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WELL HELLO THERE! **90 DEGREE** HERE-- FRESH FROM MY TRIP TO ANTARCTICA, WHERE I WAS CREATING VIDEO FLY THROUGHS USING SURVEY DATA! I'VE COME POLE TO POLE, AND NOW I'M UP IN THE ARCTIC CIRCLE. I HEAR YOU'VE BEEN HAVING A LOOK AROUND TOO, VIA THE GET KIDS INTO SURVEY ARCTIC EXPLORATION POSTER! FANCY YOURSELF AN ARCTIC EXPLORER YET? WELL, PULL ON YOUR WOOLLIEST UNDERPANTS AND LET'S SEE IF YOU'VE GOT WHAT IT TAKES TO MAKE A DIFFERENCE UP HERE!

## TASK 1:

### ALL ABOARD AN ARCTIC ADVENTURE!

(LITERACY LINKS - RETRIEVE, RECORD AND PRESENT INFORMATION FROM NON-FICTION / GEOGRAPHY OBJECTIVES - GEOGRAPHICAL KNOWLEDGE AND FIELDWORK)

The Arctic is a place of extremes. It is remote, it is cold, the day and night patterns are far different to most other places on the planet, and in many places, there is very little infrastructure to help people live (e.g. roads, power and communication lines, shops and hospitals, etc.). And yet, people like the surveyors you can see in the exploration

poster are able to live and work there! In order to do so, they first have to reach their base stations. Transport in the Arctic is very different from elsewhere in the world; specialised vehicles are used to deal with the challenging terrain and weather conditions. In order to learn more about how people get around in the Arctic, create a table like the one below and complete each part for the following Arctic vehicles - some of which you can see in the poster:

**SNOWMOBILE SEAPLANE ICE BREAKER ATV DOG SLED SKIS TRACKED VEHICLE**

MODE OF TRANSPORT	POWER SOURCE	NUMBER OF PASSENGERS	MODE OF TRACTION	BEST USED FOR...
SNOWMOBILE	PETROL ENGINE	ONE OR TWO	REAR SINGLE TRACK, SKIS AT THE FRONT	TRAVELLING QUICKLY ACROSS SNOW, SHORT TO MEDIUM DISTANCES

## TASK 2:

### DELIVER-WHO? NO FAST FOOD HERE!

(GEOGRAPHY OBJECTIVES - PHYSICAL GEOGRAPHY & LOCATIONAL KNOWLEDGE SCIENCE OBJECTIVES - FOOD GROUPS AND NUTRITION)

So, you've managed to make it to the Arctic, and you can get around OK, but transport is just the start of your troubles! From clothing and protective gear to communication and power, everything needs to be well thought through. Have a look at what the surveyors and scientists are wearing in the scene. Why do you think it is brightly coloured? Why are some people wearing goggles? You won't see any regular mobile phones here, because they wouldn't get a signal - so how do people working in places like this communicate with the outside world? Here's a hint: there's something helpful in front of the orange tracked

vehicle! How about getting power to those buildings? There are no power lines, but there is a source of fuel that's being used to provide power - can you spot it? Have a look near the snowman!

One other important consideration is food, especially if an Arctic explorer is out on the snow for whole days and nights! Have a look at this table to see how much food an adult male would need for a single day out on the ice:

MANHAULING SLEDGES	6,500 CALORIES
TRAVELLING BY DOG SLEDGE	5,000 CALORIES
TRAVELLING BY SKIDOO	3,350 CALORIES

Continued...



Considering that a normal daily intake is around 2,000 calories, you can see how much more energy an Arctic explorer would need! It's also important to remember that this food would have to be carried around - which requires space and effort! With that said, your challenge is to make a shopping list for a single day in the field, travelling by Skidoo.

You could use an online shopping website to help you do this. You'll be looking for foods that are high in protein, carbohydrates and fat. You will also be looking for foods that are easy to transport, in light packaging, which are perhaps dehydrated or freeze-dried. Have a look at this real-life example for inspiration (with a calorie count for each item in brackets):

BISCUITS (530),  
PEMMICAN (700),  
BUTTER AND CHEESE (700),  
SUGAR (200),  
MEAT AND FISH (780),  
SOUP (40),  
PORRIDGE (25),  
MUESLI (140),  
VEGETABLES (120),  
CHOCOLATE (530),  
JAM (65),  
MILK (225),  
DRINKING CHOCOLATE (45).

