**Question 1 1 pts**

R is a(n) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_-based programming system.

1. Image
2. Object
3. Science

**Question 2 1 pts**

What is the assignment operator? For example, used to assign a vector.

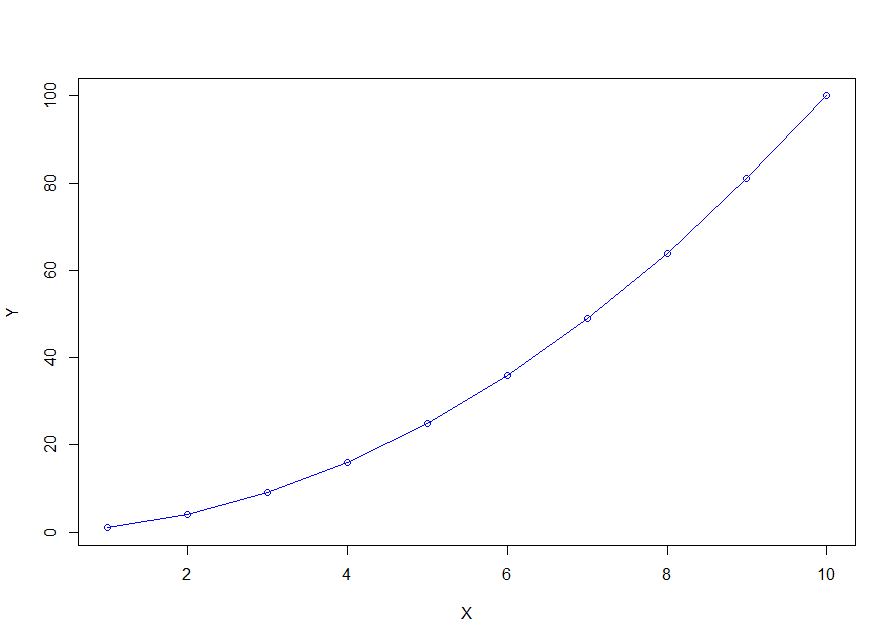
1. <-
2. ?
3. ~

**Question 3 1 pts**

In an R script, what symbol placed before characters or text makes it a note to yourself rather than code that will be run?

1. &
2. c()
3. #

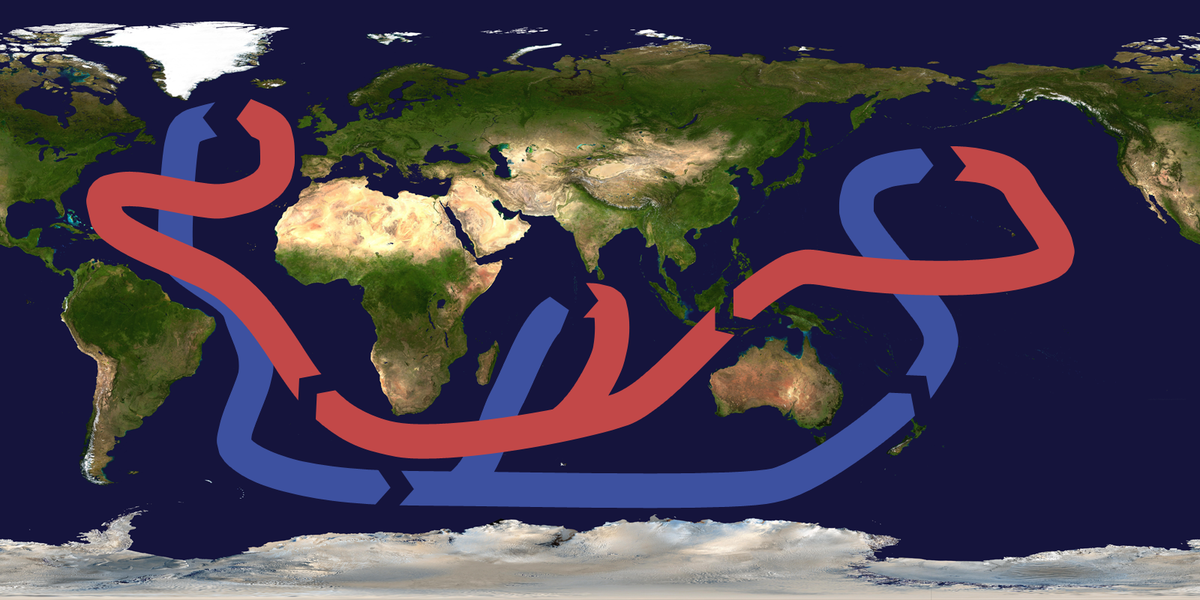
**Question 1 1 pts**

Which set of commands created this plot? 

