plastic, eat fruit. Fruit is healthy and has no plastic packaging.

3) Use a recycled bag. Bring your own bag to the market. A plastic bag is used for just 12 minutes and then it is thrown away but reusable bags you can use it all the time.

4) No plastic straws! Animals may suffocate, such as turtles, in plastic straws. If you want to use straws, use reusable straw made from metal or bamboo. Don't use them at school or ask for a paper straw.

5) Use reusable food containers. Use for your lunch at school a reusable container. Don't use any plastic by not bringing food in plastic wraps.

6) Throw plastic in a trash can. If you have used any plastic, put it in a container. Don't throw it in the water or on the street.

7) Do a beach clean-up. Go with your friends or family to the beach and start picking up some plastics from the beach and out of the water. Be safe!

8) Reduce your single use plastic. Don't use plastic bags, bottles, cups, straws that you use once and then throw it away. Do this by refusing single use plastics that you don't need.

9) Collect on the playground plastic items. Look for them with your friends and put them in the trash can.

10) Spread the word. Tell your family and friends at home. Tell them about the effects on marine species and make them aware of

Questions:

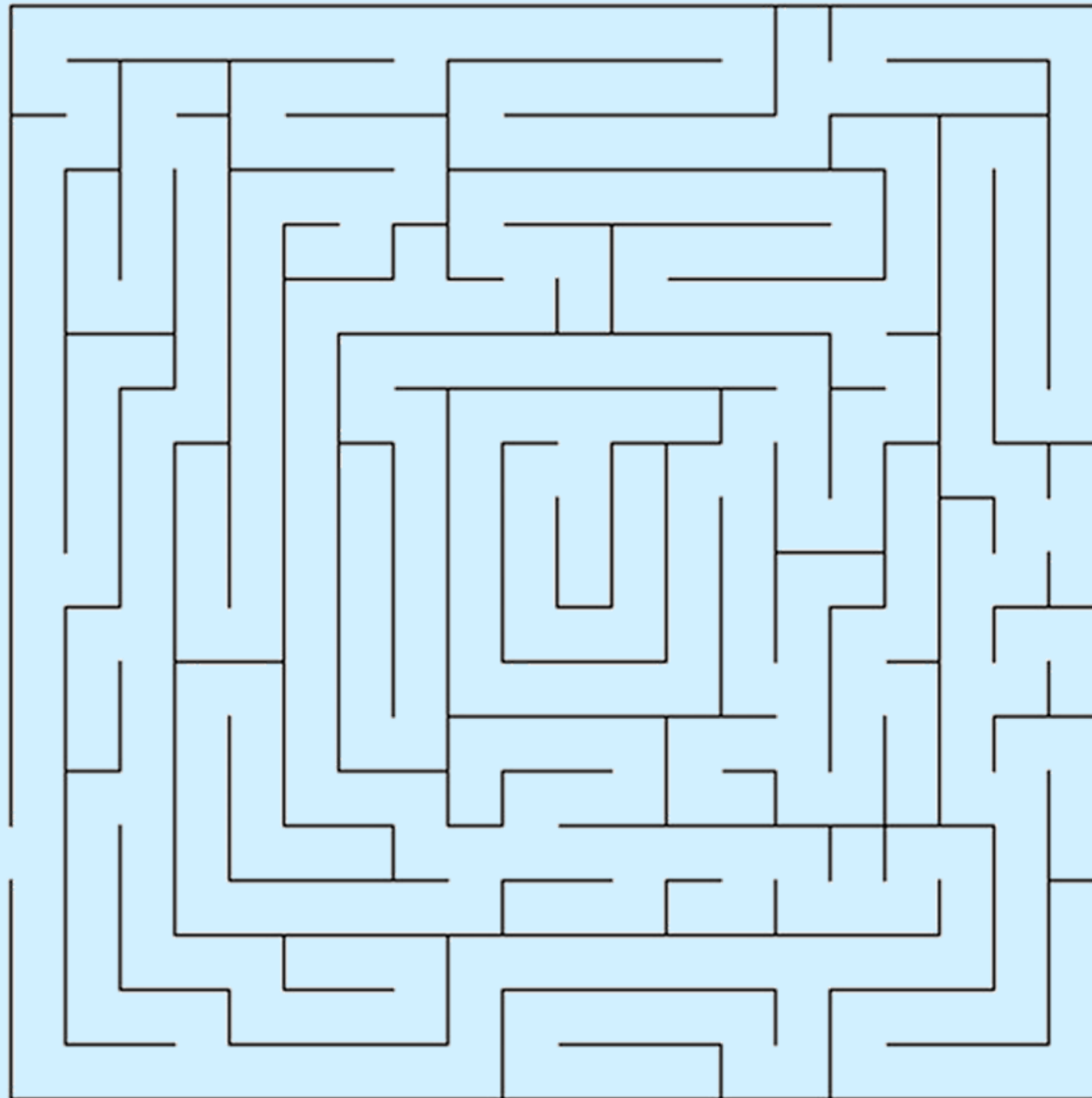
1. Which plastic items do you think can be recycled?

