Eco Kids planet

Primary School Resources

Oceans

PLASTIC POLLUTION PROBLEM

AMAZING OCEAN FACTS

OCEAN QUIZ

OCEAN CRAFTS AND PROJECTS

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ecokidsplanet.co.uk
41 Claremont Rd, Barnet, EN4 0HR

Amazing Ocean Facts

1

The oceans cover around 70% of the Earth's surface and are thought to hold over **95% of all the water** on the planet.

2

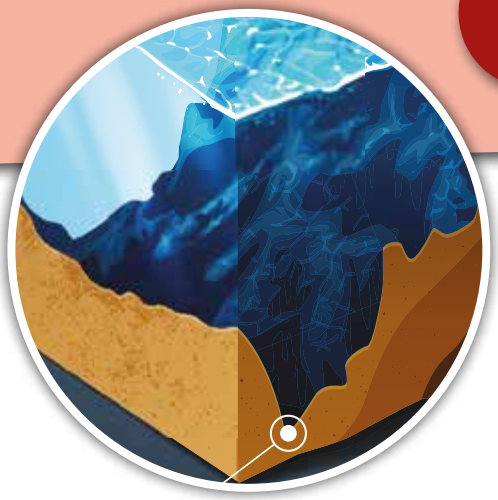
The Pacific Ocean is the largest of the Earth's five oceans and covers about 30% of the surface of the planet. **The Atlantic is the second biggest**, covering 21%.

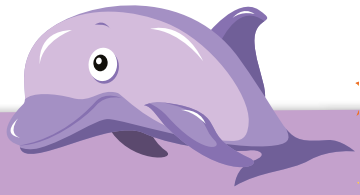
3

There are many magnificent underwater landscapes, including the deepest valley (**Mariana Trench** – 11,000m), the longest mountain range (**Mid-Oceanic Ridge** – 56,000km), the largest living structure (**Great Barrier Reef** – 2,600km) and the tallest mountain on Earth (**Mauna Kea** – 10,210m).

4

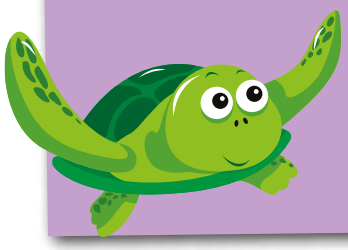
More is known about the surface of the moon than the ocean. Twelve people have walked on the moon but only three have been down to the **Mariana Trench**.

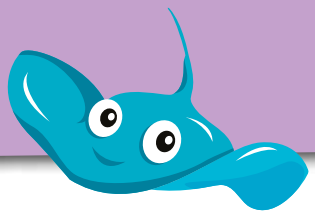




5

About 94% of life on Earth can be found in the oceans.





6

The ocean is **full of gold**! It is believed there are 20 million tons of dissolved gold in the ocean, and undissolved gold can be found encased in rock on the sea floor. If people could find a successful way to mine the gold, there would be enough for every person on Earth to have **4kg each**.

7

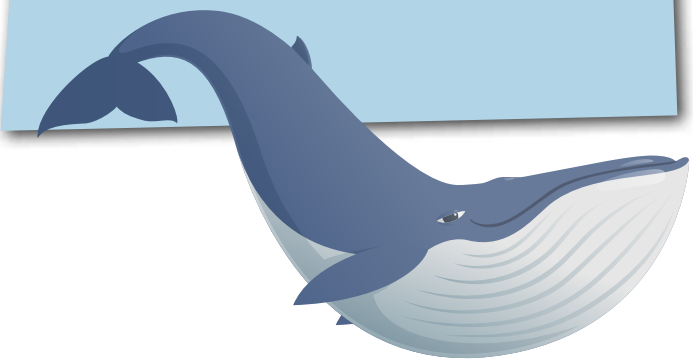
The ocean holds more **historical artefacts** than all the world's museums combined. Under the waves, there are clues and objects from ancient civilisations – an estimated **one million** wrecks, and, of course, fossils of animals and plants, which may have gone extinct millions of years ago.

8

More than **3.5 billion people rely on the oceans** for their primary food source. Fish are the greatest source of protein consumed by humans on the planet.

10

The ocean is home to the biggest animal ever known to have lived on Earth – **the blue whale** – as well as millions of the smallest, in the form of tiny microbes.

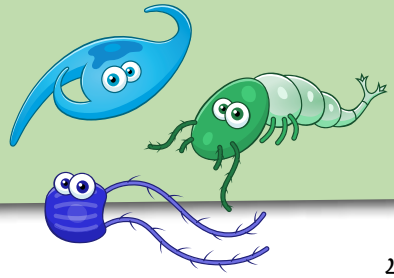


9

Scientists have identified and counted around 250,000 species in the ocean. It's estimated that there could be **up to one million species**, not including tiny plankton species.

11

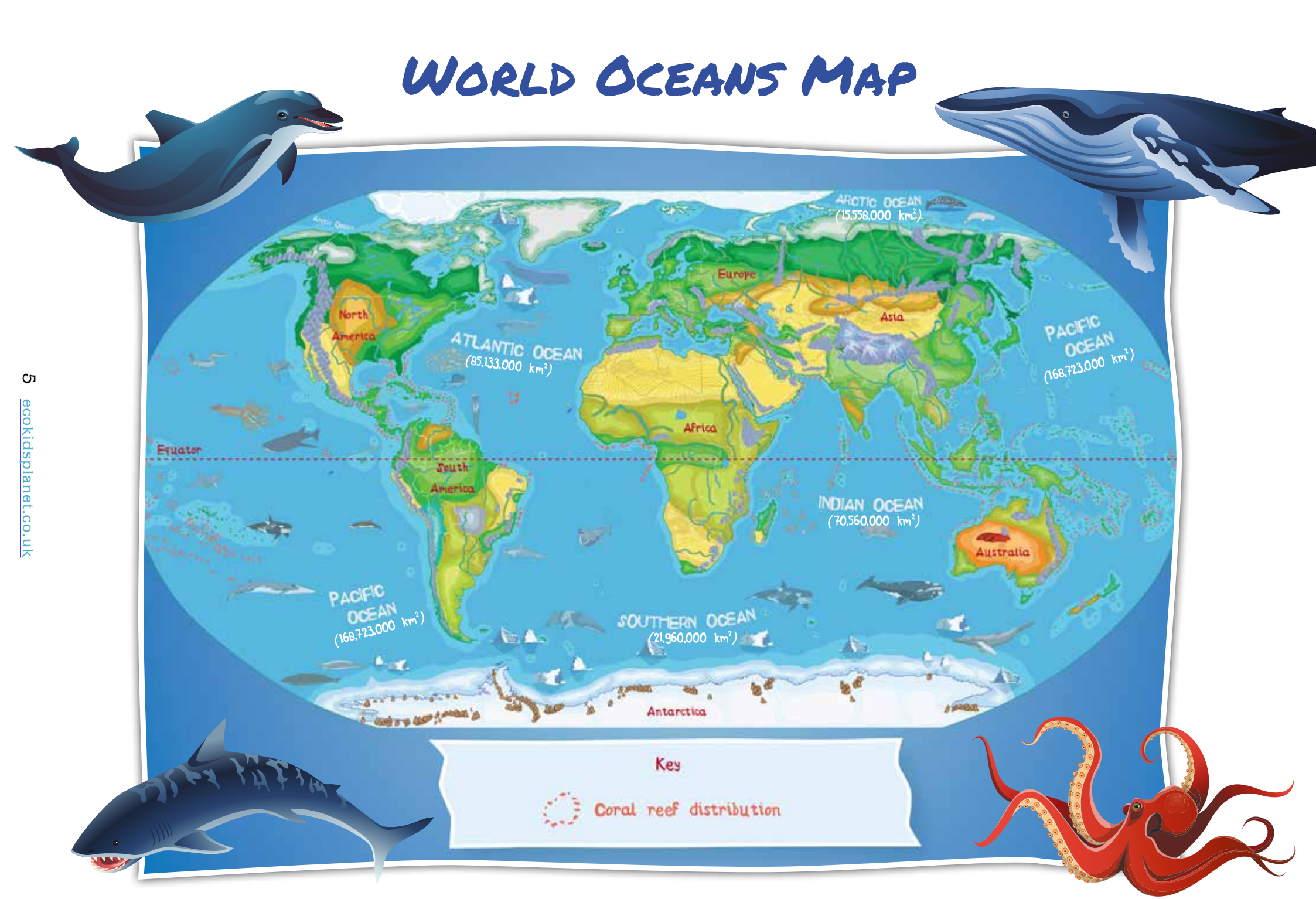
The oceans are full of tiny plankton. Phytoplankton (tiny algae) are thought to produce around **50% of the oxygen we breathe**. The word plankton actually comes from the Greek word for 'wanderer' and refers to all sorts of species that drift along on the ocean currents.



