



Worksheet

1

What is the deep sea environment like?

Task 1

Describe the images you have of the deep sea.

Task 2

Can humans live in the deep sea?

Task 3

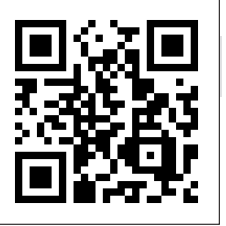
Write down your thoughts to the Research Question.



Worksheet 2

What happens when waste flows into the sea?

Task 1



Watch the video and find out what kind of waste is in which part of the ocean.

https://youtu.be/_xEjXiGRMVI

Task 2

Is it feasible to remove the accumulated waste in the ocean?

Task 3

Write down your thoughts to the Research Question.



Worksheet 3

What impact does plastic waste have on marine life and our society?

Task 1

What will be the impact on marine life as plastic waste increases?

Task 2

What do you think the effects you considered in Task 1 will have on our lives?

Task 3

Write down your thoughts to the Research Question.



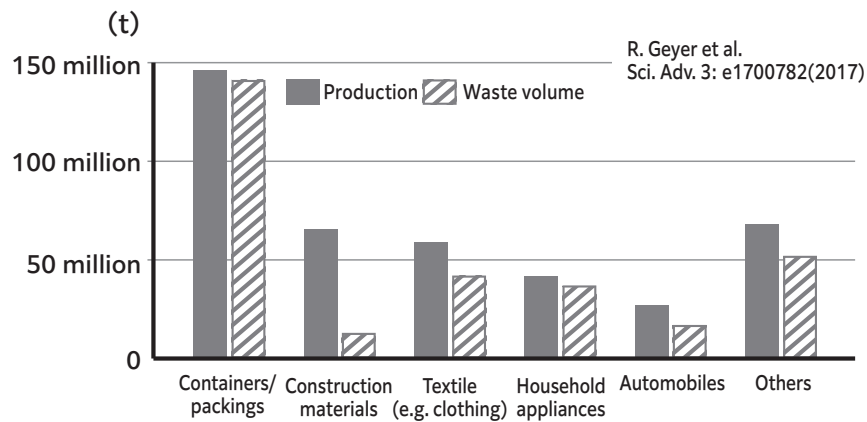
Worksheet 4

Where does marine plastic waste come from?

Task 1

What can be said from the following graph?

Global production and waste generation of plastic by sector



Task 2

How does land-based waste end up in the ocean?

Task 3

Write down your thoughts to the Research Question.



Worksheet **5**

What materials would be beneficial for solving the plastic waste problem?

Task 1

What new materials are under development today?

Task 2

What functions should future plastics have in order to replace conventional plastics?

Task 3

Write down your thoughts to the Research Question.



How can we solve the issues of plastic waste?

Task 1

List the initiatives already being undertaken to address the plastic waste issue.

Task 2

Are there any plastic products in our daily lives that could do without plastic?

Task 3

Write down your thoughts to the Research Question.



Advanced Questions

Let's take on some advanced questions

- What are characteristics of marine life living in the extreme environment of the deep sea?
- How many grams of plastic waste do you generate in a week?
From that, can you estimate the annual plastic waste generation in Japan?
- Why do lightweight plastics that float on water eventually sink to the sea floor?
- Why do plastics break down into smaller pieces over time?
- What proportion of plastics are recycled?
- What are the advantages and disadvantages of biodegradable plastics?

Interview with researcher



- Interview with researcher: Dr. Ryota Nakajima
<https://youtu.be/OoRY3eCU8OI>

see also



- Deep-sea Debris Database
<https://www.godac.jamstec.go.jp/dsdebris/j/index.html>



- One reason why microplastics move toward the deep sea is now known (Less Plastic Life)
https://lessplasticlife.com/marineplastic/fate/how_microplastics_sink_to_the_deep/



- GOODBYE PET BOTTLE PROJECT - GODAC's New Effort -
<https://www.jamstec.go.jp/sdgs/j/case/034.html>



- "Biodegradable Plastics" - Ask the NO-PLASTIC Doctor about the Truth of Environmental Issues (Kankyo Dainari)
<https://www.kankyodainari.com/articles/nakajima-03>



- BISMAL (Biological Information System for Marine Life), a marine biodiversity and biogeography database
<https://www.godac.jamstec.go.jp/bismal/j/about.html>



Grade:

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Review

Review Sheet 1

Write about what you have learned, any questions that remain unresolved, and your thoughts.

