



**DISCOVER
OUR PLACE:
SCOTT BASE!**

ANTARCTIC ACTIVITY BOOK

Name:



Antarctica
New Zealand



Antarctica
New Zealand

ANTARCTICA AND THE SOUTHERN OCEAN – VALUED, PROTECTED, UNDERSTOOD

Antarctica New Zealand looks after everything Aotearoa does on the icy continent. We take scientists to Scott Base and help them with their world-leading research. A big part of our mahi is to protect the environment. We want everyone to value, protect and understand Antarctica and the Southern Ocean.

Find out more about Antarctica New Zealand at

www.antarcticanewzealand.govt.nz



Can you find the lost Adélie penguin on the front cover?

'DISCOVER OUR PLACE: SCOTT BASE!' BOOKLET
CREATED BY ANZAC GALLATE FOR ANTARCTICA
NEW ZEALAND

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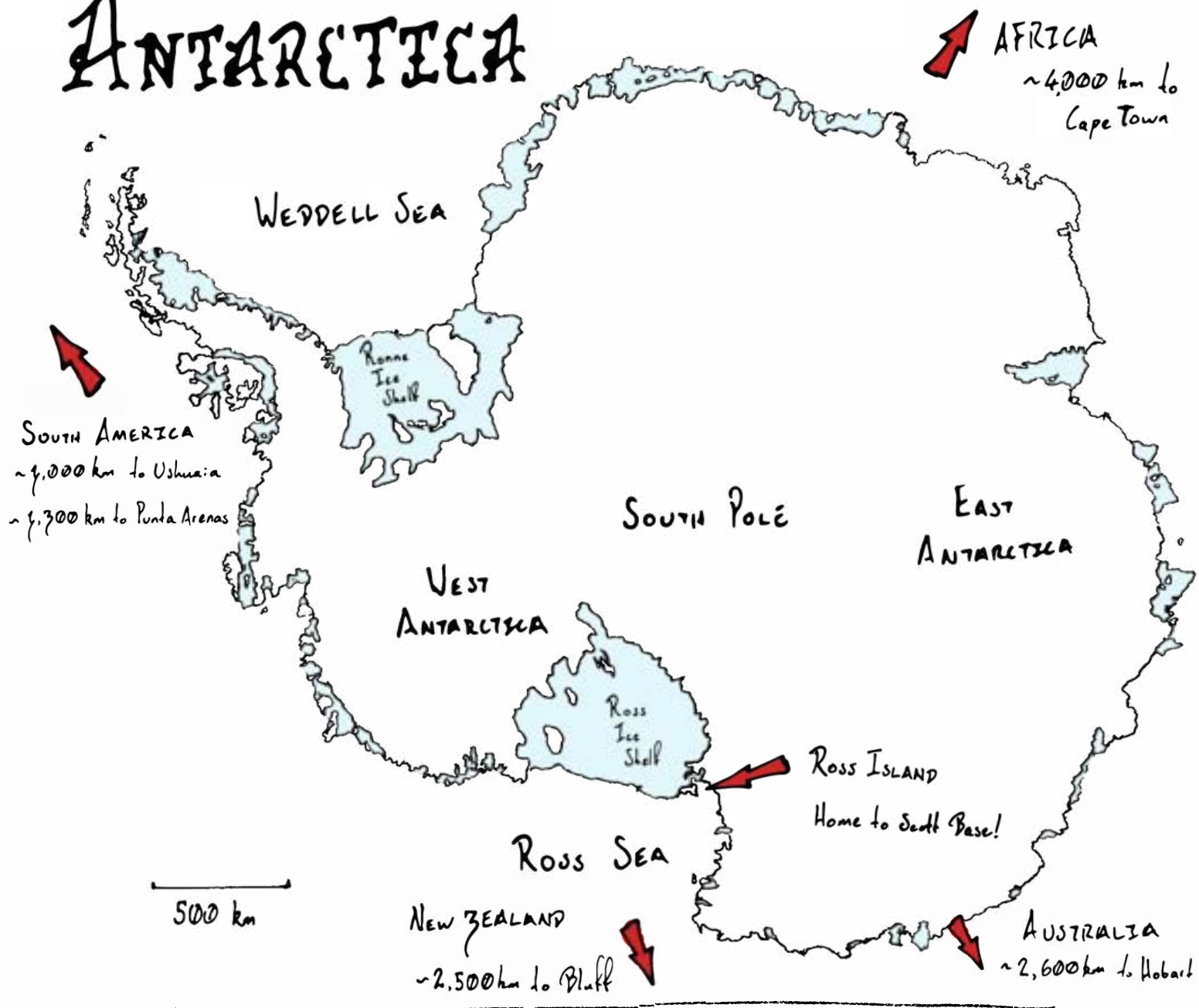


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*Match the numbered snowflakes throughout this book with extra resources on page 25



ANTARCTICA



















Freezing Fun Facts:

- A giant, icy continent at the bottom of the world, Antarctica is the driest, coldest, and windiest of the seven continents. Temperatures can reach as low as -89.6°C , winds can blow up to 320kms/hr. The lack of precipitation on the continent makes Antarctica the world's largest desert!
- Antarctica is, on average, 2200m high which makes it the world's highest continent.
- Antarctica is the fifth largest continent, almost double the size of Australia, and 52 times the size of New Zealand!
- Antarctica isn't owned by any country, and is instead governed internationally through the Antarctic Treaty System, declaring Antarctica a place of peace and science. Today, many countries operate research stations in Antarctica to study this unique environment, check them out on the next page.
- In winter, sea ice forms in the waters around Antarctica, and doubles the continent in size from 14 to around 29 million square kilometers!
- While considered a desert, Antarctica contains 90% of the world's ice.

FLAG SCRAMBLER!

Can you unscramble the names of countries with stations in Antarctica and match them to their flags?

	IEAATRGNN
	<u>Argentina</u>
	SARITLAAU
	ALRSUBE
	MILGEUB
	ZIBLAR
	ULBAGAIR
	ELCIH
	HICNA
	IACHZEC
	UDRACOE
	FNNIDAL
	FECANR
	ANGMYER
	NIDAI
	TLIAY

	AJNPA
	<u>Japan</u>
	EARLNTDEHSN
	ENW EDNZALA
	YWONRA
	PRUE
	DNALPO
	SURASI
	THSOU AARFCI
	OUTSH KAERO
	SPINA
	NDEWSE
	RIENAKU
	EIUNTD OMIDGKN
	ITUDNE STTSAE
	RYUAGUU

SCOTT BASE - HOME ON THE ICE!

As New Zealand's only research station in Antarctica, Scott Base is a hub for scientists from New Zealand and across the globe, who come together to carry out some of the **most important research in the world**.

Scott Base was built to enable New Zealand to play its part in the Commonwealth Trans-Antarctic Expedition (TAE), officially opening on the 20th of January, in 1957! Scott Base then became a permanent research station in 1962. Since then, a lot of changes have been made to the base to host research activity, with many buildings being added and removed. Only three original buildings remain today, including the restored TAE Hut, built by Sir Edmund Hillary and his team in 1957.



Staying at Scott Base

Scott Base operates all year long. Over the summer, the research station is a bustling hub of scientists and staff, with room to accommodate 86 people at a time. By the end of the summer, over 300 people will have stayed at the base, carrying out research and supporting operations. Usually only around 12 people stay for the winter, helping to run the station and collect data for research projects. **Check out the Scott Base timeline here.**

EXPLORE SCOTT BASE!



Station Cameras

Did you know there are cameras around Scott Base that regularly upload photos to the internet? Scan this QR code or go to **antarcticanz.govt.nz/scott-base/webcams-weather** to check them out! What do you notice about the photos? What is the weather like?



Inside Scott Base

Want to explore more of Aotearoa New Zealand's home on the ice? Scan this QR code or go to **antarcticanz.govt.nz/scott-base/facilities** to take a 360° tour of the inside of the base! Click on the red dots on the bird's-eye-view of Scott Base. What do you notice about some of the rooms? What are they used for?