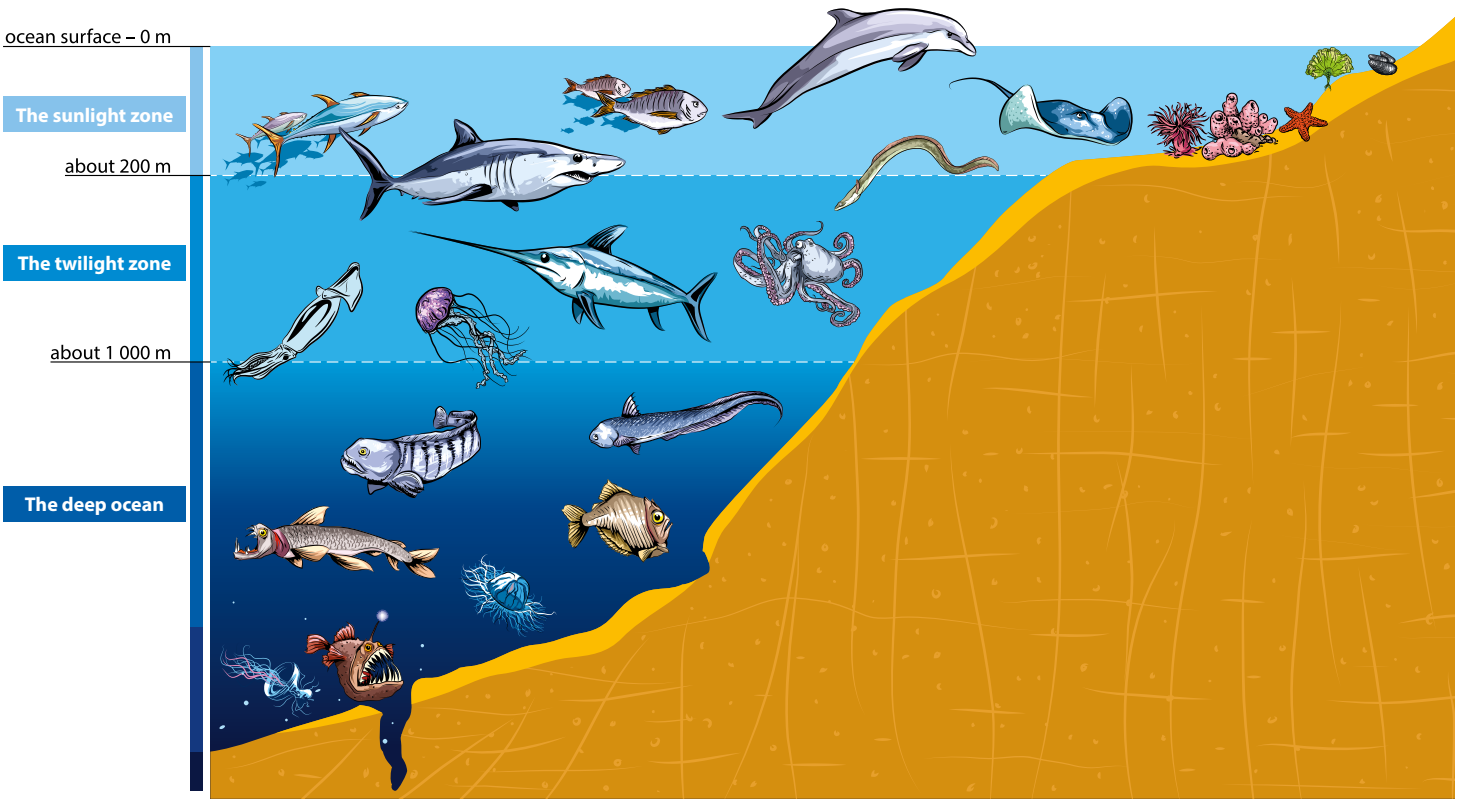
12

Earth is the only known planet or moon with **liquid oceans**. We sit in the 'Goldilocks zone' in the galaxy, where the conditions are just right for oceans to exist.

World Oceans Map



Ocean Light Zones



The ocean can be divided into three zones, based on the amount of light received.

- **The sunlight zone.** Also called the **euphotic** or **epipelagic** zone, this is the top layer, where photosynthesis can still take place. Typically, the sunlight zone extends to 200 metres deep. More than 90% of marine animals live in this zone.
- **The twilight zone.** Also known as the **mesopelagic** zone, it extends from 200 to 1,000 metres. Sunlight and temperature decrease rapidly with depth; there is not enough energy for photosynthesis to take place, so no plants live in this zone. The water has a lot less oxygen. Despite this, there is an abundance of life that has adapted to life in near darkness, cold water and high pressure.
- **The deep ocean.** This is the region from 1,000 metres deep to the ocean floor. No sunlight reaches that deep. The pressure is intense and crushing, and the temperatures are close to freezing. The deep-sea anglerfish is one of the many species in this layer that has its own light-producing organ to attract prey or a mate. Sperm whales hunt at these depths on occasion to prey on giant squid. The deep ocean is further divided into three zones: **midnight zone**, **the abyss** and the **trenches**.

Go to page 27 to create your own model of the different zones of the ocean!

Corals

Coral reefs are one of the natural wonders of the world. Colourful and bursting with life, reefs grow in clear, warm tropical waters. Built by tiny creatures called polyps, they can grow into super-structures visible from space.

What is a coral reef?

Coral reefs are living colonies made by billions of small, soft-bodied animals, called polyps. Polyps look like mini sea anemones, and have wavy tentacles attached to a stalk. Each polyp makes itself a cup-like skeleton – called a calicle – to protect its soft body. As a colony grows, their calicles gradually build themselves up to form a reef.

A CROWN-OF-THORNS SEA STAR FEEDS ON CORAL POLYPS

FUN FACT
Nearly a quarter of all living things in the oceans dwell in and around coral reefs. These multicoloured underwater wonderlands are sometimes called 'the ocean's rainforests', because so many different species live there.

How do they grow?

Reefs begin life when polyps attach to an underwater limestone rock. A single polyp reproduces (makes copies of itself) thousands of times. The calicles of each polyp link together to create a colony that acts as a single organism. Over time, many colonies become reefs. Coral reef structures can live for hundreds and thousands of years.

FUN FACT
Corals grow at a rate of about 13mm per year – slower than your fingernails!

TABLE CORAL

PILLAR CORAL

What do they eat?

Although some corals capture plankton and even small fish, killing them with their stinging tentacles, most corals have a hidden secret. They form a partnership with a microscopic algae called zooxanthellae (say "zo-oh-zan-thell-ay"). Zooxanthellae take energy from sunlight, just like plants, and nutrients from the seawater, and share them with the corals in which they live, giving them their magical colours and helping the coral polyps maintain their hard skeletons.

ELKHORN CORAL

...and what eats them?

Corals compete for space on a reef. They also have predators. The crown-of-thorns starfish – one of the world's largest – moves slowly across corals, grazing on the helpless polyps.

BRAIN CORAL

What type of corals form reefs?

Polyps are only a few millimetres wide and a centimetre tall, yet they build gigantic and extensive reef structures. The largest and most famous reef is the Great Barrier Reef in Australia, at 2,300km, which is, in the Coral Sea and runs down Australia's eastern coast.