Date:

Date:

Date:



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Review

Review Sheet 2

Write about what you have learned, any questions that remain unresolved, and your thoughts.

Date:

Date:

Date:



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Supplement

Connecting with Things around You 1

How does what you have learned/will learn from this text relate to things around you and your life? Write down your thoughts.

Date:

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Supplement

Connecting with Things around You 2

How does what you have learned/will learn from this text relate to things around you and your life? Write down your thoughts.

Date:

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Date:



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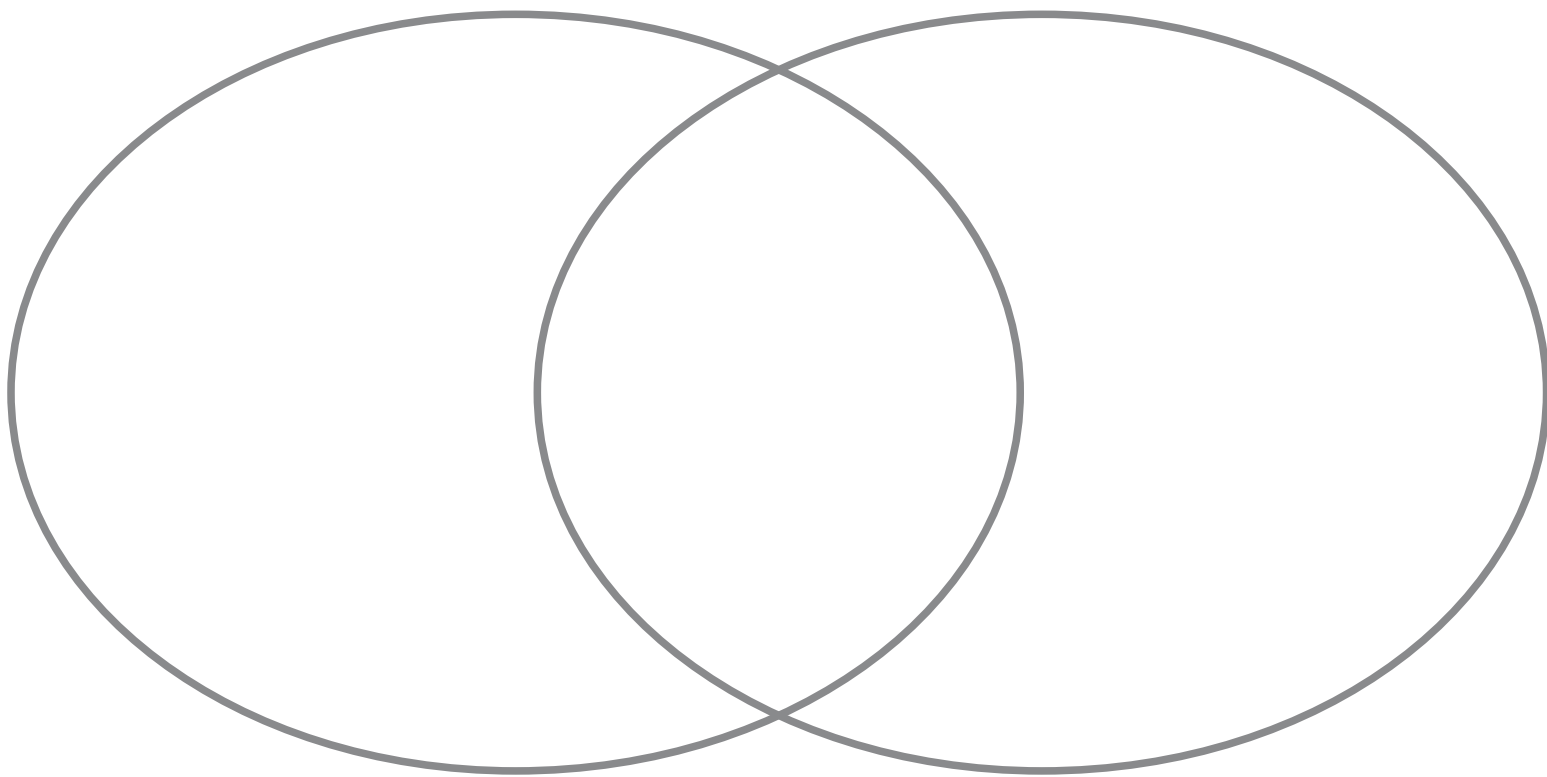
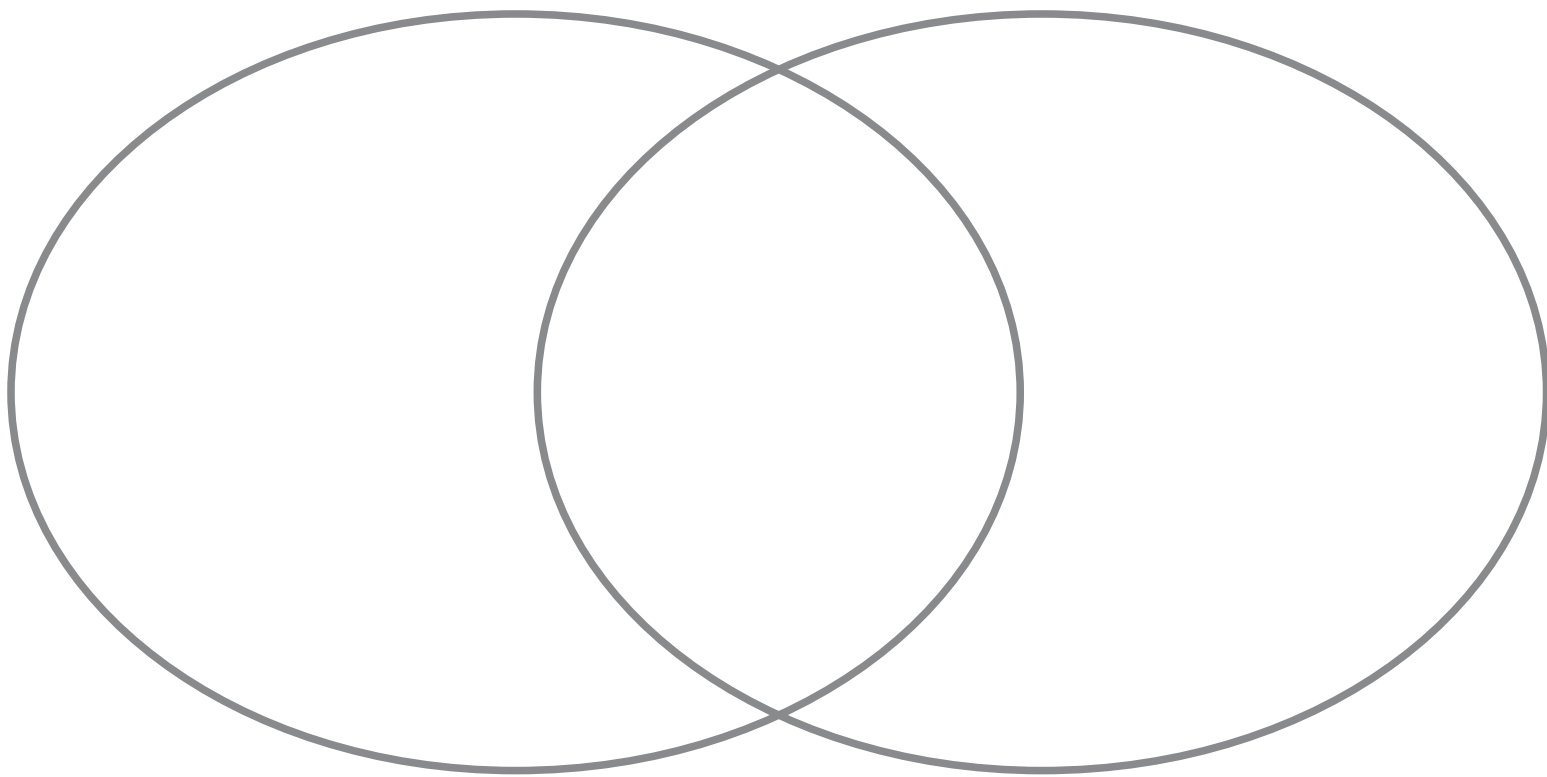
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Venn Diagram