TOTAL: 3400 KILOCALORIES PER DAY --  
PROTEIN 102G, FAT 195G, CARBOHYDRATE 170G.

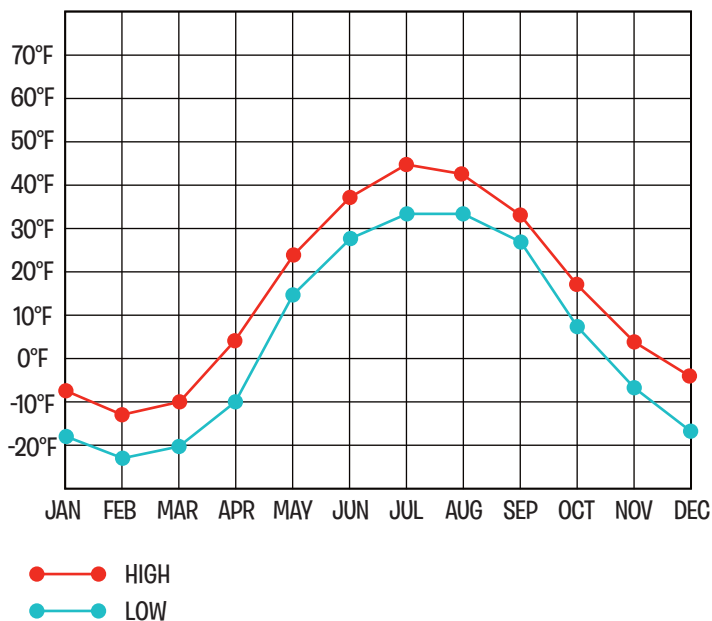
## TASK 3: WORKING HARD, WHATEVER THE WEATHER

(GEOGRAPHY OBJECTIVES - LOCATIONAL KNOWLEDGE / MATHS OBJECTIVES - STATISTICS & DATA HANDLING)

If you've had a good look around the exploration poster, you'll know that there are plenty of things happening that are a result of **climate change**. As a surveyor in the Arctic, you might use LiDAR and SONAR technology to study the shape of glaciers, and more importantly, how the climate affects their size and shape. Information like this informs

If you are going to join the survey team and contribute to these conservation efforts, it would be useful to have a good understanding of the weather that you'll have to endure in the Arctic circle. Take these temperature and daylight measurements and use your maths skills to create line graphs that could help you prepare for the Arctic climate.

Here's an example of a temperature-tracking line graph:



projects such as the Last Ice Area conservation initiative - a project to protect an area known as 'Tuvaijuittuq' (meaning 'the place where the ice never melts' in Inuktitut). This region in the high Arctic of Canada and Greenland is the last place where summer sea ice will remain as the Earth continues to warm, and it will be essential as a home for ice-dependent life. You can read more about this project here.

HOURS OF DAYLIGHT BY MONTH	
MONTH	HOURS OF DAYLIGHT
JANUARY	4
FEBRUARY	8
MARCH	12
APRIL	16
MAY	22
JUNE	24
JULY	24
AUGUST	20
SEPTEMBER	14
OCTOBER	10
NOVEMBER	4
DECEMBER	2

AVERAGE TEMPERATURE BY MONTH		
MONTH	LOW	HIGH
JANUARY	-19°F	-8°F
FEBRUARY	-22°F	-12°F
MARCH	-20°F	-10°F
APRIL	-10°F	5°F
MAY	15°F	24°F
JUNE	29°F	38°F
JULY	33°F	45°F
AUGUST	33°F	41°F
SEPTEMBER	28°F	33°F
OCTOBER	9°F	18°F
NOVEMBER	-7°F	4°F
DECEMBER	-17°F	-4°F