There are many different types of reef-building coral. For example, **table corals** have a large, flat top, while **pillar corals** grow upwards like clusters of stiff fingers. The branches of the fast-growing **elkhorn coral** look like antlers, and the ridged surface of **brain coral** looks like a human brain! **Soft corals**, such as sea fans and sea pens, do not attach themselves to the reef but are anchored in surrounding mud or sand.

SEA FAN

FUN FACT
At over 2,300km long, Australia's Great Barrier Reef is the largest structure built by living organisms.

SEA PEN

What conditions do they need to grow?

Corals need shallow water – usually less than 60 metres – balmy temperatures, between 20°C and 28°C, and lots of sunshine. They like clear, moving water, low in nutrients and unclouded by sediments, and lots of microscopic plankton.

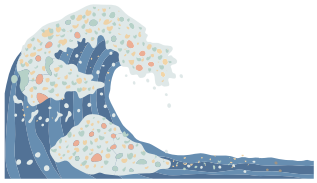
9 Appalling Plastic Pollution Facts

Plastic is everywhere, it lasts for ever, and it's choking up our planet and the animals that live here.

1

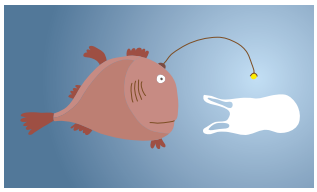
Plastic is a long-lasting material, which takes many hundreds of years to break down. It means it may stay in the environment, causing damage, almost for ever.

2



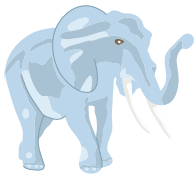
Plastic is broken down into smaller and smaller pieces – microplastic – without actually disappearing. There is more microplastic in the ocean than there are stars in the Milky Way.

3



Eventually, much of the plastic sinks to the sea floor. Plastic has been found on the seabed in every sea and ocean, even at depths exceeding 7,000m.

4

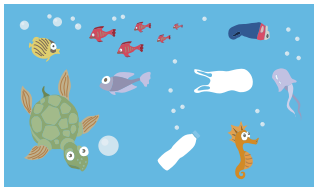


If the amount of plastic we produce each year was measured in elephants, it would weigh almost 30 million elephants!

5

Half of the plastic items we make are used just once, then thrown away. Enough plastic is thrown away each year to circle the Earth four times.

6

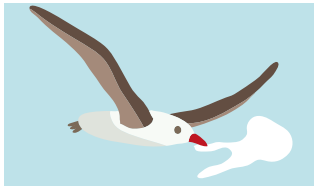


Eight million tons of plastic end up in the oceans every year. Experts predict that by 2050, the oceans will contain more plastic waste than fish.

7

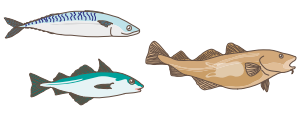
For every six water bottles we use, only one makes it to the recycling bin.

8



One million sea birds and 400,000 marine mammals die every year from plastic pollution in the oceans.

9



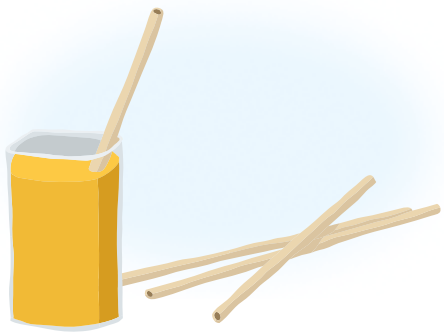
Plastic was found in a third of all fish caught in the UK. Nearly every seabird on Earth is eating plastic.

10 WAYS TO WAVE GOODBYE TO PLASTIC!

Ridding your life of plastic is far better than recycling it.

Here are some little tips on getting you through the day plastic-free:

1



No more plastic straws!

Swap plastic straws for a bamboo, paper or steel one. Keep it in your bag for when you're out and about.

2

Carry a reusable water bottle

One million plastic bottles are bought around the world every minute! That's a crazy number! Take a reusable water bottle with you. Lots of places will fill it with tap water or have water fountains for you to use.

3

Declare a plastic ban on your lunchbox!

Now this is one you can really take charge of. Show your parents who is boss and demand a ban on plastic items entering your lunchbox!

Mighty materials
A stainless steel lunchbox is lightweight, easy to clean, incredibly durable and as shiny as the stars.

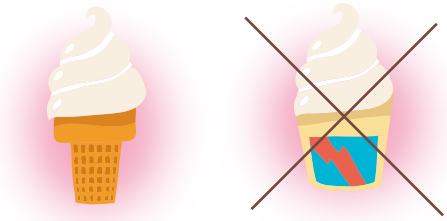
Bamboo power
Don't let plastic spoons creep into your lunchbox! Replace them with bamboo or wooden utensils.

Load up on loose vitamins
Flood your lunchbox with loose fruit, vegetables and salads. No need to buy plastic pots and packets.

Colourful wraps
Swap clingfilm and plastic sandwich bags for colourful reusable wraps.

Try new things
Swap plastic-packaged crisps for loose crackers, oat cakes and flatbreads.

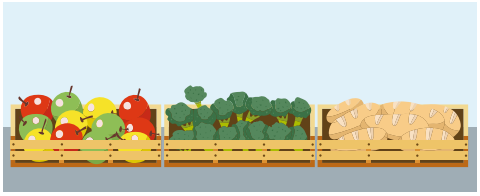
4



Eat more ice cream cones!

One of the yummiest ways you can help save the planet. Choose a cone or waffle over a plastic tub when you next order an ice cream.

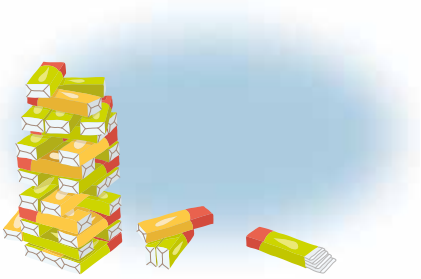
5



Buy loose fruit, vegetables and bread

As a consumer, you have the power to show supermarkets that you don't want everything wrapped in plastic. Purchase items that are loose or come in paper bags.

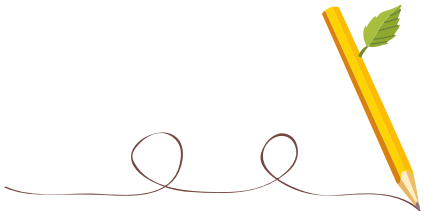
6



Check your chewing gum!

Did you know that almost all chewing gum is made of plastic? So when you're chewing gum, you're also chewing on plastic. Ditch the gum or swap it for a plastic-free variety from companies including Peppersmith, Simply Gum and Green Tree Gum Co.

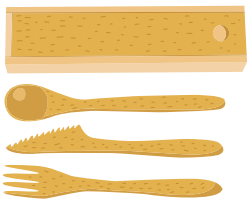
7



Avoid disposable plastic pens

In America alone, 1.6 billion disposable pens are thrown away each year. Swap felt-tip pens for crayons and chalk, and swap pens for pencils, refillable fountain pens or pens made from recycled plastic.

8



Take your own utensils

It's very easy to pick up plastic utensils out of habit, especially when on the go. Instead, pack your own. These can be cleaned and used again and again!

9

Swap your toys or buy second-hand

Swap your unwanted toys with friends, or buy toys from a charity or second-hand shop. Not only are you saving lots of plastic from entering landfill, but you never know what you're going to find!

10

Host a zero-waste party!

Send paperless invitations, make decorations from recycled goods, and ditch the disposable plates and cups. Transform your party bags with home-made treats or books, rather than plastic toys. Recycle your wrapping paper and compost any leftover food. There you have it: memorable, fun AND a plastic-free party!