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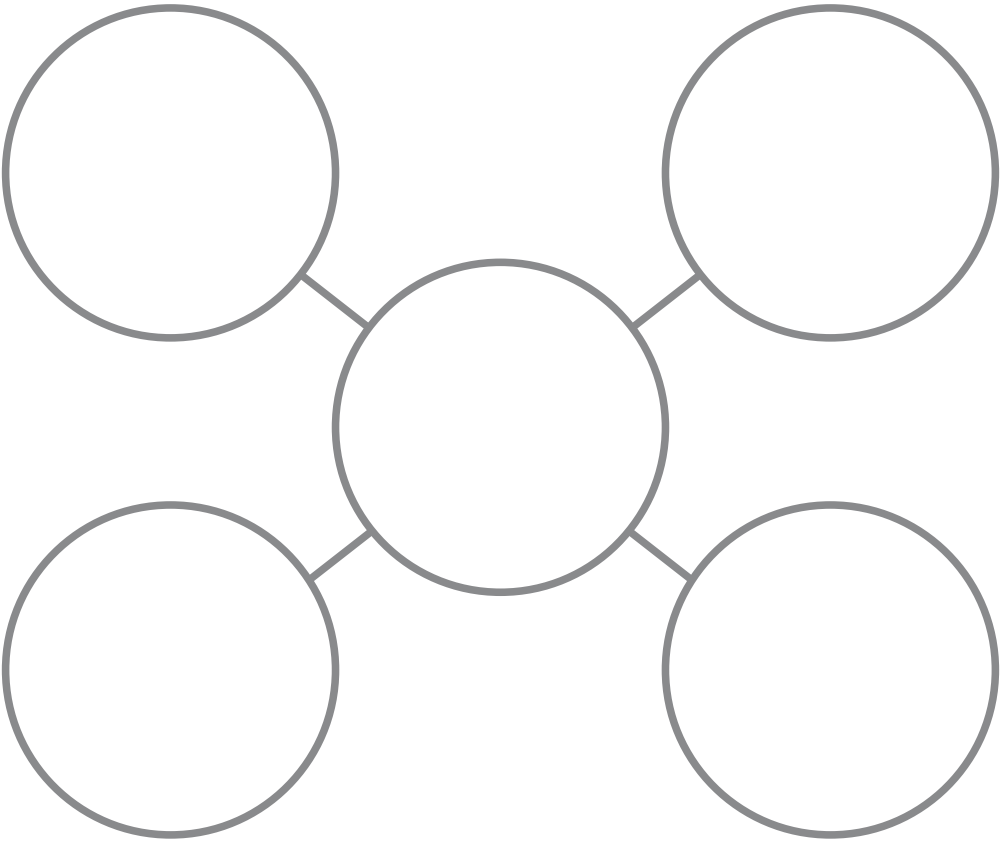
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Image Map