2. What is a good alternative for a foam coffee cup?

3. What can you use to pick up plastic waste?

Labyrinth

Help the fish swim from the polluted ocean to the clean ocean.



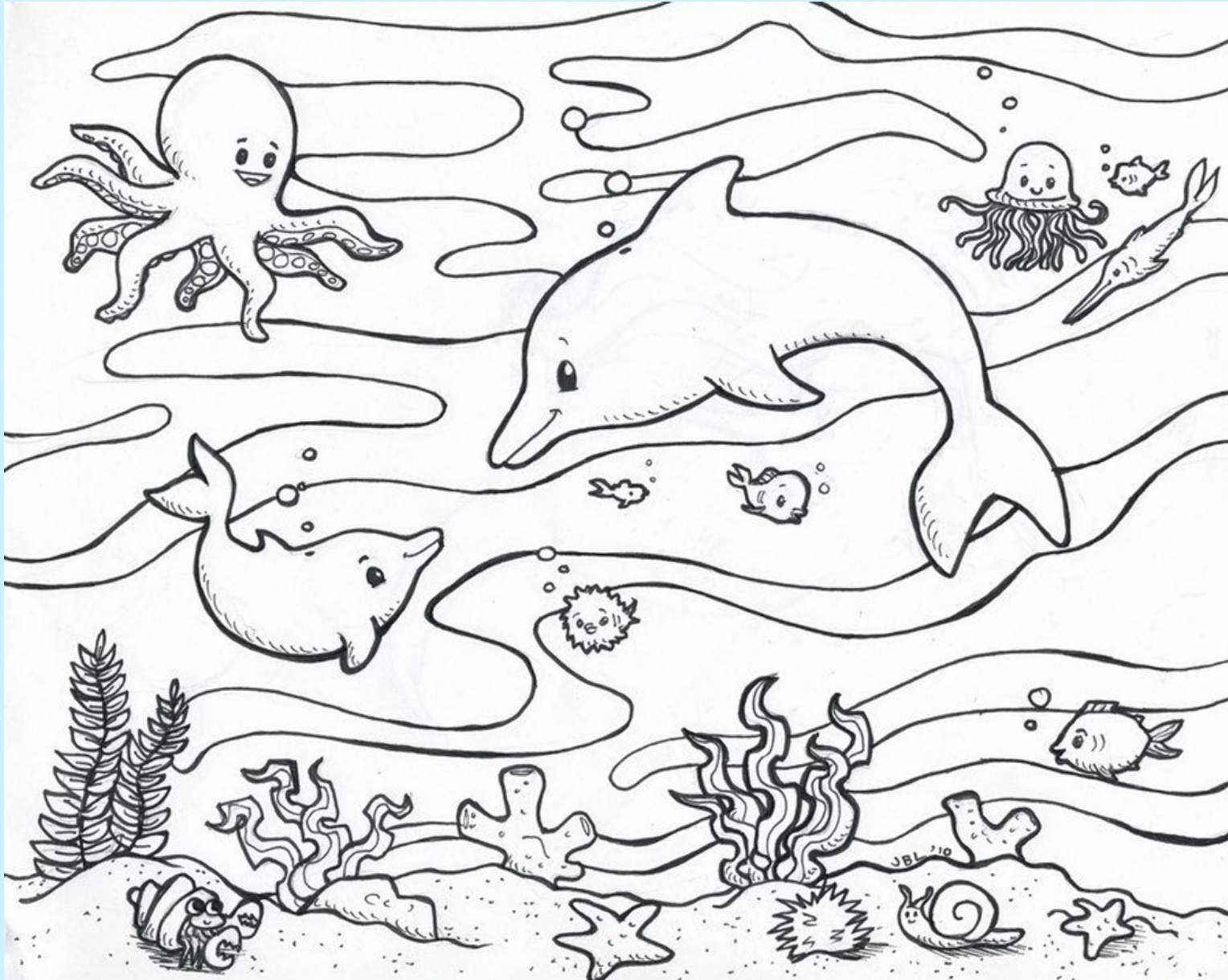
Drawing:

Look for three plastic items in the classroom or outside. Draw your findings below.