## TASK 4:

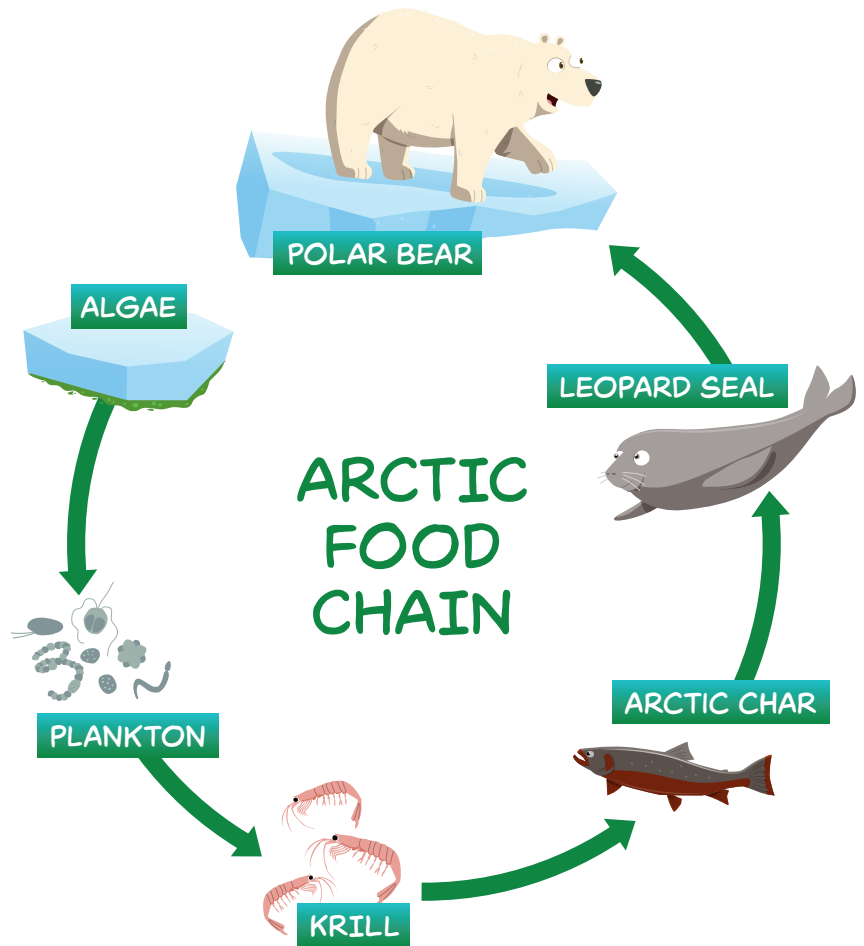
### EVERYTHING IS CONNECTED

(GEOGRAPHY OBJECTIVES - PHYSICAL GEOGRAPHY / SCIENCE OBJECTIVES - LIVING THING AND THEIR HABITATS)

Changes in the Arctic climate will inevitably have an impact on the ecology of the area. You can see from the exploration poster that animals are struggling in the Arctic. This is because both their habitat and their food supplies are being affected by the impact of climate change. Whilst surveyors study the physical changes in the Arctic, the data they collect can provide clues as to what is happening in the animal world.

Take a look at this Arctic food chain. Have a go at creating your own, and for each part, try to explain what would affect it, and what the impact would be for the chain going forward. Here's an example:

IF THE MELTING SEA ICE REMOVES THE AREA WHERE ARCTIC COD REPRODUCE, THEN THERE WOULD BE LESS FOOD FOR LEOPARD SEALS.



## TASK 5:

### THIS ART IS TRASH!

(GEOGRAPHY OBJECTIVES - GEOGRAPHICAL KNOWLEDGE AND PHYSICAL GEOGRAPHY / ART OBJECTIVES - CONTROL AND USE OF MATERIALS)

As a result of the hard work of surveyors and scientists working in the Arctic, the global population is becoming more aware of the impact of climate change on the natural world. But there is still more work to do!

One way to raise awareness is to use your creative skills to make something that moves people to make a change. One big, important thing that everyone can do is to recycle their household rubbish.

These images of the lone Arctic polar bear were made using cut-up pieces of scrap paper, arranged in a geometric pattern. Could you create a recycled art piece and use it to show people what can be done with materials that would otherwise be thrown away?