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Bear Hand Chart



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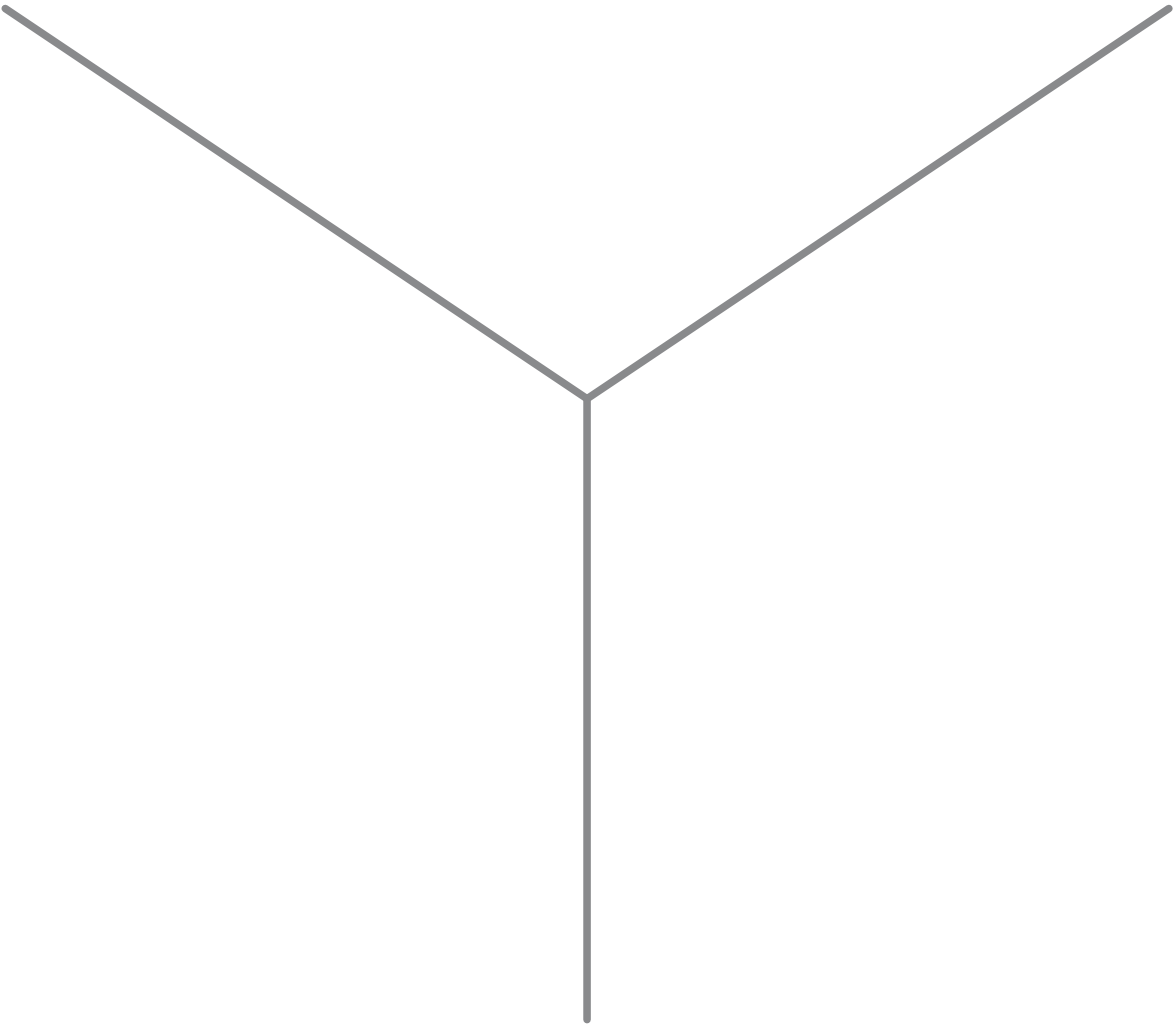
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Y Chart