1. X=1:10  
   Y=X  
   plot(X, Y, type = "o", col = "blue")
2. X=1:10  
   Y=X^2  
   plot(X, Y, type = "o", col = "blue")
3. X=1:10  
   Y=X^2  
   plot(Y, X, type = "o", col = "blue")

**Question 1 1 pts**

What kind of circulation is shown in the figure?



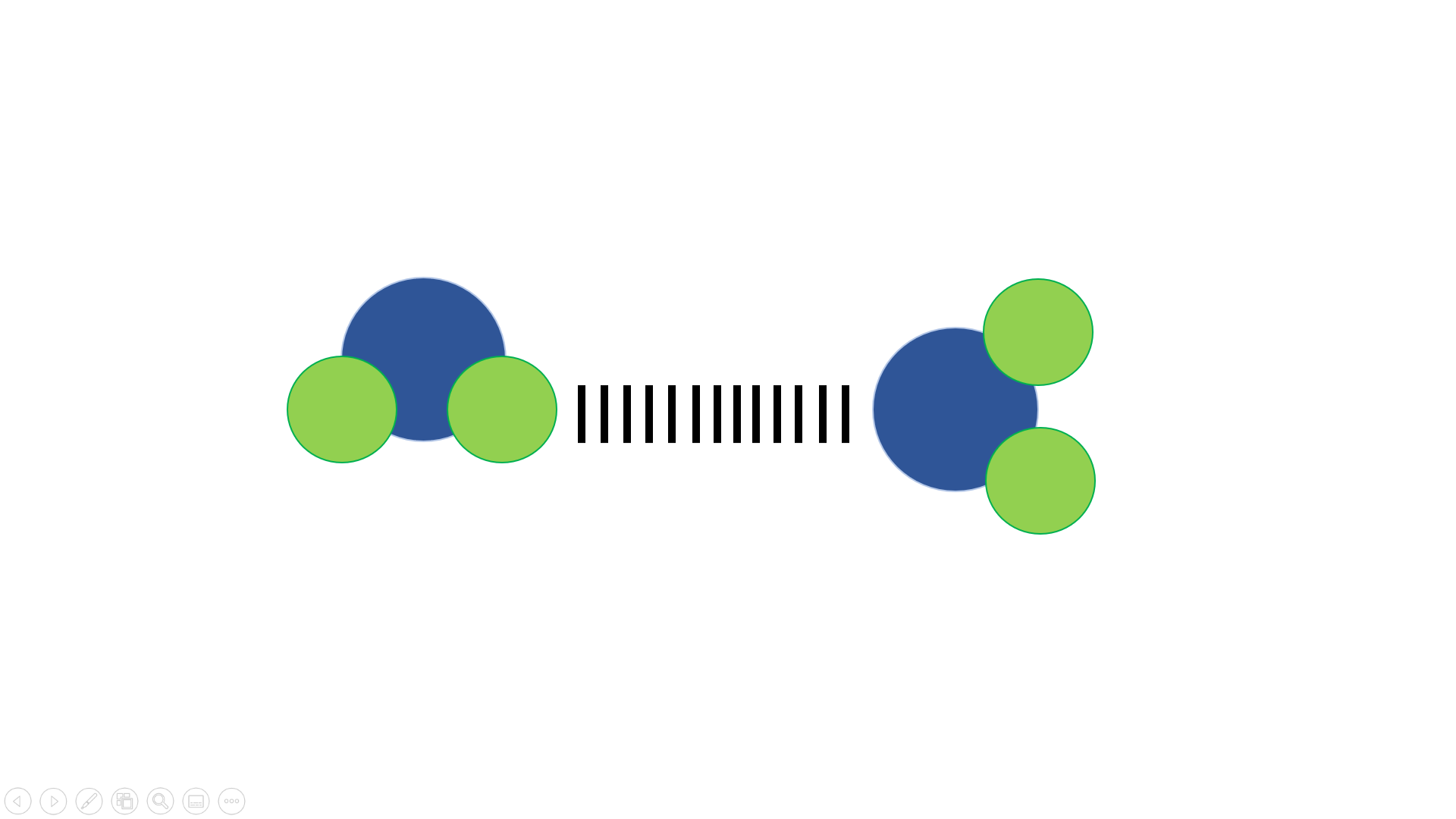
(<https://upload.wikimedia.org/wikipedia/commons/b/b0/Thermohaline_circulation.png>;