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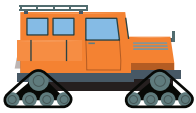


## TASK 1:

### ALL ABOARD AN ARCTIC ADVENTURE!

LET'S EXPLORE THAT WAY THAT PEOPLE GET AROUND IN THE ARCTIC! COMPLETE THE TABLE BELOW FOR THE VEHICLES IN THE LIST -- SOME OF WHICH YOU CAN SEE IN THE POSTER!



MODE OF TRANSPORT	POWER SOURCE	NUMBER OF PASSENGERS	MODE OF TRACTION	BEST USED FOR...
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 SEAPLANE				
 ICEBREAKER				
 ATV				
 DOG SLED				
 SKIS				
 TRACKED VEHICLE				

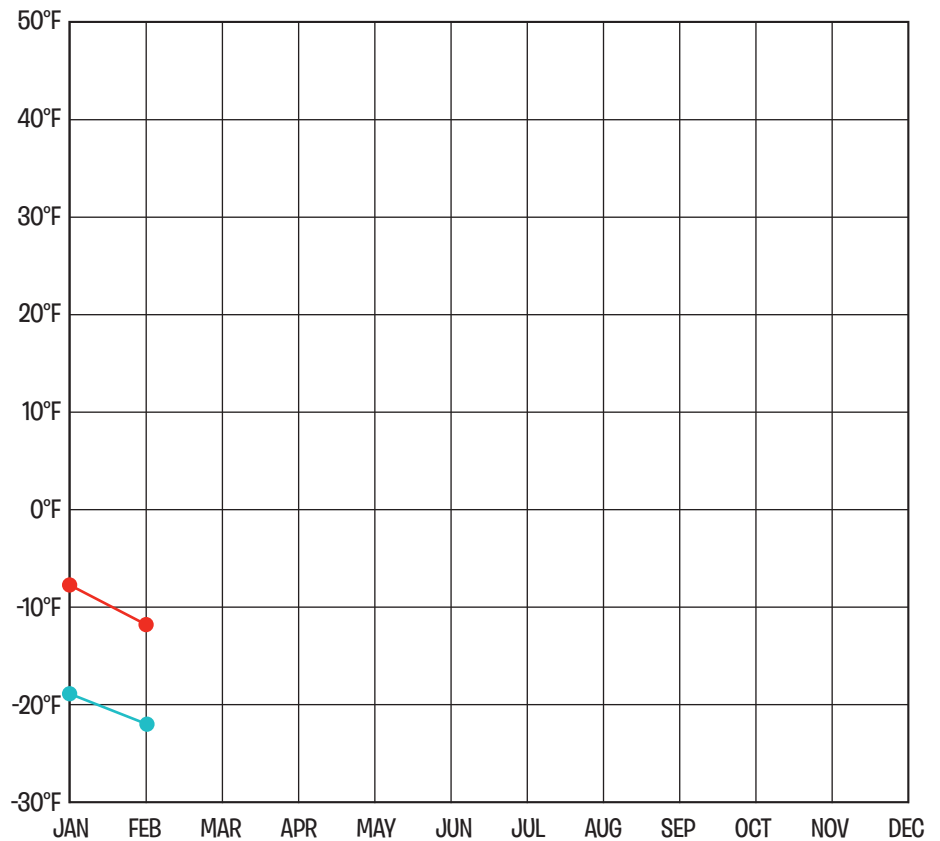


# TASK 3: WORKING HARD, WHATEVER THE WEATHER

Take the temperature and daylight measurements from the tables and use your maths skills to create line graphs that could help you prepare for the Arctic climate. The first points have been plotted for you!

● HIGH  
● LOW

AVERAGE TEMPERATURE BY MONTH		
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## TASK 4: EVERYTHING IS CONNECTED

Have a go at creating your own Arctic food chain, and for each part, try to explain what would affect it, and what the impact would be for the chain going forward. Here's an example from the chain on the Learning Page:

IF THE MELTING SEA ICE REMOVES THE AREA WHERE ARCTIC COD REPRODUCE, THEN THERE WOULD BE LESS FOOD FOR LEOPARD SEALS.