Ocean Quiz

What can be found along the west coast of Scotland?

a Scottish penguins
b Deep coral reefs
c Great white sharks

1

Which is colder?

a Antarctica
b The Arctic

2

Where do penguins live?

a Antarctica
b The Arctic, including the west coast of Scotland

3

What is an atoll?

a Circular patches of reef
b Seagrass
c Sea fish

4

What is the biggest fish in the world?

a Great white shark
b Whale shark
c Sun fish

5

What area of our planet is covered by the oceans?

a Roughly half
b 70%
c A little more than half

6

The mighty salty waters of our planet are divided into how many oceans?

a Five
b Four
c Six

7

8 Which ocean is the largest?

a Southern
b Atlantic
c Pacific

9 Which ocean is the smallest?

a Southern
b Indian
c Arctic

10 Which ocean is covered with ice during winter?

a Arctic
b Southern
c Pacific

11 What are corals?

a Algae
b Salty water mushrooms
c Animals, relatives of jellyfish

12 Which is the largest sea turtle?

a Leatherback
b Green
c Desert tortoise

13 How deep is the Mariana Trench, the deepest part of the world's oceans?

a 8,484m
b 10,911m
c 2,146m

14 Which of these creatures is endangered?

a Humpback whale
b Blue whale
c Atlantic salmon

15 How long does it take for a plastic bottle to decompose (break down)?

a 10-20 years
b 100 years
c 450 years

Answers on page 28

I scored: _____

0-8	Ocean explorer!
9-12	Ocean enthusiast!
13-15	Ocean expert!

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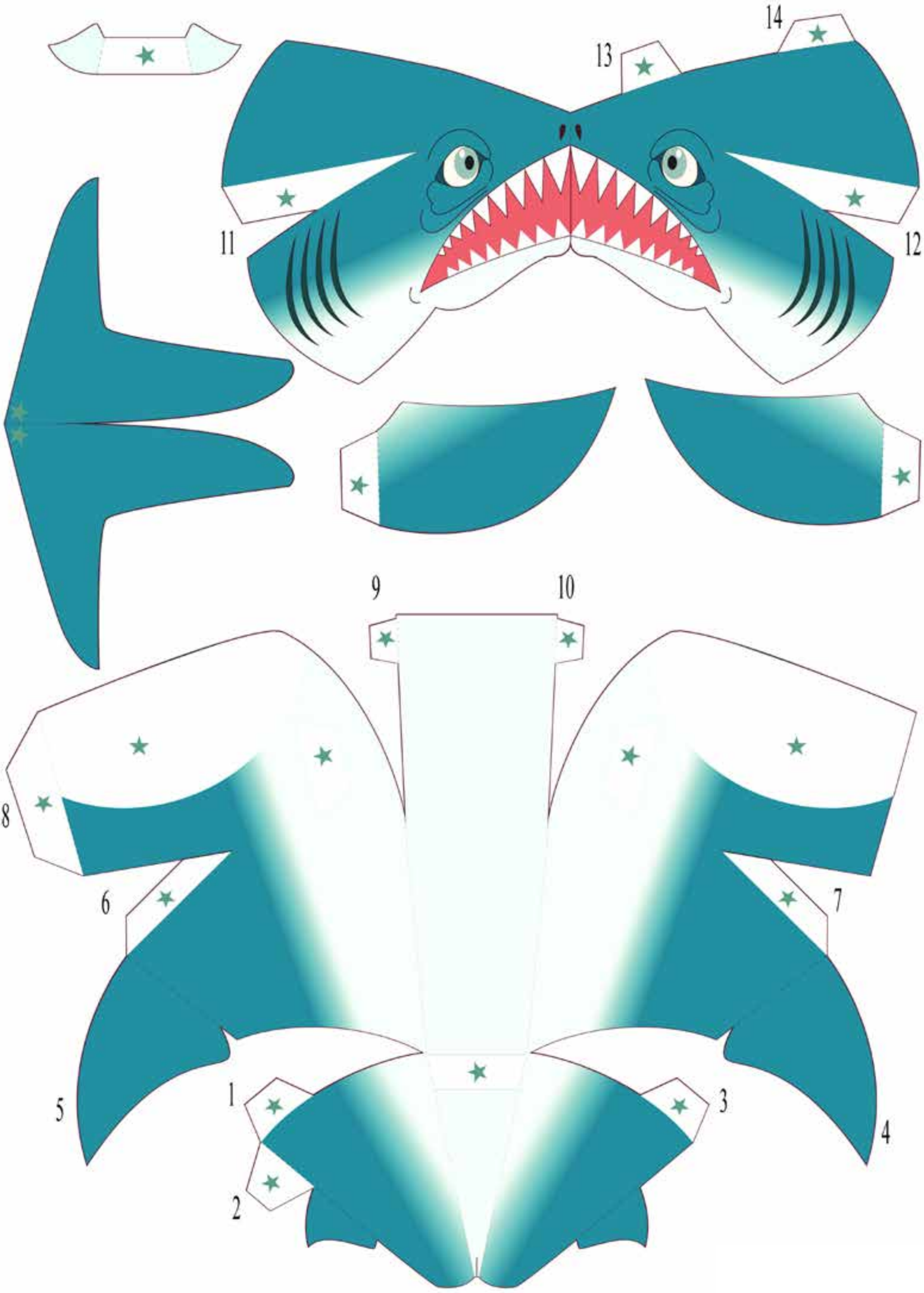
Ocean Crafts and Activities


14
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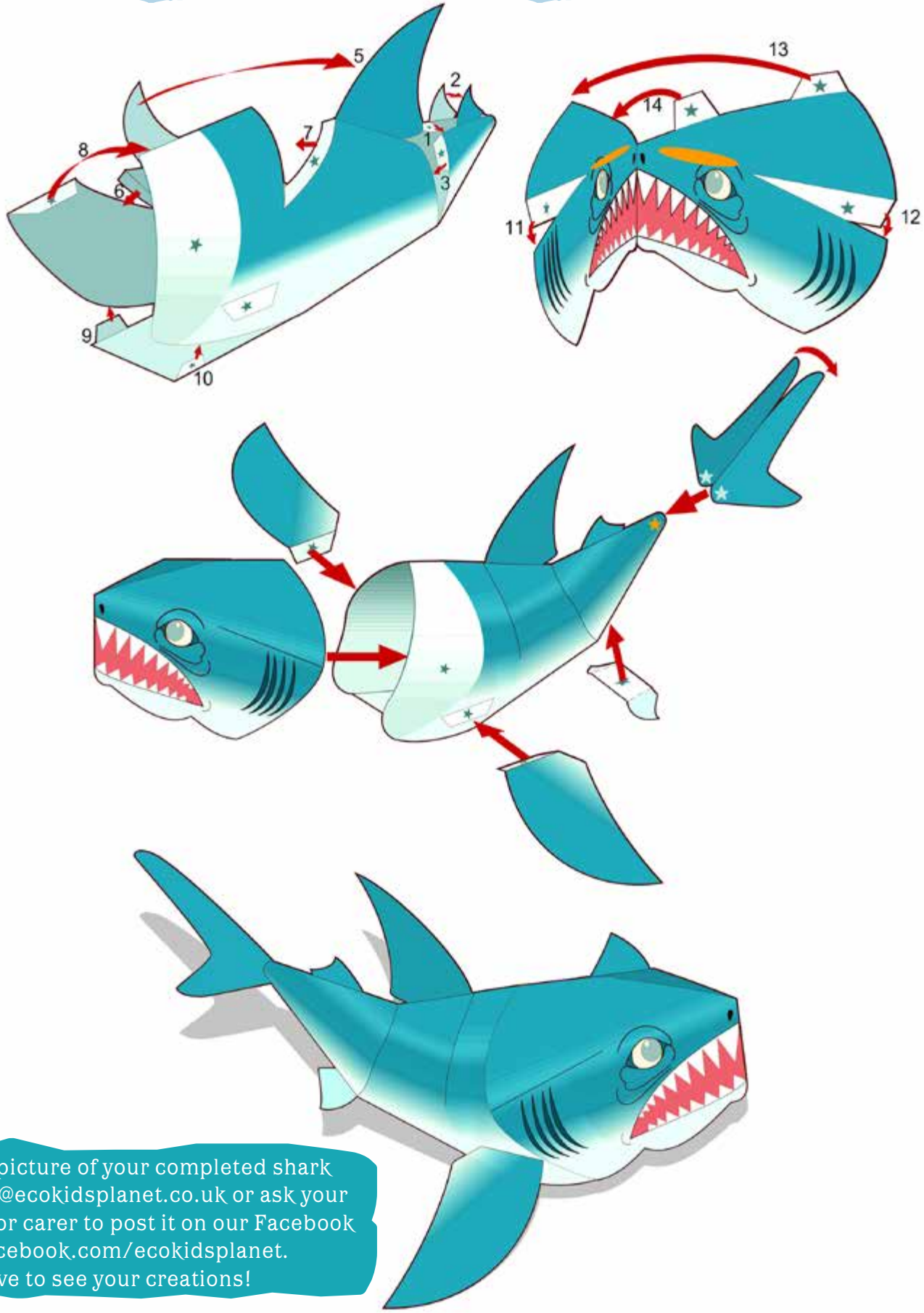
2

INSTRUCTIONS FOR MAKE-YOUR-OWN GREAT WHITE SHARK ACTIVITY

Print and cut out all the pieces on the previous page, then follow these step-by-step instructions to assemble your paper shark.