Brisbane [CC BY-SA 3.0 (<http://creativecommons.org/licenses/by-sa/3.0/)>])

1. Ekman Circulation
2. Thermohaline Circulation
3. Tidal Circulation
4. Atmospheric Circulation

**Question 2 1 pts**

What kind of chemical bonding is being shown?



1. Hydrogen Bonding
2. Oxygen Bonding
3. Covalent Bonding
4. Ionic Bonding

**Question 1 1 pts**

Inspect the Table.

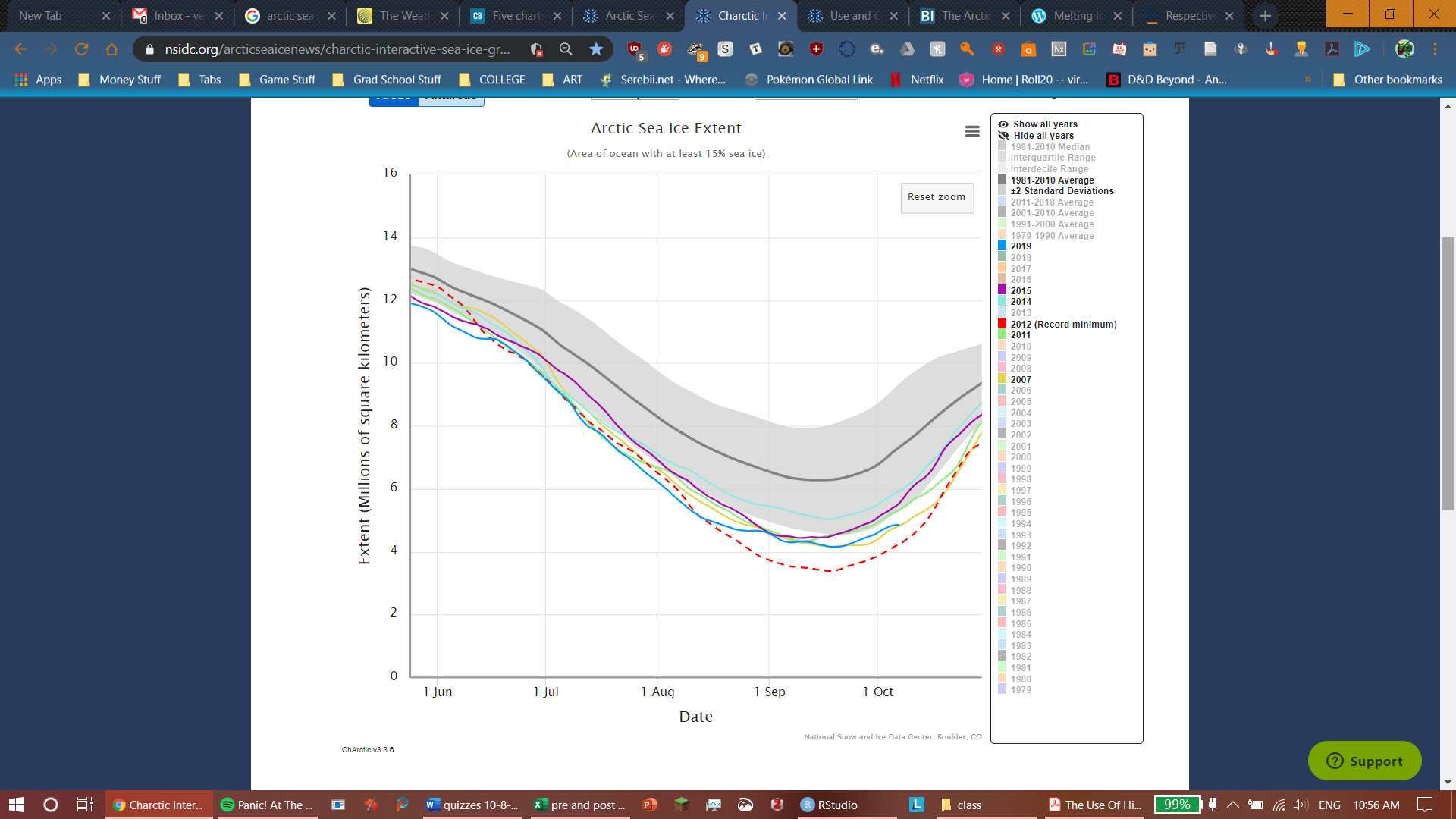
Is the Antarctic described by Column A or Column B?