Tropical Paradise

The lowest temperature ever recorded at Scott base was -57°C , in 1968. The highest temperature ever recorded was 8°C ! Throughout the year, average temperatures rest around -19.8°C . winter temperatures at the base are usually around -29°C , and -11.3°C in summer!

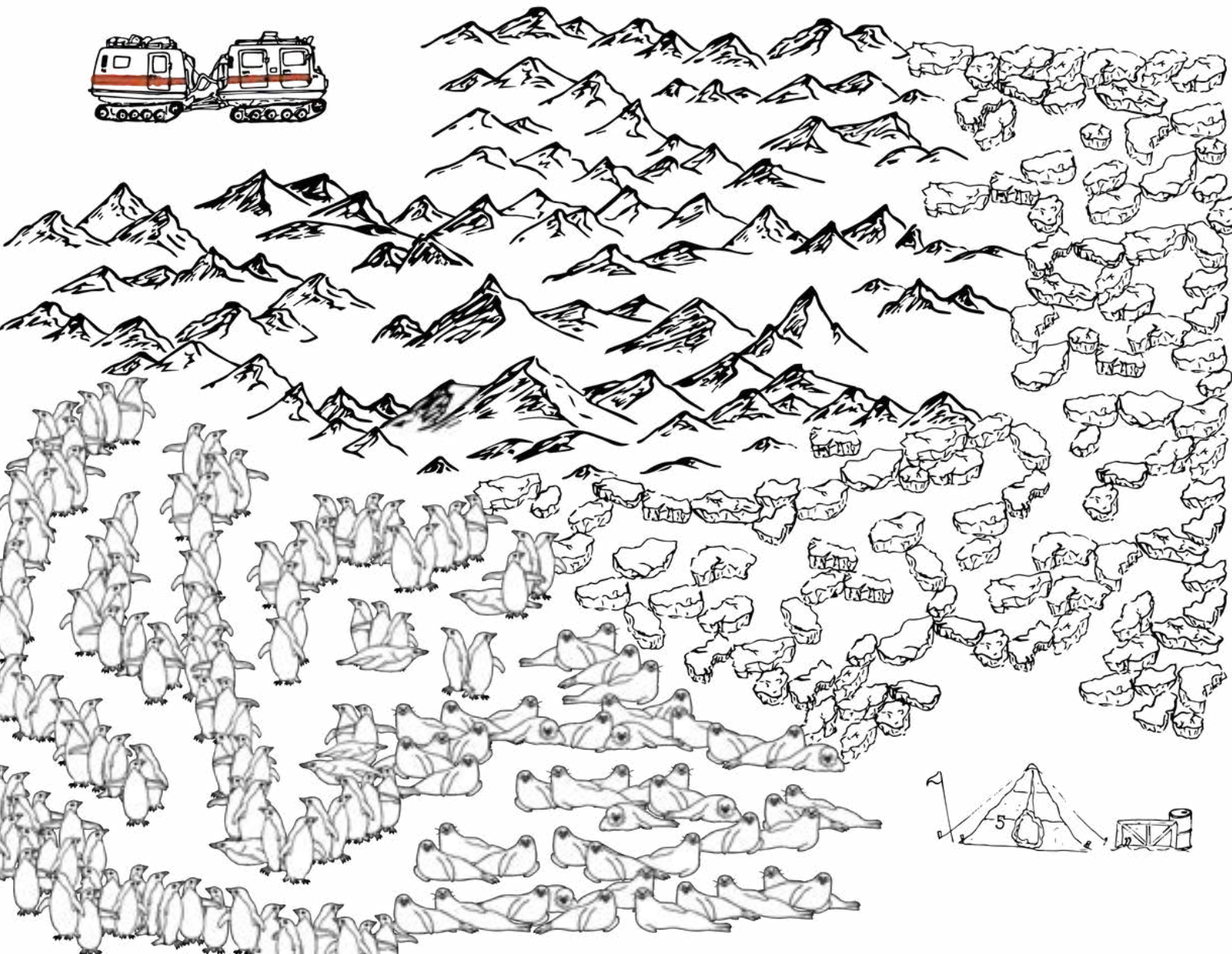


Te Kaiwhakaterere o Te Raki (Navigator of the Sky)

In front of Scott Base, Te Kaiwhakaterere o Te Raki stands proud. The pouwhenua was carved by Ngāi Tahu master carver Fayne Robinson, and personifies exploration, adventure and discovery. The upper face looks up into the stars in the sky for navigation, while the lower face looks to the South Pole. Decorations of stars, water, waves and Antarctic animals represent nature and how important it is to protect the environment.

ANTARCTIC LABYRINTH!

Can you get the Hägglunds through the Antarctic mountains, ice, seals and penguins to reach the field camp?



WORD SEARCH PARTY!

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

BASE
 CONSTRUCT
 EMPTY
 ENERGY

EXPEDITION
 FROZEN
 HÄGGLUNDS
 JACKET

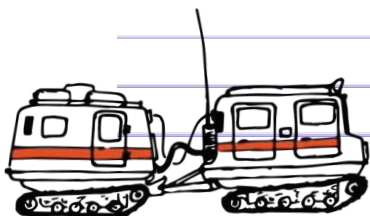
PENGUINS
 RESEARCH
 SCIENTISTS
 SHIP

SKIDOO
 SLIDE
 SLIP
 SNOWSTORM

SUPPLIES
 WADDLE
 WASTE

**NOW USE THE WORDS YOU'VE FOUND TO CREATE A SHORT STORY
 ABOUT YOURSELF ADVENTURING AROUND SCOTT BASE!**

(You might like to use another page)



THE NEW SCOTT BASE

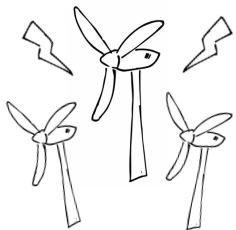


Scott Base is getting an upgrade!

Over the next few years, Antarctica New Zealand will replace the ageing buildings at Scott Base. The new base will be a safe, modern and more sustainable research station that will support New Zealand's work in Antarctica for the next 50 years!

Building a ship on the ice!

Building a new research station safely and efficiently in the harshest, driest, coldest and windiest environment on Earth is no easy task! In fact, the Scott Base Redevelopment will be Antarctica New Zealand's biggest project ever! Many challenges simply come with the extreme remoteness of Scott Base. There are no supermarkets or hardware stores to nip into for supplies! No power grid, water supply or sewage system is available to connect to either. Instead, everything possibly needed for the construction of the new base has to be planned for. The finished base then has to be fully self-sufficient, like a ship on the ice!



The southern-most wind farm in the world

There's no national electricity grid in Antarctica so Scott Base gets most of its electricity from three wind turbines which are shared with McMurdo Station (a large American Base 4km away). With plans to renew this wind farm during the redevelopment, the new base will be powered by up to 97% renewable energy.

No yellow snow

To protect the unique Antarctic environment, getting rid of human waste also has to be thought about carefully. At Scott Base, human waste is piped from toilets to a Waste Water Treatment Plant, where the 'solid material' (poop!) is separated and then shipped back to New Zealand for disposal! Researchers out in the field also have to bring their waste back to the base!



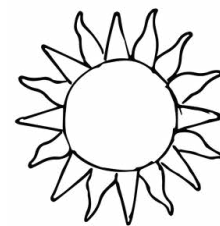


The yearly grocery shop

In January, a year's supply of food arrives at the base by ship. Most of the food is canned, frozen or dried so it can be stored for a long time without going off. Food supplies are chosen carefully to also minimise packaging. Glass, paper, aluminium and tin are all separated to be taken back to NZ and recycled. The base produces its fresh water by taking the salt out of sea water. This is called 'reverse osmosis' ❄️ 3

Bright midnight Sun

During most of the summer season in Antarctica, the sun never sets below the horizon. For staff and researchers to get some sleep, blackout curtains in bedrooms are a must! Winter brings several months of darkness, where the sun doesn't rise at all - fortunately there is a movie room at Scott Base! Can you find it on the 360° Base tour? (pg.6) (Hint: Check out the Hatherton Lab!)