Send a picture of your completed shark to hello@ecokidsplanet.co.uk or ask your parent or carer to post it on our Facebook wall: facebook.com/ecokidsplanet. We'd love to see your creations!

Make Your Own:

JELLYFISH

WHAT YOU NEED:

- An egg box
- Coloured tissue paper
- Fabric scraps
- Ribbon, sequin string, lace, cord, etc
- Yarn
- Beads
- Glue
- Scissors

WHAT TO DO:

Step 1: Cut the egg box up into sections. Carefully make a hole in the top of one section with a sharp pencil point. This will be your jellyfish's bell.

Step 2: Cover your model with tissue paper or fabric. Glue it down and trim it to length. Make sure you can still see the hole at the top. Stick on lace, beads and other decorations if you wish. Set aside to dry.

Step 3: To make your jellyfish's tentacles, cut some lengths (measuring roughly 30cm) of ribbon, cord, sequins and lace, or strips of fabric. Lay them on the table next to each other.

Step 4: Cut a long piece of yarn and use it to tie the ribbons together halfway along their length. The yarn will also be your hanging thread. Thread a bead on to the yarn so it sits on top of the tentacles.

Step 5: Next thread the yarn up through the underside of the bell – the bead will stop the bunch of tentacles coming up through the hole. Take some more beads and thread them on the string at the top.

Step 6: Hang your jellyfish up to decorate your room; it will drift nicely when a breeze catches it.

Papercraft by Daisy Fox

How to Make a Paper Stingray

What you need:

- Coffee filter paper
- Water spray bottle
- Chunky felt-tip pens or bingo dabbers
- Scissors
- Glue stick
- Cloth or sheet to protect worktop
- Googly eyes

Before you start!
Because this activity involves soaking ink through paper, make sure you put down a cloth or sheet to protect your worktop!

Step 1: Fold your filter paper in half.

Step 2: Using different coloured dabbers or pens, colour in the filter paper. Have a go at adding spots and different patterns. Make sure you press down hard, so enough ink runs from your pen into the paper. Look closely at the filter paper – can you see how the ink is moving through it? This is called absorption. How cool!

Step 3: Spray your paper with water. Watch as all those dazzling colours swirl together.

Step 4: Gently push down with your finger to help the colours blend together.

Step 5: This is the hard bit – be patient! You need to wait for the paper to dry. Not doing so risks tearing it.

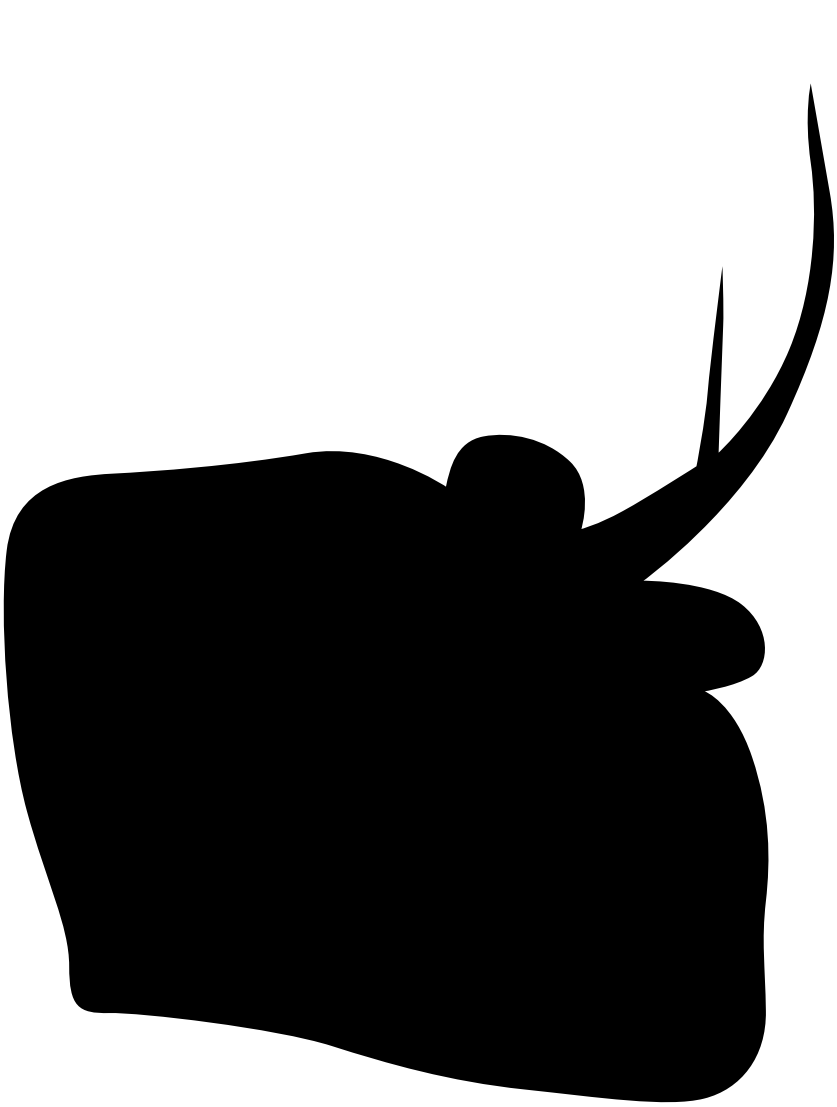
Step 6: Once dry, open up your stingray! Can you see how both sides are symmetrical? Using our silhouette templates on the next page, decide what shape you want your ray to be.

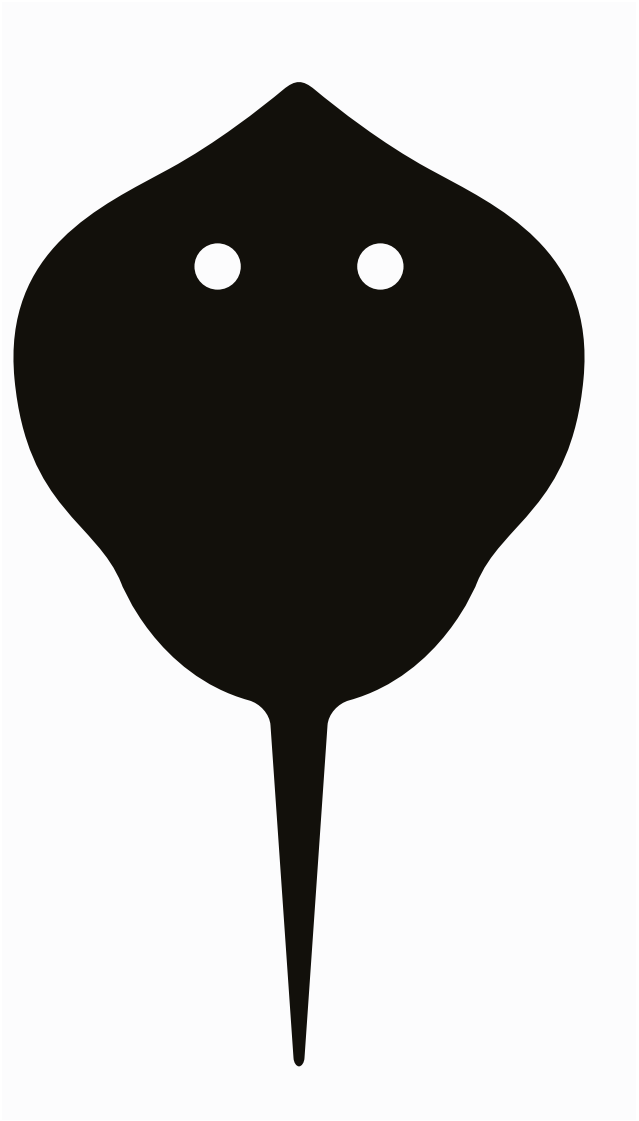
Step 7: Using the templates as a guide, cut the edges of your filter paper to make the shape of the stingray. Save some of this scrap paper and cut the ray's tail from it. Glue the tail to the underside of the ray.