|  |  |  |
| --- | --- | --- |
| **Feature** | **A** | **B** |
| **Shelf** | Broad with two narrow openings | Narrow and open to all oceans |
| **River Input** | Several | None |
| **Nutrients in Photic Zone** | Seasonally depleted | High year-round |
| **Icebergs** | Small, irregular, not in basin | Abundant, large, tabular |
| **Pack ice (sea ice) averages** |  | |
| **Maximum Area** | 15 \* 10^6 km2 | 18 \* 10^6 km2 |
| **Minimum Area** | 7 \* 10^6 km2 | 3 \* 10^6 km2 |
| **Age** | Mostly multiyear | Mostly 1 year |
| **Thickness** | 3.5 m | 1.5 m |
| **Trend in Total Amount (1979 – 2008)** | 4.1% decrease/decade | 0.9% increase/decade |
| **Snow thickness (over ice)** | Relatively thin | Relatively thick |

1. A
2. B

**Question 1 1 pts**

What does this graph show?



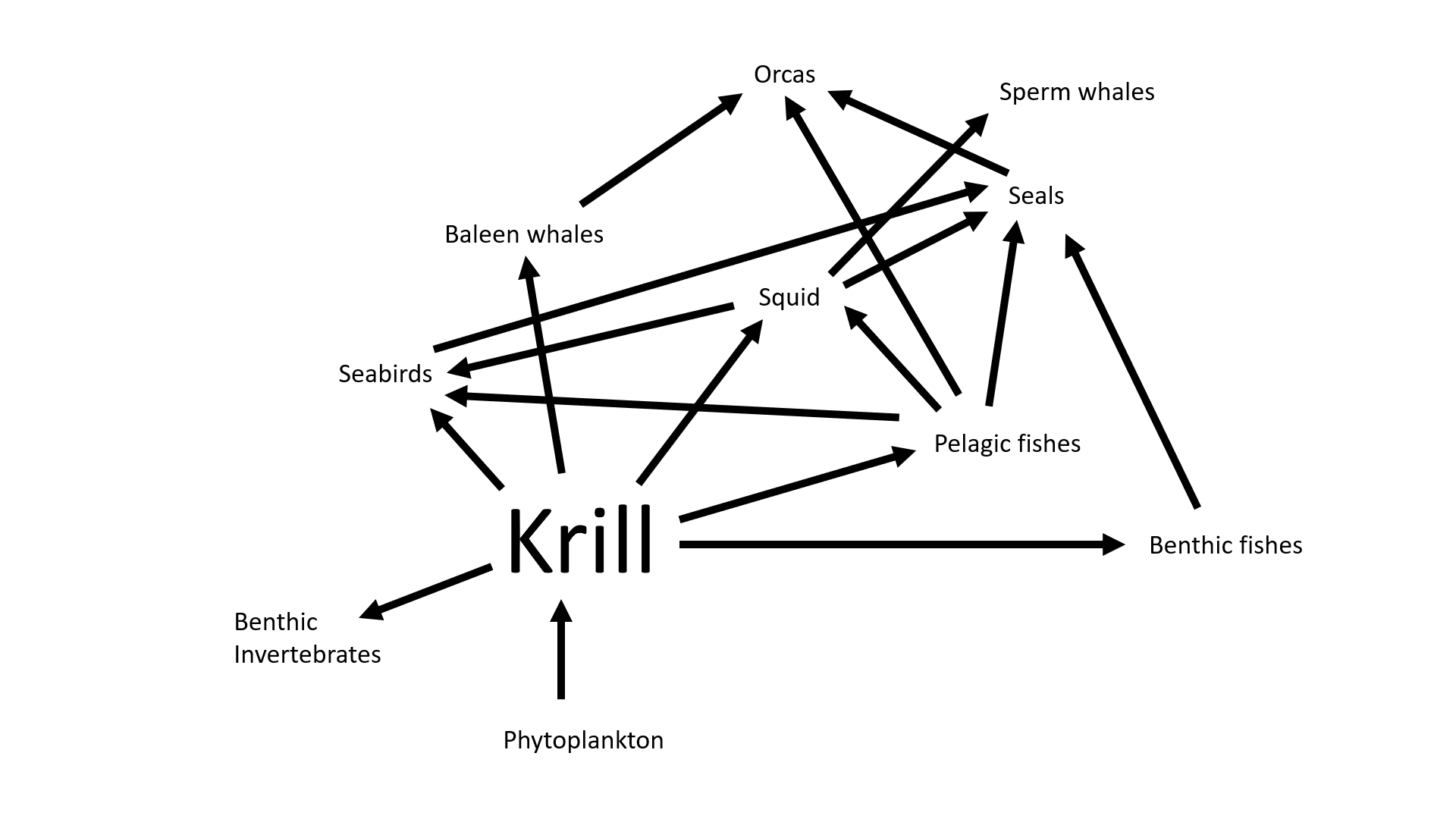
 (<https://nsidc.org/arcticseaicenews/charctic-interactive-sea-ice-graph/>;

Credit: National Snow and Ice Data Center)

1. On average, the areal extent of Arctic Sea Ice is lower in June, than in September.
2. On average, the areal extent of Arctic Sea Ice is lower in September than in June due to climate change.
3. The areal extent of Arctic Sea-Ice was lower in 2012, than the average areal extent of Arctic Sea Ice.
4. There is no difference between the average climatological areal extent of Arctic Sea Ice and the areal extent of Arctic Sea Ice in 2007.

**Question 1 1 pts**

Refer to the diagram. What do Antarctic krill eat?