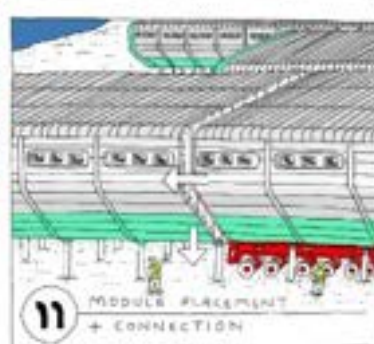
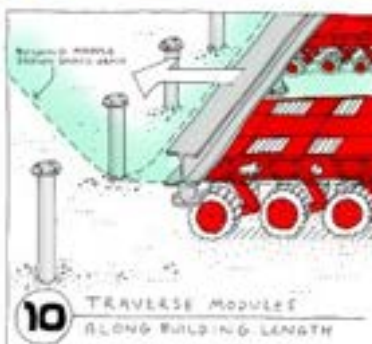
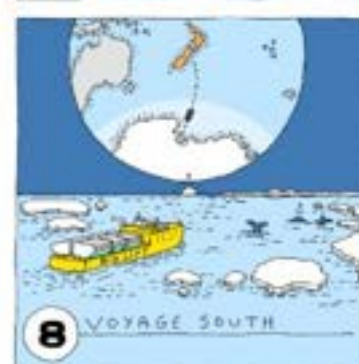
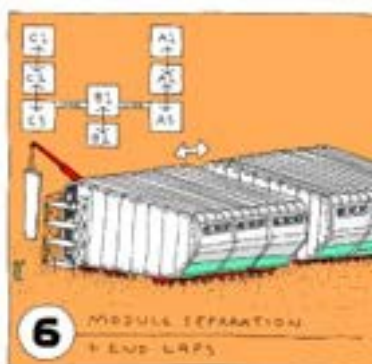
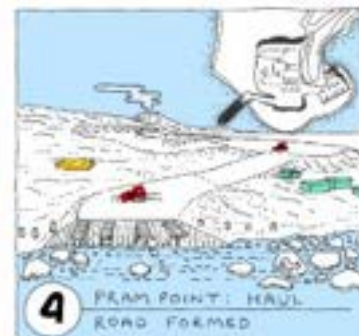
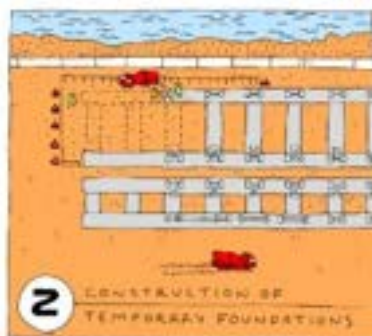


Made in New Zealand

What's much easier than packing all the materials and tools needed for a new base, shipping them to Antarctica, and quickly building a research station in windy, cold, dry conditions before the 24-hour darkness arrives? Building a base in New Zealand! The three new buildings will be pre-constructed in Timaru, then shipped to Antarctica in sections on a huge transport ship.

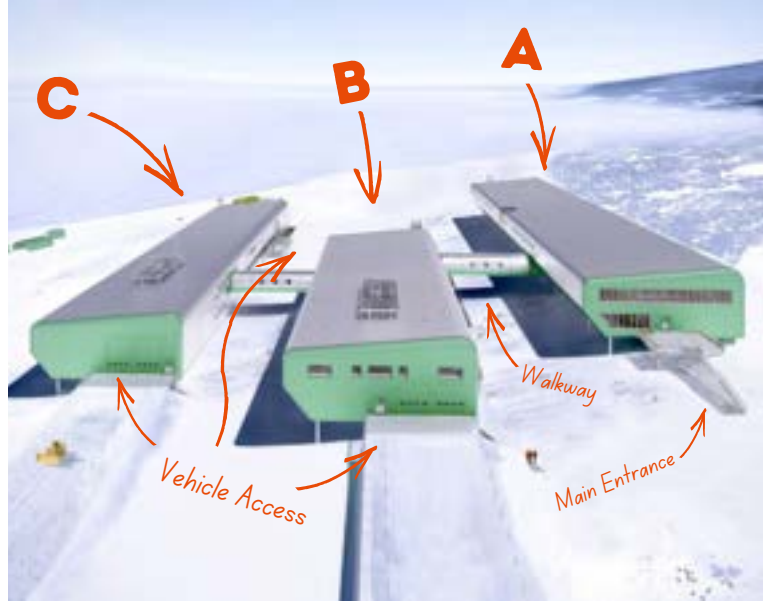
When the sections arrive at Pram Point, remote controlled trailers (like big skateboards) will be used to move them to the site before reassembly.

Check out the comic below to find out more about moving entire buildings from New Zealand to one of the most extreme environments on the planet!



INSIDE THE NEW BASE!

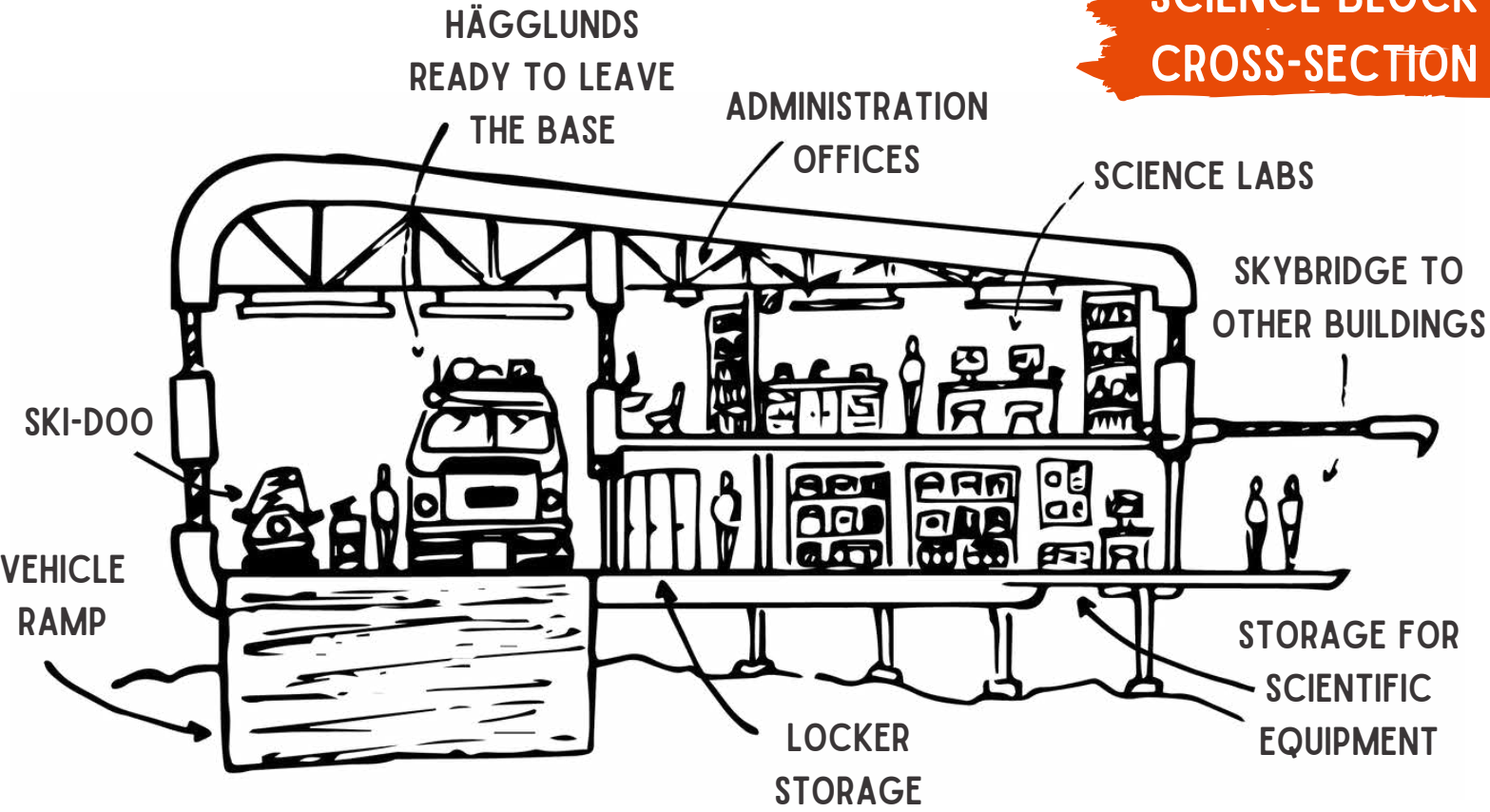
The new Scott Base will be made up of three buildings. The top building, **Building A**, will contain accommodation and living areas, including kitchens and a dining space. **Building B** will be for science labs, offices, and a preparation area for going out into field camps. **Building C** will contain storage areas, cargo, and workshops. **Walkways** will connect the three buildings to allow for access between them without needing to go outside. Multiple **vehicle entrances** will also allow for Antarctic vehicles to drive right into the base for loading and repairs! Take a virtual tour through the new Scott Base