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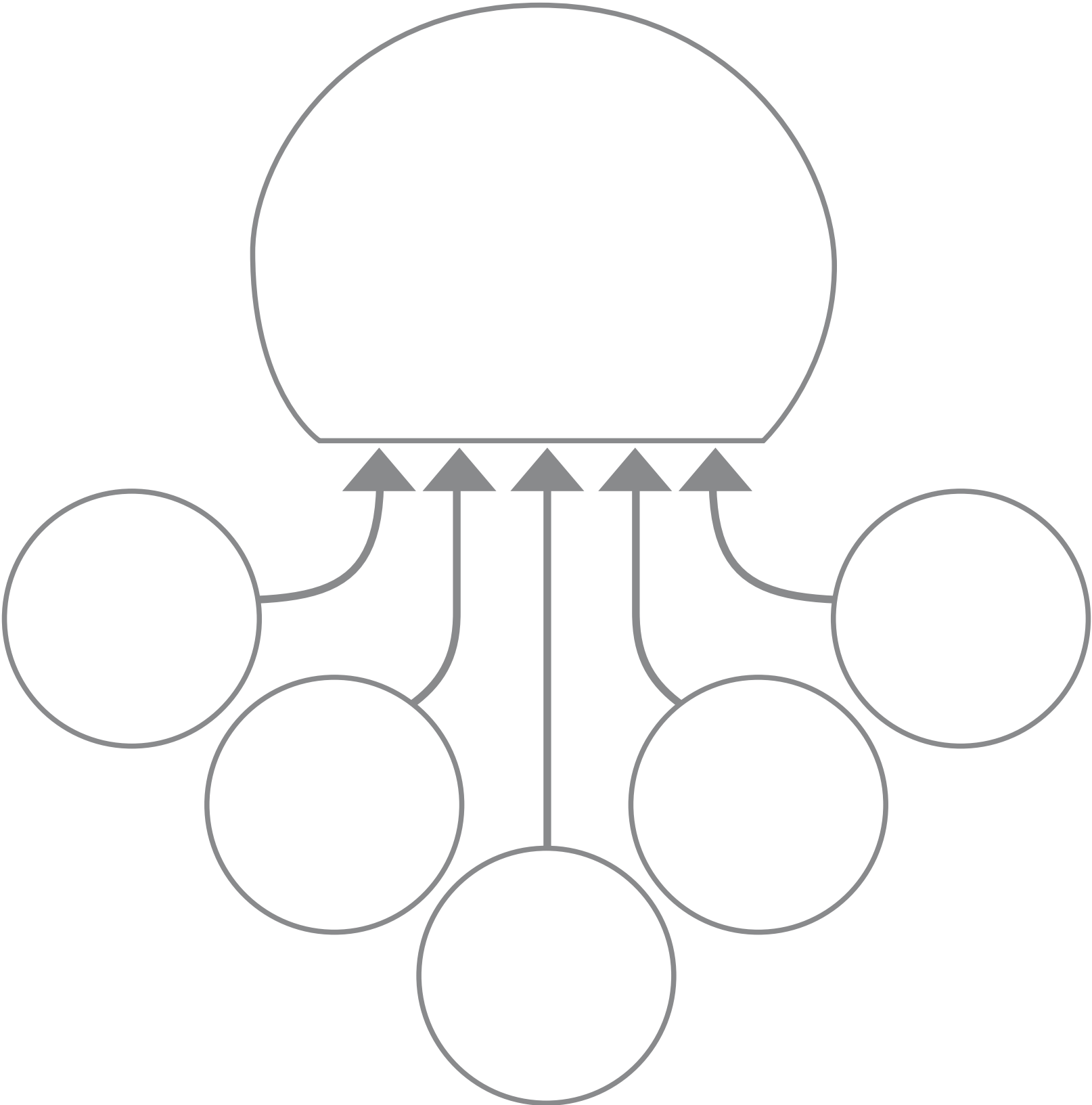
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Jellyfish Chart