Step 8:

Add some googly eyes. All done! Have fun experimenting with lots of different colours!

As always, we LOVE seeing your creations, so don't forget to send us a picture of your colourful stingrays!





A Window in the Deep

If you could pilot a submarine, what would you see? This clever viewer features a scrolling underwater scene!

What you need:

- A small cardboard box (a mini cereal box is ideal)
- Coloured card and paper
- Small buttons
- Two round, wooden lolly sticks or pencils
- Scissors
- Sticky tape
- Glue
- Coloured pens, pencils or paints

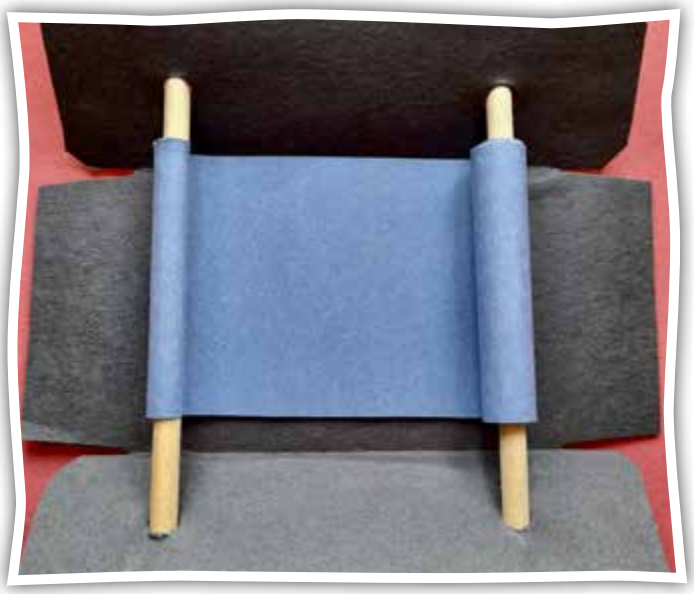
What to do:

1. Flatten your cardboard box. Cut out a round window. It may help to draw around a small jar or other circular object (ask an adult to help if you find it tricky).

2. Make four small holes – two in the top of the box and two in the bottom at either end. Paint the box and, when dry, add buttons.

3. Cut a strip of blue paper measuring approximately 40cm long. Make sure it is slightly taller than your round window but not as tall as your cardboard box. Draw or paint an underwater scene along the length of the strip.

4. Place your box on the table so the window is face down. Fold the sides back up and thread both sticks through the holes, top and bottom. These will be your winders. Making sure your artwork is also face down, use a short length of sticky tape to secure one end of the long strip to the left-hand stick. Wind the strip around the stick by turning it in a clockwise direction. Tape the opposite end of the strip to the right-hand stick.



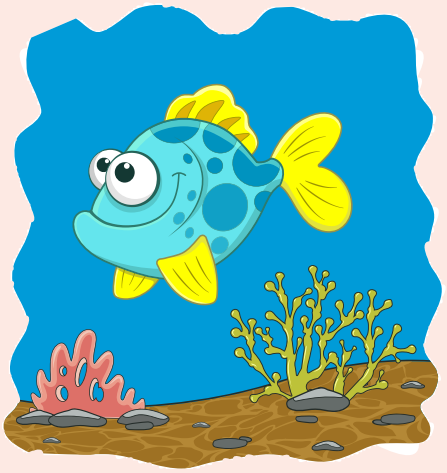
Papercraft by Daisy Fox

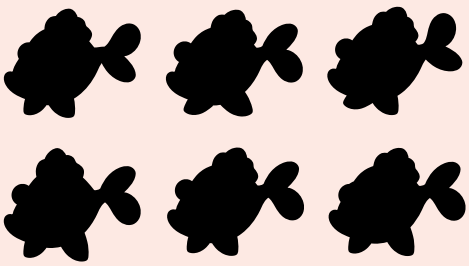
5. Add a rectangle of thin card to help keep your scene in place. Glue it carefully to the inside of the box, because the strip should move freely under the card.

6. Reassemble the box, securing with glue.

7. Wind the right-hand stick in a clockwise direction and your scene will move in front of your window. Turn the left-hand stick in an anti-clockwise direction to rewind. Enjoy your underwater journey!