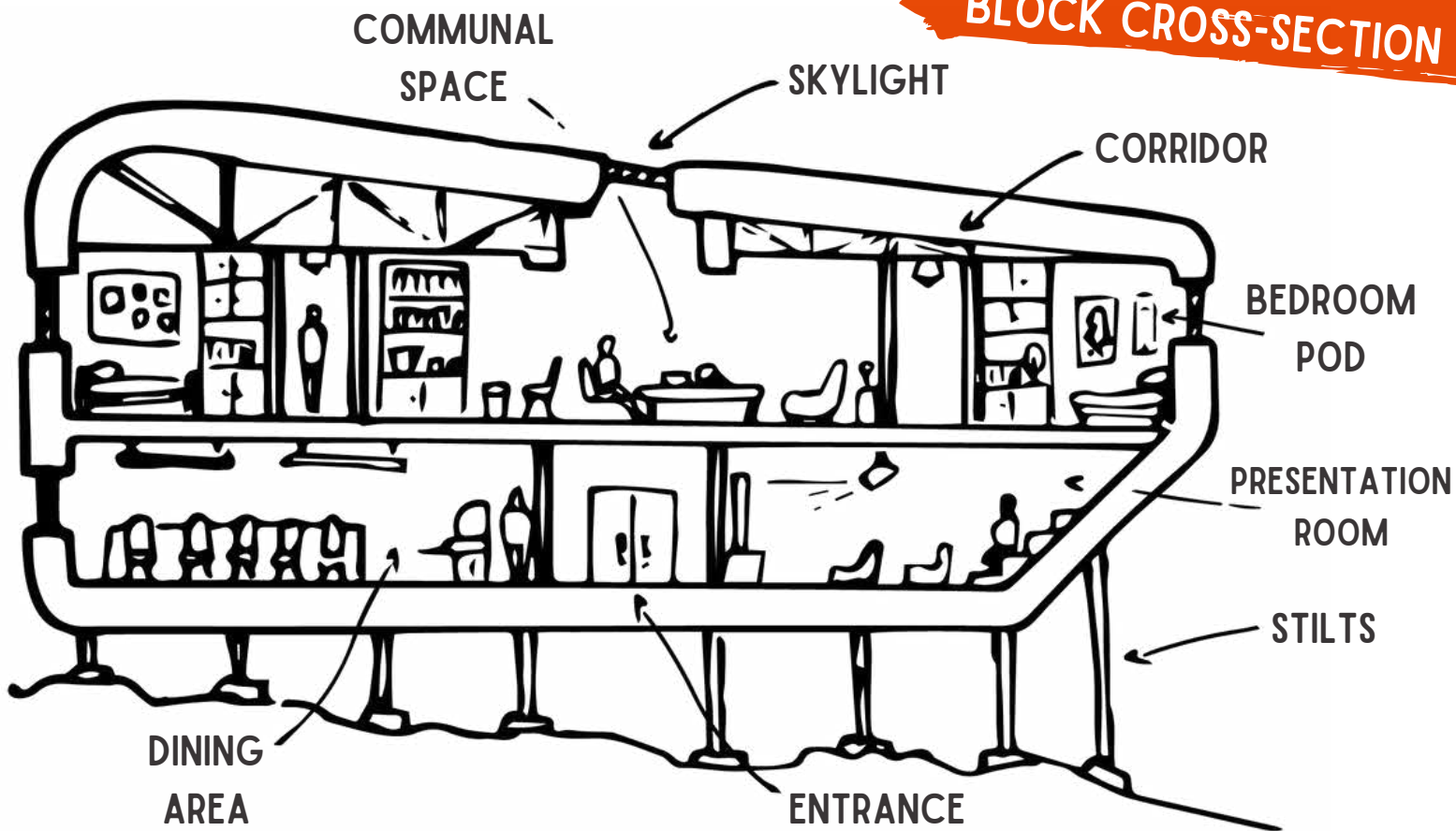
Sustainability at the new base

The new Scott Base puts a big focus on minimising New Zealand's impact on the unique Antarctic environment. We've already looked at a few ways to achieve this, including using renewable energy, and making sure waste leaves the continent. Other methods include carefully monitoring water and power use to improve efficiency. Triple-glazed windows and insulation will also help to minimise heat loss, while the interconnected buildings are heated to the same temperature.

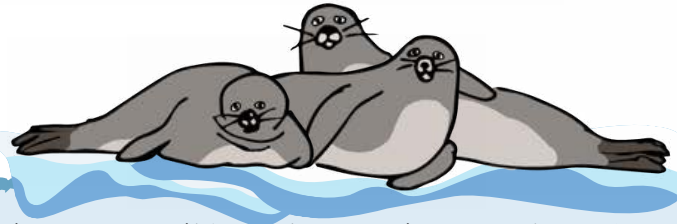
SCIENCE BLOCK CROSS-SECTION



ACCOMMODATION BLOCK CROSS-SECTION



MATCH THE ROOMS!



A research station requires all sorts of different rooms to run smoothly and support research work. Can you match some of these room examples to the reason they are important?

LIVING QUARTERS

SCIENCE LABS AND OFFICES

MEDICAL ROOM

DINING AREA

GENERATOR ROOM

WATER PLANT

VEHICLE WORKSHOP

LOCKER ROOM

CARGO AREA

GYM

MOVIE ROOM

To provide medical aid to sick or injured base crew

So staff and researchers have a place to sleep

For entertainment and relaxation

To store and organise bulky outdoor clothes

To manage and store supplies

So base crew can exercise to stay fit and healthy

For scientists to manage and conduct research work

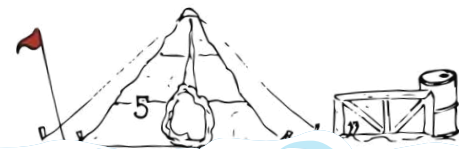
To provide a place to eat

To manage and generate electricity

For repairing base vehicles and equipment

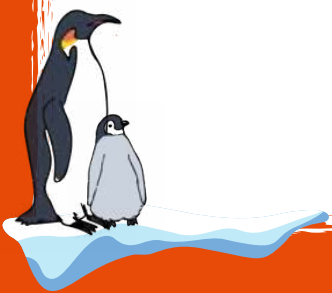
To ensure a fresh water supply

A BASE OF YOUR OWN!



Now it's time to create your own base! You might choose to draw a cross-section like the ones above, or perhaps from a bird's-eye view perspective. Think about what rooms you might need for your base. How will you get your electricity, collect water and manage waste? You might like to do a brainstorm before you get started! ❄️



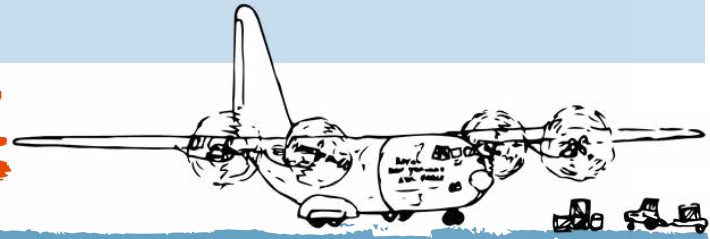




It takes a lot of people with different interests and skills to run a research station down in Antarctica. While researchers and scientists arrive and depart from the base to carry out scientific work, a whole team is needed to support them. Without running water, food, electricity, communications, transport, planning and a bed to sleep in, it would be awfully hard to get any research done! Most staff at Scott Base work there during the busy summer season, with a smaller team staying on to look after the research station and experiments over the winter.