1. Seabirds
2. Phytoplankton
3. Benthic Invertebrates
4. All of these

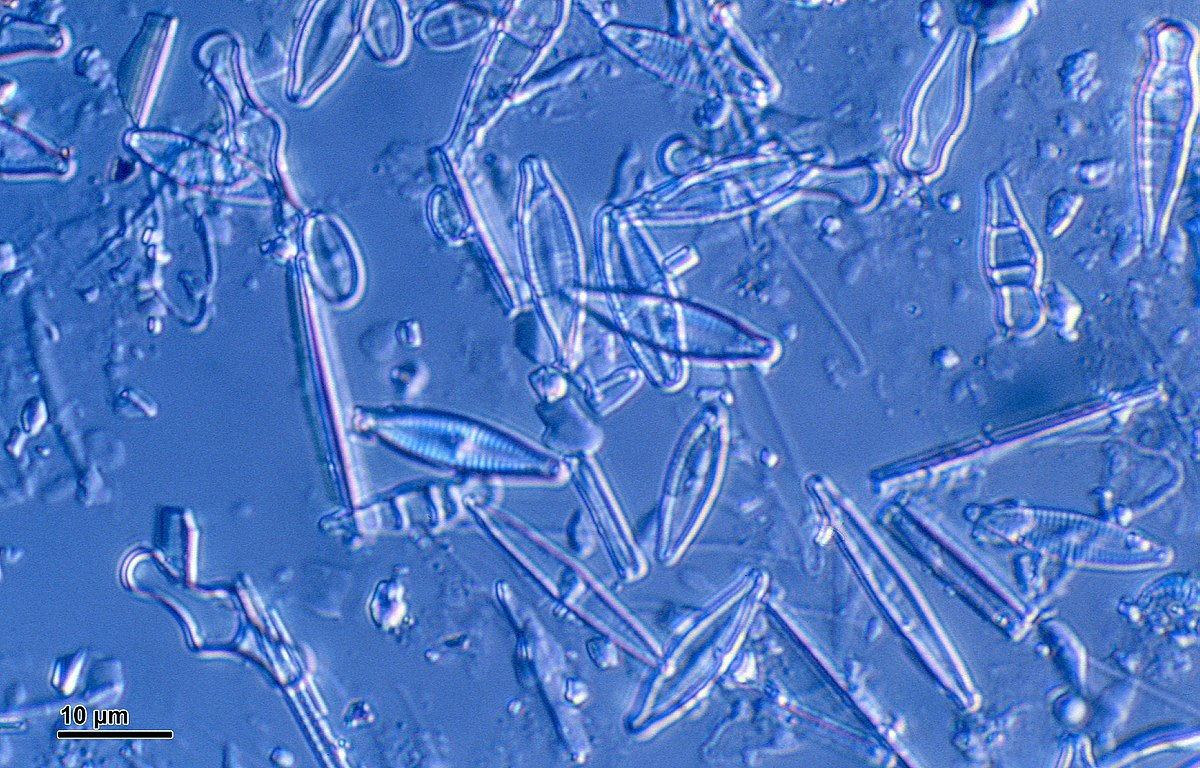
**Question 1 1 pts**

Which penguin species is declining in the West Antarctic Peninsula?

1. Adélie Penguin
2. Chinstrap Penguin
3. Cape Penguin
4. Gentoo Penguin

**Question 1 1 pts**

The phytoplankton in the image are:



(https://upload.wikimedia.org/wikipedia/commons/c/c1/Diatoms\_%28248\_05%29\_Various\_diatoms.jpg; Doc. RNDr. Josef Reischig, CSc. [CC BY-SA 3.0 (https://creativecommons.org/licenses/by-sa/3.0)])

1. Diatoms
2. Dinoflagellates
3. Coccolithophores
4. Zooplankton

**Question 2 1 pts**

Why is highest population size of a predator often lagged behind that of the prey?

1. Prey swim away from the predator.
2. It takes time for the predator population to respond to the increased food availability.
3. Predators only like to eat declining prey populations.
4. Prey are more nutritious when their populations are declining.

**Question 1 3 pts**

What aspects of a bird's behavior does the bill give information into?

1. Mating
2. Food Source
3. Predator Avoidance
4. Volume of noises they make

**Question 1 2 pts**

Which polar region has phylogenetically older groups and more endemic species?

1. Antarctic
2. Arctic

**Question 2 2 pts**

What is the brown material in this ice?



(<https://upload.wikimedia.org/wikipedia/commons/0/0a/Thurber_algae.jpg>; Andrew Thurber [CC BY-SA 4.0 (https://creativecommons.org/licenses/by-sa/4.0)])

1. Sediment
2. Phytoplankton
3. Ice algae

**Question 1 1 pts**

Pollution is any material discharged into waters that has measurable adverse effect on natural systems and can be:

1. A point source
2. A nonpoint source
3. Both point and nonpoint source
4. None of the above

**Question 1 1 pts**

True or False: The Murphy article in Nunatsiaq Online paper suggests that eating ringed seal liver is unhealthy for Inuit women.

1. True
2. False

**Question 1 2 pts**

An example of "fishing down the food web" is:

1. Krill harvesting in Antarctica
2. Salmon harvesting in British Columbia
3. Oyster aquaculture in New Zealand

**Question 1 2 pts**

The common body characteristics of marine mammals include:

1. Viviparity
2. Body Hair
3. Mammary Glands
4. Large Teeth
5. Echolocation
6. All the above
7. None of the above
8. Viviparity, Body Hair, Mammary Glands