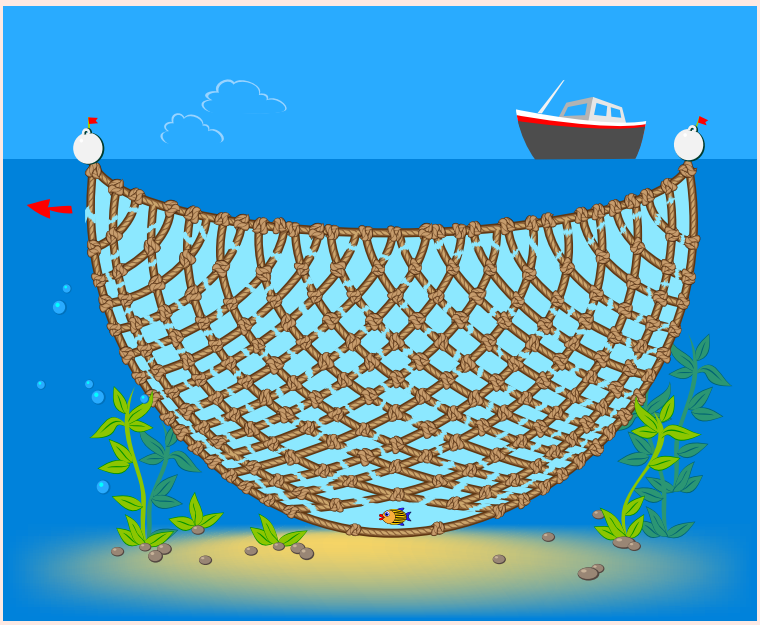
Find the correct shadow





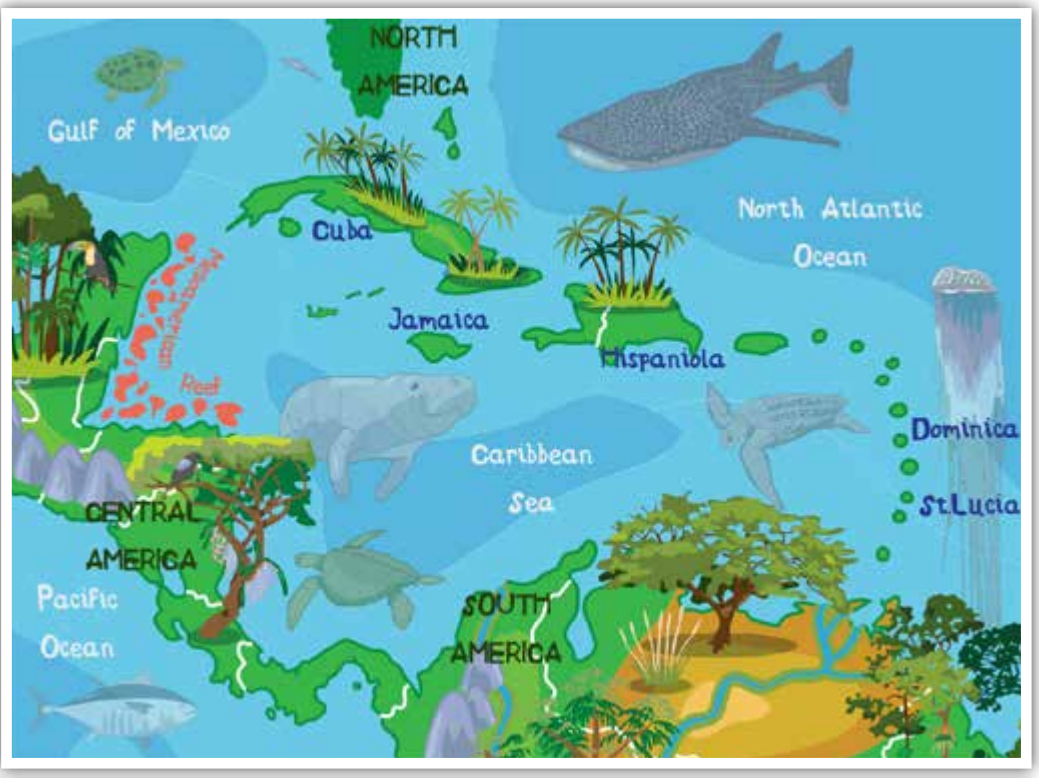
Find the way

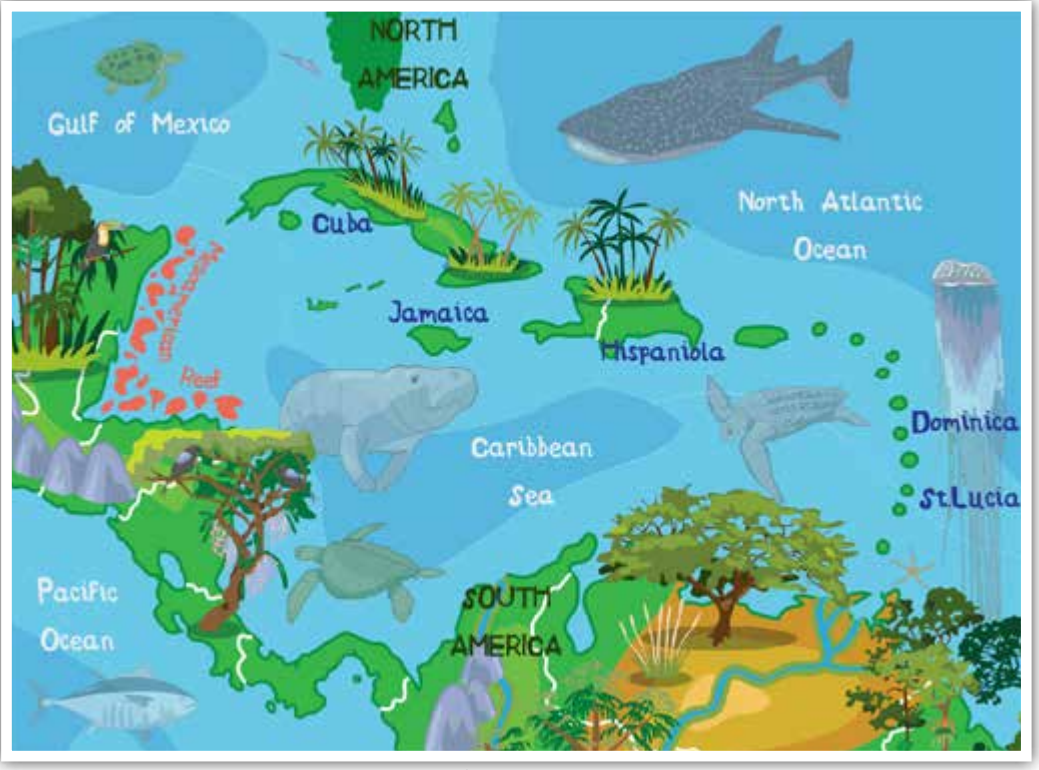
Help the little fish get out of the fishing net!



Caribbean Sea Spotting

The Caribbean Sea and its islands are among the most exotic, biodiverse and beautiful places in the world. Can you spot **10 differences** between these pictures? Colour a shell each time you find one!





Eco Kids planet

Projects and Experiments

Painting nature pebbles

Stones and pebbles come in all different shapes, sizes and textures, making them a fun and tactile object to paint on. This month, we're challenging you to transform your stones and pebbles into plants and animals!

What you need:

- Pebbles and stones
- Washing-up bowl/sink
- Tea towel
- Poster or acrylic paints
- Paintbrushes
- A colour-mixing dish/palette
- Clear nail varnish

What to do:

Step 1: Wash your stones with clean water. Dry them with the tea towel.

Step 2: Decide what animal or plant you're going to create and mix up your colours ready.

Step 3: Paint away! Will your pebble be a shy mouse? A bright butterfly? Or a warty toad?

Step 4: Allow your masterpiece to completely dry.

Step 5: Using a clean paintbrush, coat your pebble/stone in clear nail varnish. Once dry, this coating will make your artwork waterproof if left outside.

Step 6: Find a 'natural habitat' for your pebble and take a photo!

Below are some awesome ideas for inspiration!

Send a picture of your painted pebble to us via email at hello@ecokidsplanet.co.uk or ask your parent or carer to post it on our Facebook wall: facebook.com/ecokidsplanet.

Science Experiment:

Ocean Zones

There are so many mysteries hiding within the ocean's depths! Most octopuses live in the midnight zone of the ocean... Do you know where that is? Why not give this experiment a try to learn more about the different ocean zones?

What you need:

- Tall, clear cup or glass
- 3 tablespoons vegetable oil
- Blue food colouring
- 4 tablespoons water
- 2 tablespoons honey or golden syrup
- Stones to cover the bottom of the glass
- Kitchen roll

What you do:

Step 1: Place the stones in the bottom of the cup.
Step 2: Pour honey or syrup into the bottom of the cup. Avoid dripping it on the cup sides.
Step 3: Mix a few drops of blue food colouring into the water and pour it into the cup.
Step 4:
Pour the oil into the cup.
Step 5: Observe the layers that you have created in your glass.

What's going on:

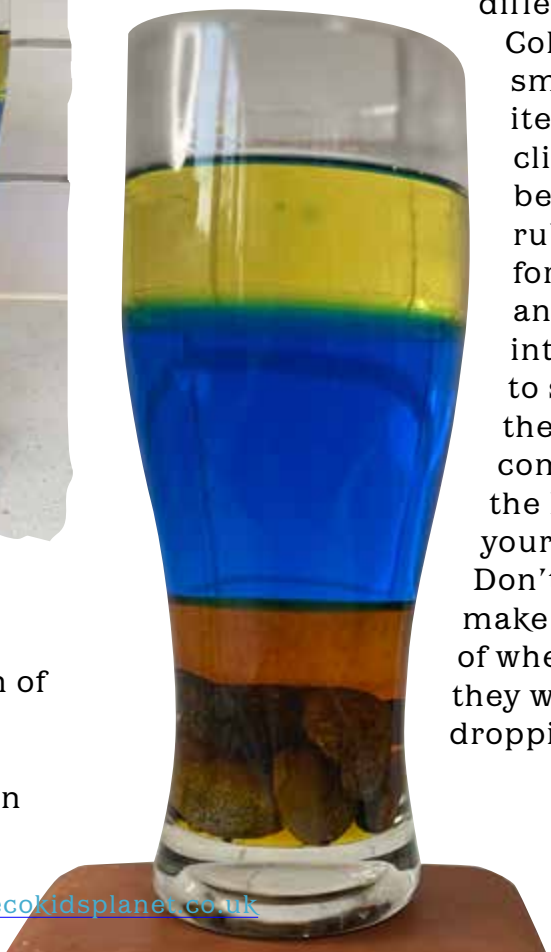
You have created a model of the different zones of the ocean.

Oil: **The sunlight zone**
Water: **The twilight and midnight zones**
Honey: **Abyss**
Stones: **Trenches (also known as ocean floor)**

Plants can only live in the sunlight zone as they need the sun to survive. Living things in the midnight zone, abyss and trenches have special adaptations to help them survive in environments with very little oxygen or light.