In addition to its regular crew, the Scott Base Redevelopment will see many more staff travelling to the ice to help build the new research station.

MATCH THE ROLES!



It takes staff in all sorts of different roles to make sure Scott Base can run smoothly and important research can be carried out. Can you match the job examples below with their crucial role?

CARGO HANDLING

CARPENTER

CHEF

DOMESTIC

ELECTRICIAN

FIELD SUPPORT STAFF

MECHANIC

POWER ENGINEER

TECHNICAL SUPPORT

TELECOMMUNICATIONS
TECHNICIAN

WATER ENGINEER



Taking care of all base electrics - heating, power, lights

Cleaning base facilities

Managing supplies and people arriving and leaving base

Make repairs to the base, manage firefighting gear

Plans and prepares meals for base crew

Maintaining satellite links and radiocommunications

Manage experiments, record data and support scientists

Deploying people and gear out into the field

Maintains sewage treatment plant and water production

Repairing vehicles and equipment, training drivers

Manages power generation equipment

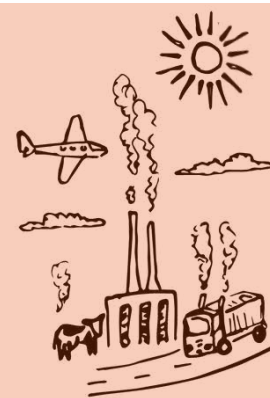
Since the days of the first Antarctic explorers, scientists have been studying the extreme environment, unique species, and breathtaking landscapes of Antarctica. More recently, climate change has become a main focus of our Antarctic researchers, who are working hard to tackle big questions. The answers to these questions will help us plan for the future.



A Warming World – Climate Change ❄️ 7

Climate describes usual weather patterns over a long period of time. While changes in climate can occur naturally (usually over hundreds of millions of years), recent and rapid changes in climate have been caused by the release of greenhouse gases by humans. These greenhouse gases trap heat in the atmosphere (the greenhouse effect) resulting in rising ocean and air temperatures. To learn more, head to

<https://www.climate-change-guide.com/greenhouse-effect.html>



An Antarctic Planet

Antarctica has more of an impact on our daily lives than you might think! Through several different processes, the icy continent helps to regulate the atmospheric and ocean temperatures around the world:



The big, white continent acts like a mirror that reflects the sun's energy back into outer space! This means land, oceans and air do not get as hot.



The cold air in the sky above Antarctica sinks to the ground and becomes freezing winds that flow across land and over the sea – this helps form sea ice which keeps the Southern Ocean cold.

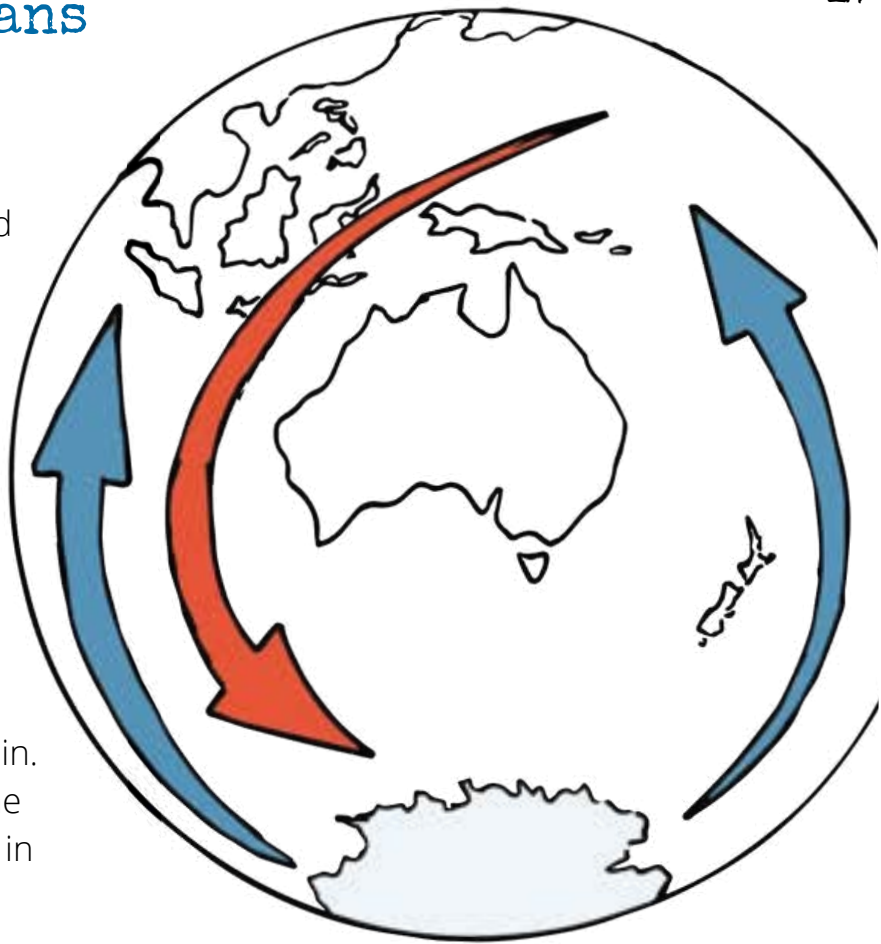


Most water vapour in Antarctica turns to solid ice. This means it isn't up in the atmosphere where it can trap heat as a greenhouse gas.

A Commotion in the Oceans

Most of all, Antarctica plays a big role in driving the world's ocean currents.

When surface water in the Antarctic gets cold enough, seawater freezes into sea ice. As most of the salt is left behind, the surrounding water then becomes saltier. Water containing more salt becomes heavier, and sinks towards the ocean floor, cooling even more. The sinking water forms flows of extremely cold deep water that travel to warmer areas near the equator. As the water then warms, it begins to rise. Warmer water is then drawn back towards the poles to cool down and sink again. This process drives seawater around all of the world's oceans - and plays an important role in regulating the Earth's temperature!



ICE SHEETS, ICE SHELVES, and SEA ICE – What's the difference?



ICE SHEETS

Ice sheets are thick layers of ice that cover most of the Antarctic continent. They form from snowfall being compacted into ice over thousands of years. Unlike ice shelves or sea ice, ice sheets rest on land rather than on water. In some parts of Antarctica, ice sheets can reach up to 4.7km deep - that's 14.3 Auckland Sky Towers tall!

ICE SHELVES

Ice shelves are extensions of ice sheets - where ice sheets meet the ocean and begin to float on water instead of resting on land. The Ross Ice Shelf, near Scott Base, covers an area almost twice the size of New Zealand!

SEA ICE

Sea ice forms on the ocean's surface when water temperatures reach around -2°C (the more salty water is, the colder it has to be to freeze!). As layers continue to form, sea ice can get several metres thick. In the winter, so much sea ice forms in the Southern Ocean that Antarctica doubles in size! In the summer, most of this sea ice melts.

RESPONSE TO WARMING

Using satellite monitoring, scientists have found that Ice sheets in Antarctica are melting 6 times faster than they were only 30 years ago.

Melting ice on the underside of ice sheets can make them move faster towards the ocean. Passing by islands and rocky surfaces, they can fracture (crack) and weaken.

Melting water flowing downwards through the ice also leads to further melting and fracturing.

IMPACT ON THE REST OF THE WORLD

Melting ice sheets contribute to sea level rise, where water is being added to the sea when before it was locked up on land. If all of Antarctica's ice sheets melted, the world's sea level would rise by around 60 metres!

Increasing sea level rise is a huge climate issue, causing more flooding, coastal erosion, and severe weather events around the world - likely to disrupt the lives of hundreds of millions of people.