Drawing:

Colour the drawing of a clean and sustainable ocean.



Thank you!



Thank you for participating in the education toolkit about plastic waste in the ocean. Hopefully you will be more aware what plastic can do to our environment in a negative way and that you will start reducing, reusing or recycling plastic waste. Together we can save the ocean and live in a sustainable world with plastic free oceans.

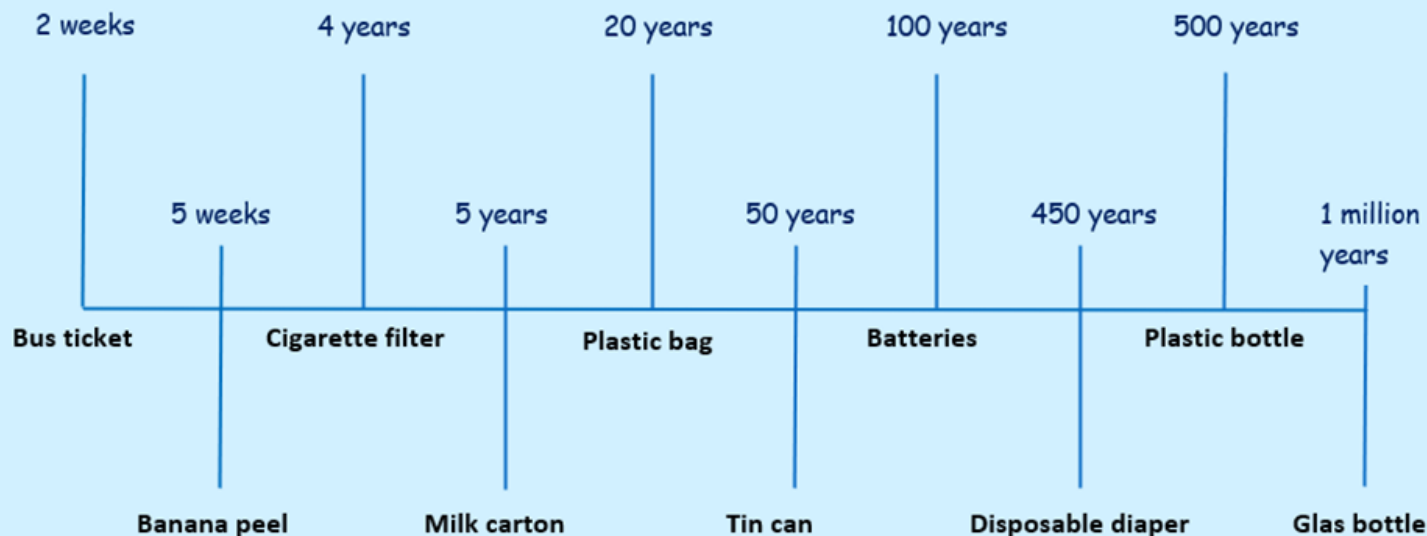


Answers:

Lesson 1:

- 1) Cigarette buds
- 2) Plastic waste is a pile of trash made out of plastic objects in the earth's environment that negatively effects animals, habitat and humans.
- 3) In the oceans
- 4) Microplastics comes from larger plastics and are small pieces of less than 5 millimetres long

How long until it's gone?



Answers:

Crossword puzzle

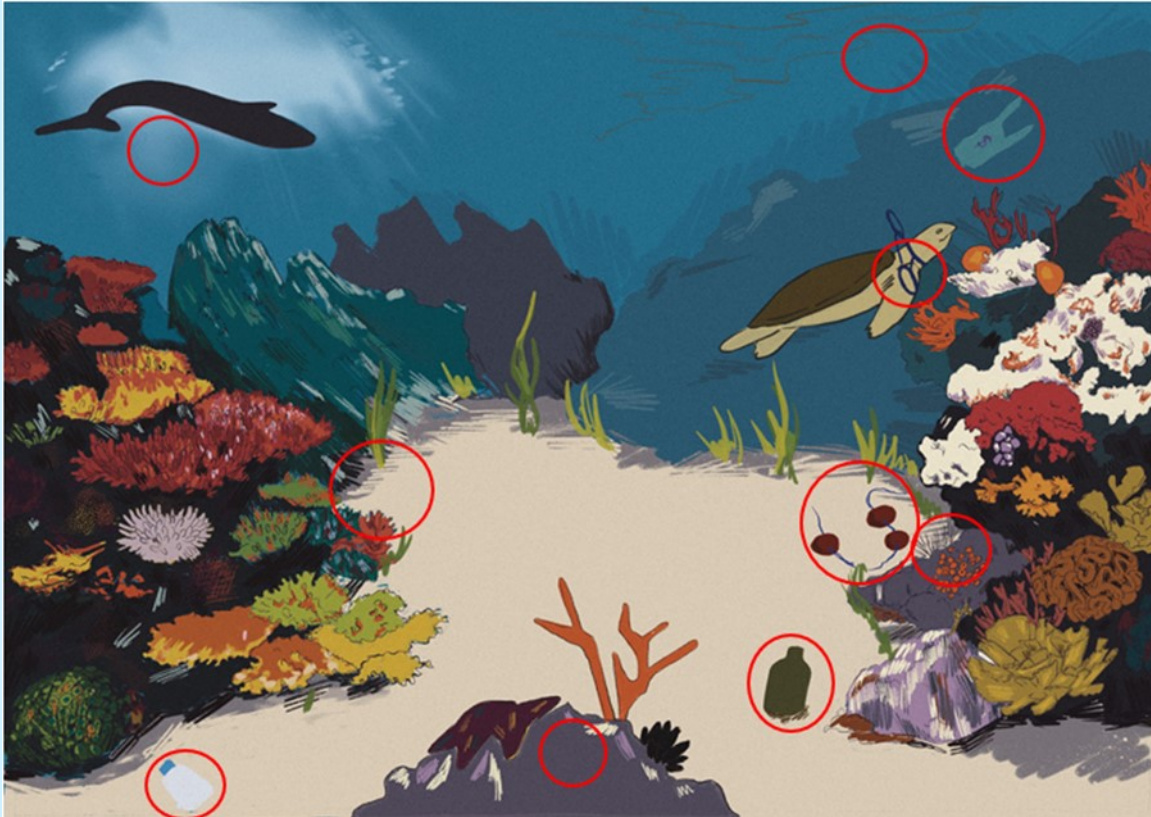
W	A	R	T	S	K	G	H	E	S
O	N	C	L	H	D	B	I	E	O
S	B	U	F	M	Q	O	T	O	D
R	H	P	U	V	E	T	L	R	A
T	D	O	W	Z	E	T	B	L	C
K	S	J	E	R	V	L	D	M	A
R	E	P	A	I	D	E	A	S	N
E	N	G	I	N	C	S	W	G	P
F	I	S	H	I	N	G	N	E	T
C	J	G	A	B	H	S	A	R	T

Lesson 2:

- 1) Animals mistake plastic for real food. They accidentally eat it because they don't know what plastic is. For example, the turtle eats plastic bags because that looks like jellyfish.
- 2) Due to infection, drowning, entanglement, ingestion or suffocation.
- 3) Microplastics may enter the human body through fish, tap water or sea salt.

Answers:

Find the differences



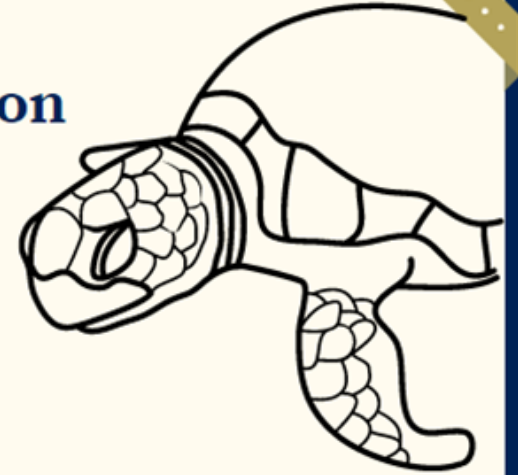
4) C

5) B

6) B

Certificate:

Certificate of Appreciation



This certificate is awarded to:

Name participant



for your participation and completing the program in reducing plastic pollution in Indonesia

Signature teacher



Name teacher



Teacher



A handwritten signature in blue ink, appearing to read 'Demi Adinda Klerkx'.

DEMI ADINDA KLERKX

Founder