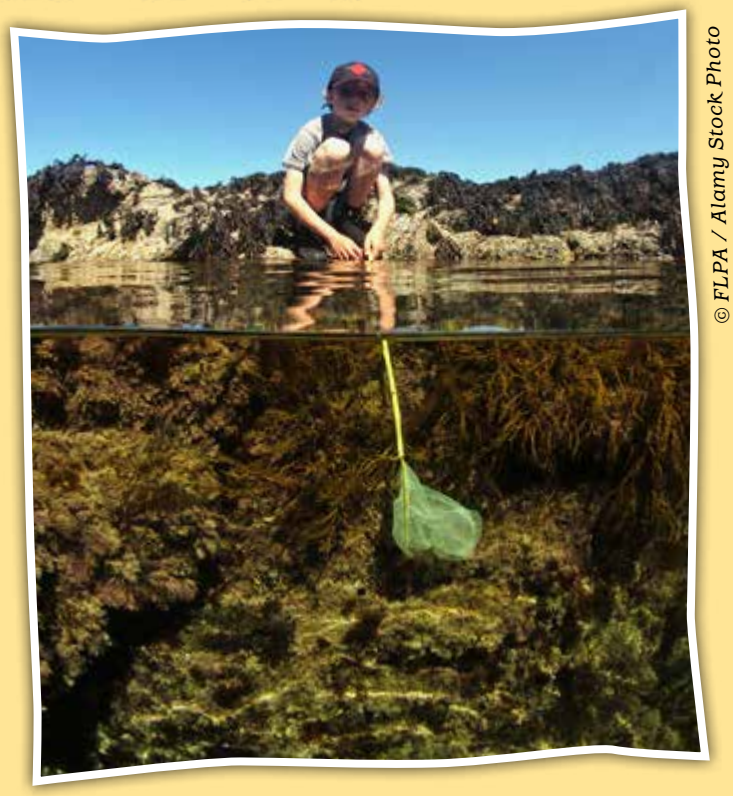
Now try this:

The different densities of the liquids in the glass mean that they separate into layers. They would still separate into these layers even if you poured them into the glass in a different order. Collect a few small household items (paper clip, plastic bead, toothpick, rubber band, for example) and drop them into your glass to see how their densities compare with the liquids in your model ocean. Don't forget to make a prediction of where you think they will go before dropping them in.



This summer, go

ROCK-POOLING!



© FLPA / Alamy Stock Photo

Life in the sea is not always easy to see and appreciate. One way to get close to some fascinating creatures in their natural habitat is by exploring the rock pools that can be found around coastlines at low tide.

You will need:

- A bucket
- A net
- A magnifying glass or pot
- Tough, waterproof footwear

Firstly, remember that the sea is very powerful and unpredictable. Make sure the tide is low, and never stay out too long – the tide can come in quicker than you realise!

Find some shallow pools close to the sea and start exploring. Try looking under rocks, moving seaweed around, or simply sitting still and watching the pool to see whether anything moves. With enough patience and attention, you'll be rewarded with some surprising finds.

Notice something moving? Try to catch it with your bucket or net to get a closer look. Very gently, manoeuvre your bucket or the net around the rock pool until you can scoop the animal up. Don't be too forceful – you don't want to hurt it! Remember, these animals live in seawater, so make sure there is some in your bucket ready for your finds.

What might you see?

Crabs

There are lots of different types of crab to be found in our waters, including hermit crabs (in a large conical shell), shore crabs (small and dusky orange), velvet crabs (dark shells covered in spiny hair) and even spider crabs (large, orange, spiny crabs with very long legs).

To tell whether a crab is male or female, hold it very gently by the sides of its shell, and look at its belly – there is a triangle shape underneath. The sides of the triangle on the female bulge out, so it looks more like a semi-circle, but the male's curve in, more like a pyramid.

Starfish

Starfish eat shellfish, such as mussels, by slowly prising open their shells. Can you see a starfish that looks as though it's standing on tiptoes, in the shape of a wigwam? That is how they look when they eat!

Sea anemones

Sea anemones attach themselves to the rocks to avoid getting washed away by currents and waves. Beadlet anemones have tiny blue blobs around the bottom of their tentacles! If you find one with its tentacles out, you can try to touch them. Can you feel them stick to you? They are trying to sting you, but their stings are too weak.

Shrimp

Beware of shrimps' tricks – they move very quickly, and often swim backwards when you least expect it.

Little fish

Most of the little fish you find in rock pools are gobies or blennies. If you're lucky, you can spot a pipefish – it looks like a swimming shoelace, and is related to the seahorse.

Limpets

Although they may seem to be fixed to the rock, limpets actually move around to graze on algae. They return to the same spot by following the mucus trail that they leave behind.

Barnacles

Barnacles are tiny crustaceans that attach to the rocks and feed with a tiny leg that pokes out of the top of the shell. If you see some under the water, look very closely – you may be able to see this leg fanning through the water. This is the barnacle feeding on microscopic plankton.

Mermaid's purse

These are rays' eggs! They may have a baby ray inside – hold it up to the light and you will be able to see it wriggling.

Crab, sea anemone, shrimp: Jenny Hickman

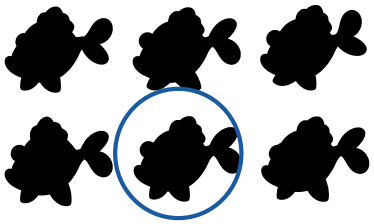
Make sure you put the animals back after a short time, in the same place you found them. Be careful when handling things, and ask an adult to help you.

ANSWERS

Ocean Quiz

1.	b	6.	b	11.	c
2.	a	7.	a	12.	a
3.	a	8.	c	13.	b
4.	a	9.	c	14.	b
5.	b	10.	a	15.	c

Find the correct shadow



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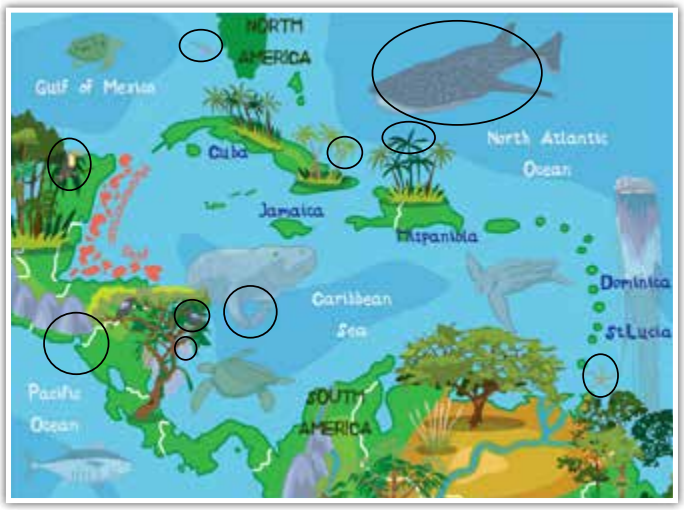

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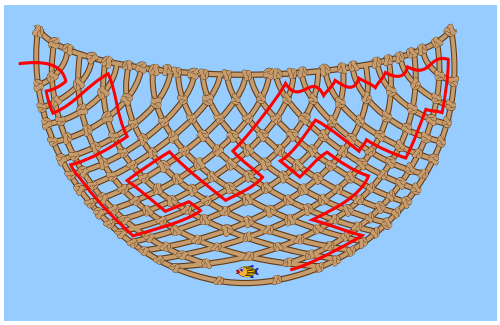

Clownfish jokes

Q What did the Pacific Ocean say to the Atlantic Ocean?

A Nothing, it just waved!

Q What did one rock pool say to the other rock pool?

A Show me your mussels!

Q How do you make a goldfish old?

A Take away the 'g'!

Q What washes up on tiny shores?

A Microwaves!

Q Why did the fish blush?

A Because it saw the ocean's bottom!

Q What did the boy octopus say to the girl octopus?

A Can I hold your hand, hand, hand, hand, hand, hand, hand?

If you've enjoyed this resource pack, we'd be thrilled if you could share your thoughts. You can send us an email at hello@ecokidsplanet.co.uk and let us know what you think.

About Eco Kids Planet

Eco Kids Planet is an award-winning nature and science magazine that introduces children to the wonders of nature and encourages them to protect their planet.

Ideal for kids aged 7 to 11.

Learn more about the oceans in the previous issues of Eco Kids Planet!

Available in our online shop: bit.ly/amazing-oceans

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