Ice shelves, are very sensitive to changes in ocean temperatures. Warmer water can rapidly melt the undersides of ice shelves, thinning them, making them weaker, and allowing for more movement of the ice sheets behind them into the ocean.

With warming water temperatures, ice shelves are breaking apart more often, collapsing and disintegrating into the ocean.

Melting ice shelves don't directly cause sea level rise. The ice shelf is already sitting in the water, so when it melts, the water simply changes form - like melting ice cubes in a glass!

The loss of ice shelves is still very concerning though, as they prevent the ice sheets behind them from slipping into the ocean.

Using satellite images, Antarctic researchers have found that in some places, sea ice is melting more than usual, while in other parts of Antarctica it is increasing.

Melting sea ice is also a big problem! A reduction in sea ice reveals the dark surface of the water below which absorbs more of the sun's energy, heating the water and atmosphere even more!



Antarctica is home to some truly incredible wildlife! Having adapted to life in the extreme cold, Antarctica's animal residents use insulating feathers, blubber and fur to keep warm. Despite these amazing adaptations, most animals in Antarctica are seasonal visitors, and do not stay for the winter as conditions are too harsh. Some of the most recognisable Antarctic animals are the many species of whales, penguins and seals which enjoy Antarctica's highly productive marine environment.



Penguins

There are 5 main species of penguins in Antarctica: **emperor, king, Adélie, chinstrap** and **gentoo penguins**. **Emperor penguins** are the largest of these species, reaching up to 1.15 metres tall! Penguins have evolved many features that help them survive in Antarctica's harsh environments. Feathers and fat layers help to keep them warm, while their streamlined bodies help them to move at great speeds through the water to catch fish, squid, and krill. Penguins are mainly preyed upon by leopard seals, skuas, and some types of killer whales!

EMPEROR PENGUIN



ADÉLIE PENGUIN



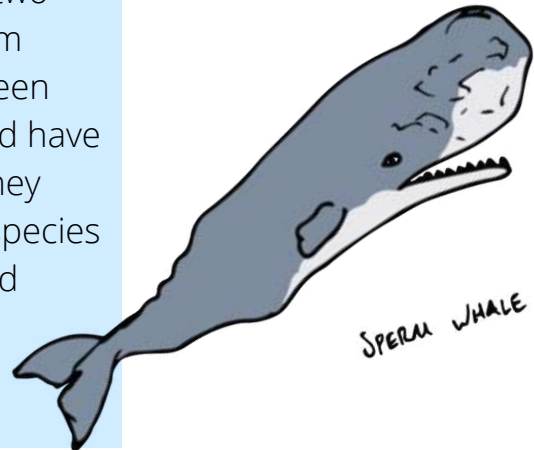
Whales

Many different species of whale can be found in Antarctic waters. **Blue, southern right, sei, humpback, minke, orca** and **sperm** whales all take advantage of the high productivity of the Southern Ocean. Whales are mammals, meaning they all breathe air, are warm-blooded and give birth to live young. The immense size of whales, and their layers of blubber are what allows them to retain heat and survive in the coldest seas on Earth! All whale species belong to one of two groups: toothed or baleen. Toothed whales (like orcas and sperm whales) mainly eat fishes and squid, using their sharp teeth. Baleen whales (like the blue whale, humpbacks and right whales) instead have baleen plates (made of keratin, like fingernails and hair) which they use to trap food by passing water through their bristles. These species of whale don't spend all of their time in the Antarctic, and instead migrate south in the summer to take advantage of the massive amounts of krill, which feed on vast phytoplankton blooms.

HUMPBACK WHALE



SPERM WHALE



Seals

There are six species of seal found in Antarctica: **Weddell, southern fur, southern elephant, Ross, crabeater** and **leopard seals**. **Antarctic fur seals** are the smallest species of Antarctic seal, while **elephant seals** are the largest - some males reach up to 3,700kg! **Crabeater seals** are the most common species of seal in the world (with a population of around 15 million!) and eat mainly krill. While most seals stick to fish, krill and squid, **leopard seals** are fearsome predators, also dining on penguins and other seals. **Weddell seals** are found further south than any other mammal, and are by far the cutest-looking Antarctic seal!



LEOPARD SEAL

WEDDELL SEAL

CRITTER CREATOR

Now it's time to create your own Antarctic animal! Wildlife in Antarctica have evolved many special adaptations so they can survive in one of the most harsh environments on the planet - what adaptations will you add to yours? You might like to use some of the suggestions below and do some more research. Draw and label features of your creature in the space below or on a separate page!

CRUSTACEAN	FLIPPER	BLUBBER	WHAT DO THEY EAT?
FISH	FEATHERS	MIGRATION	HOW DO THEY STAY WARM?
MAMMAL	FUR	FLYING	HOW DO THEY MOVE AROUND?
BIRD	SCALES	SWIMMING	HOW DO THEY INTERACT WITH OTHER ANIMALS?



ANTARCTIC FOOD WEB

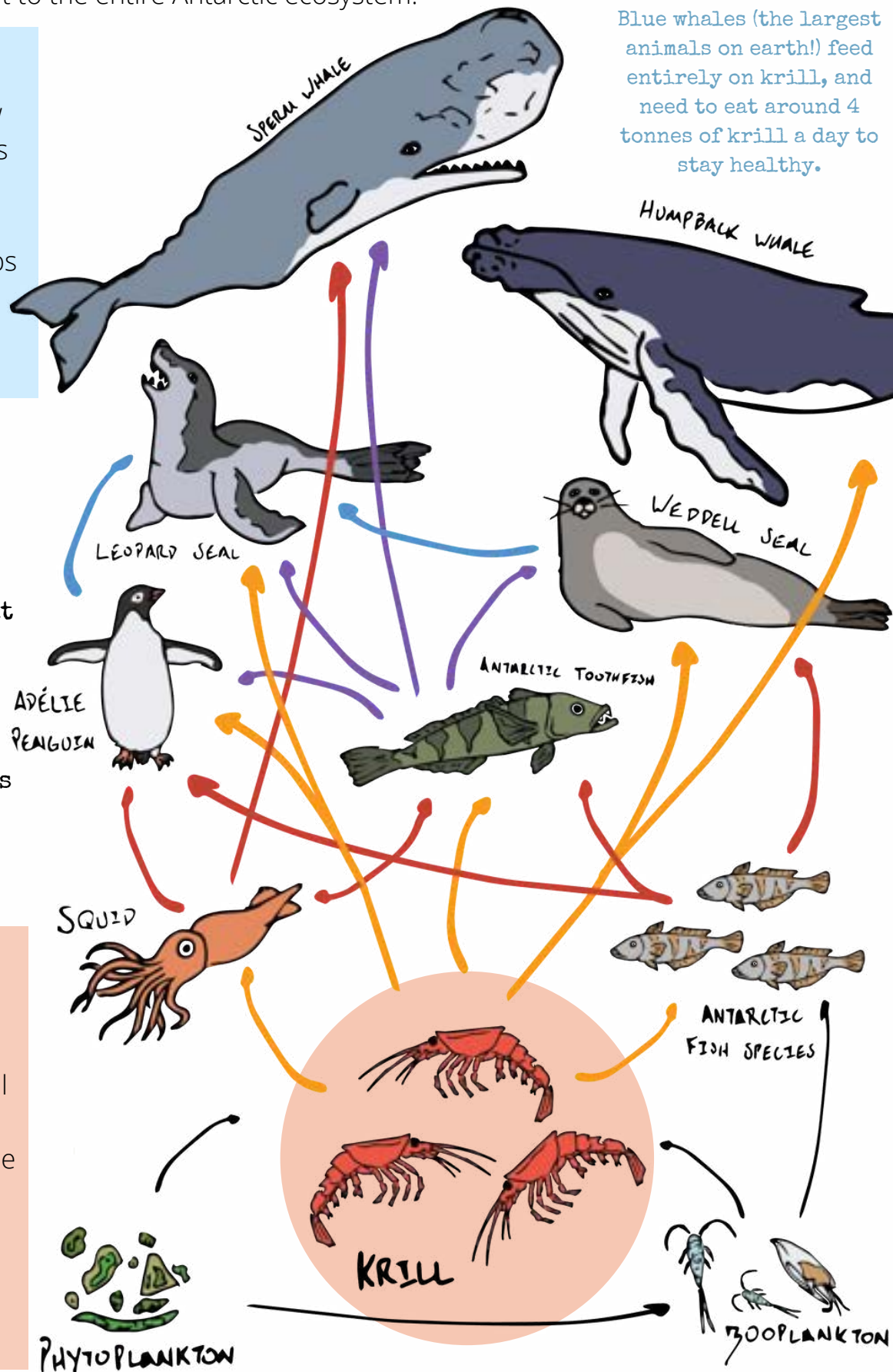
Licence to Krill

Most Antarctic species are very dependent on one tiny creature for survival: **Krill!** Krill are small shrimp-like marine crustaceans and rest near the bottom of the food chain, consuming phytoplankton and zooplankton (tiny organisms floating freely in the water). Krill make up a large part of the diet for most penguins, seals, whales, fish and seabirds in Antarctica, which makes them incredibly important to the entire Antarctic ecosystem!

Food Webs

Food webs help to show the feeding relationships between organisms in a specific ecosystem. This simplified food web helps to show how important krill are to the Antarctic ecosystem. ❄️ 9

Blue whales (the largest animals on earth!) feed entirely on krill, and need to eat around 4 tonnes of krill a day to stay healthy.



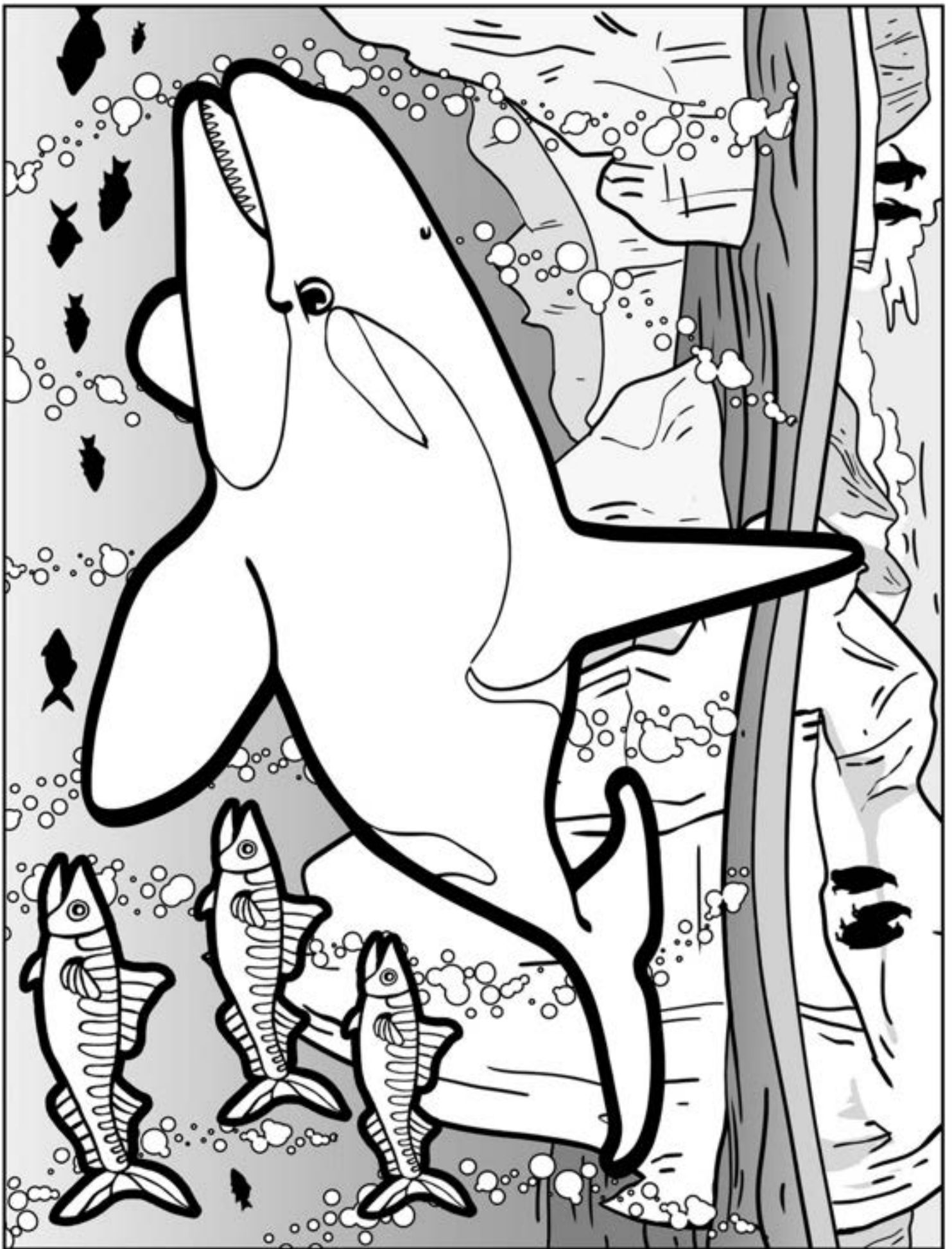
How many connections between krill and other organisms can you find?

How many organisms eat something else that eats krill?

Where might an orca whale be placed in this food web? (You might have to do some research!)

Crabby Climate

Scientists are very interested in the impact of climate change on krill populations. Krill feed on algae and plankton on the underside of sea ice. A reduction in sea ice due to warming has already seen a decline in krill populations.

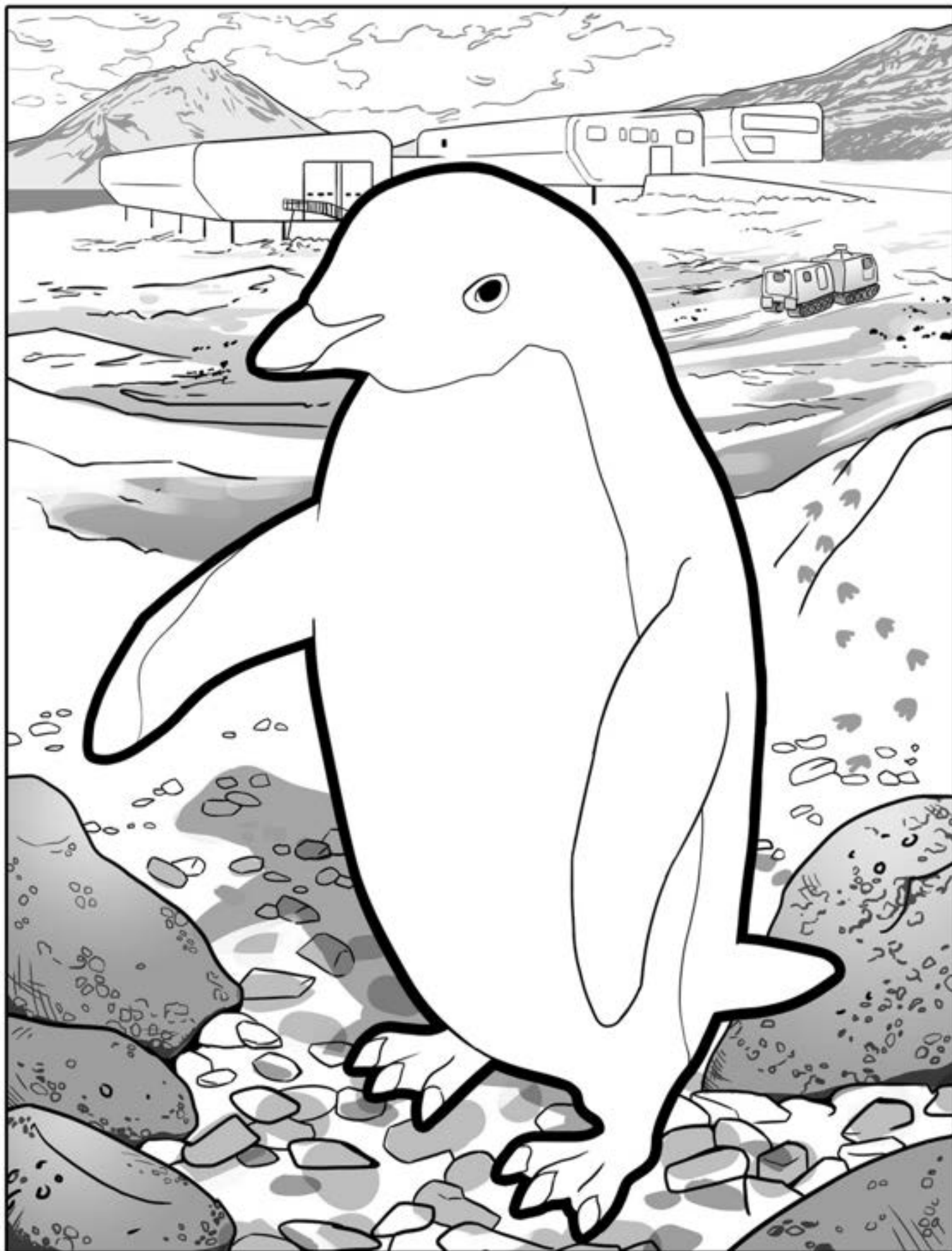


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2. Download the 'Spectacular' App by QuilverVision
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4. Scan Page to Play



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New Zealand**

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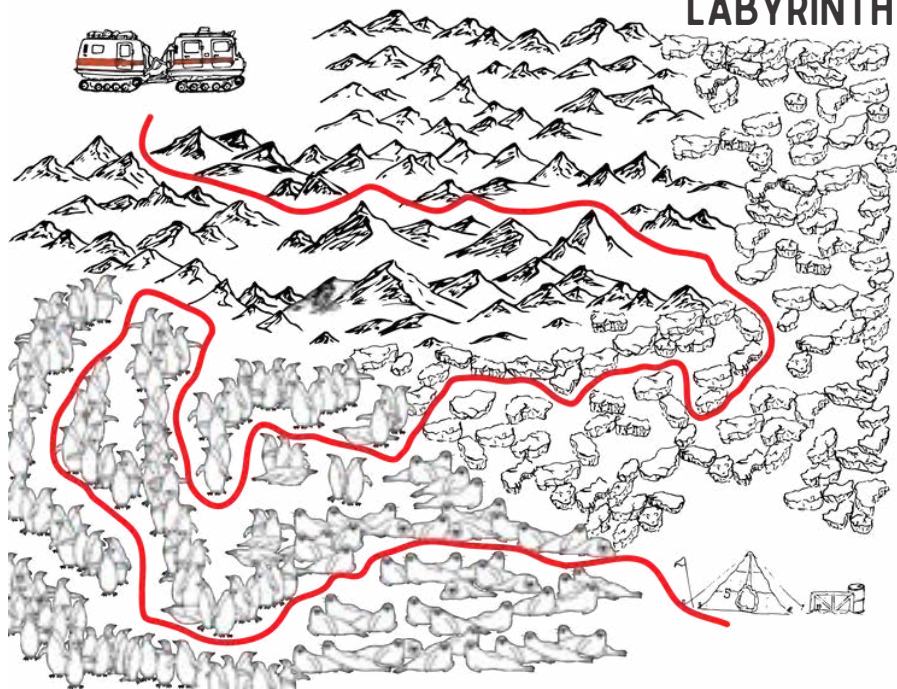
1. Colour the Picture
2. Download the 'Spectacular' App by QuiverVision
3. Use 'Spectacular' to scan the QR code
4. Scan Page to Play

ANSWERS

WORD SEARCH PARTY

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

LABYRINTH



FLAG SCRAMBLER

-  ARGENTINA
-  AUSTRALIA
-  BELARUS
-  BELGIUM
-  BRAZIL
-  BULGARIA
-  CHILE
-  CHINA
-  CZECHIA
-  ECUADOR
-  FINLAND
-  FRANCE
-  GERMANY
-  INDIA
-  ITALY
-  JAPAN
-  NETHERLANDS
-  NEW ZEALAND
-  NORWAY
-  PERU
-  POLAND
-  RUSSIA
-  SOUTH AFRICA
-  SOUTH KOREA
-  SPAIN
-  SWEDEN
-  UKRAINE
-  UNITED KINGDOM
-  UNITED STATES
-  URUGUAY

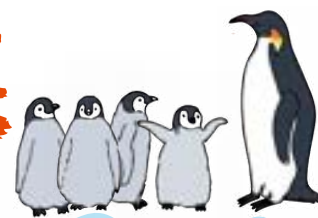
MATCH THE ROOMS

- LIVING QUARTERS** *So staff and researchers have a place to sleep*
- SCIENCE LABS AND OFFICES** *For scientists to manage and conduct research work*
- MEDICAL ROOM** *To provide medical aid to sick or injured base crew*
- DINING AREA** *To provide a place to eat*
- GENERATOR ROOM** *To manage and generate electricity*
- WATER PLANT** *To ensure a fresh water supply*
- VEHICLE WORKSHOP** *For repairing base vehicles and equipment*
- LOCKER ROOM** *To store and organise bulky outdoor clothes*
- CARGO AREA** *To manage and store supplies*
- GYM** *So base crew can exercise to stay fit and healthy*
- MOVIE ROOM** *For entertainment and relaxation*

MATCH THE ROLES

- CARGO HANDLING** *Managing supplies and people arriving and leaving base*
- CARPENTER** *Make repairs to the base, manage firefighting gear*
- CHEF** *Plans and prepares meals for base crew*
- DOMESTIC** *Cleaning base facilities*
- ELECTRICIAN** *Taking care of all base electrics - heating, power, lights*
- FIELD SUPPORT STAFF** *Deploying people and gear out into the field*
- MECHANIC** *Repairing vehicles and equipment; training drivers*
- POWER ENGINEER** *Manages power generation equipment*
- TECHNICAL SUPPORT** *Manage experiments, record data and support scientists*
- TELECOMMUNICATIONS TECHNICIAN** *Maintaining satellite links and radiocommunications*
- WATER ENGINEER** *Maintains sewage treatment plant and water production*

RESOURCES FOR TEACHERS



For more educational resources and activities, head to the Antarctic Education Hub: <https://www.antarcticanz.govt.nz/education-hub>

Match the numbered snowflakes throughout the book with the following for extra resources:

- ❄️ 1 Scott Base - Home on the Ice! [History | Antarctica New Zealand \(antarcticanz.govt.nz\)](https://www.antarcticanz.govt.nz/history)
- ❄️ 2 Tropical Paradise Antarctic research station temperature activity: <https://dle7mq055r7tid.cloudfront.net/images/Average-Daily-Temperatures-for-McMurdo-Station-Vostok-Station-and-Amundsen-Scott-Base-Google-Docs.pdf>
- ❄️ 3 The Yearly Shop - Reverse Osmosis: [Reverse osmosis Facts for Kids \(kiddle.co\)](https://www.kiddle.co/reverse-osmosis-facts-for-kids) and [Osmosis Facts for Kids \(sciencing.com\)](https://www.sciencing.com/osmosis-facts-for-kids/)
- ❄️ 4 A Base of your own - Design a new Scott Base in Antarctica: [Design & Innovation | Antarctica New Zealand \(antarcticanz.govt.nz\)](https://www.antarcticanz.govt.nz/design-innovation) (Maths Level 3)
- ❄️ 5 Working in Antarctica - what to wear in Antarctica <https://vimeo.com/244148115>
- ❄️ 6 Science on the ice [Science | Antarctica New Zealand \(antarcticanz.govt.nz\)](https://www.antarcticanz.govt.nz/science)
- ❄️ 7 The greenhouse Effect [Greenhouse Effect \(climate-change-guide.com\)](https://www.climate-change-guide.com/greenhouse-effect/)
- ❄️ 8 Antarctic wildlife [Antarctica New Zealand \(antarcticanz.govt.nz\)](https://www.antarcticanz.govt.nz/wildlife)
- ❄️ 9 Food webs <https://www.antarcticanz.govt.nz/education/search>