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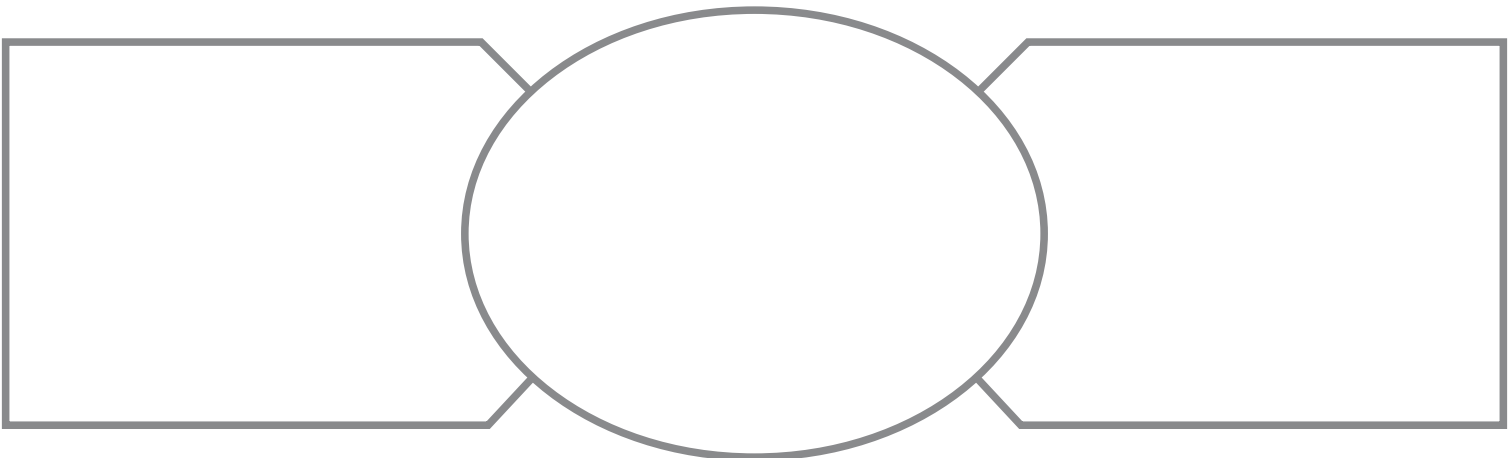
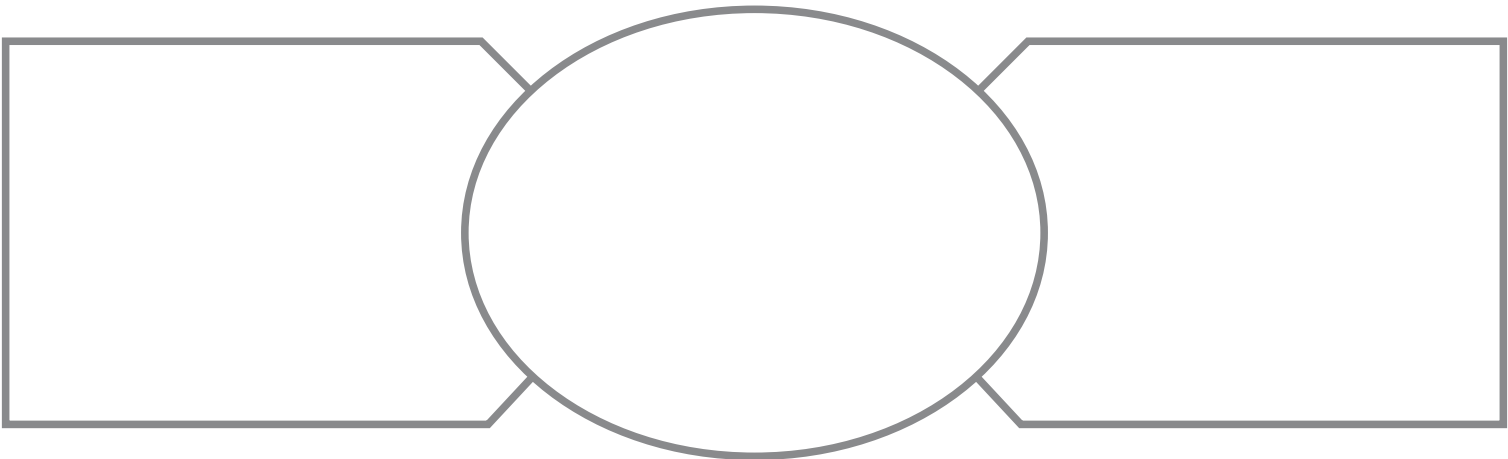
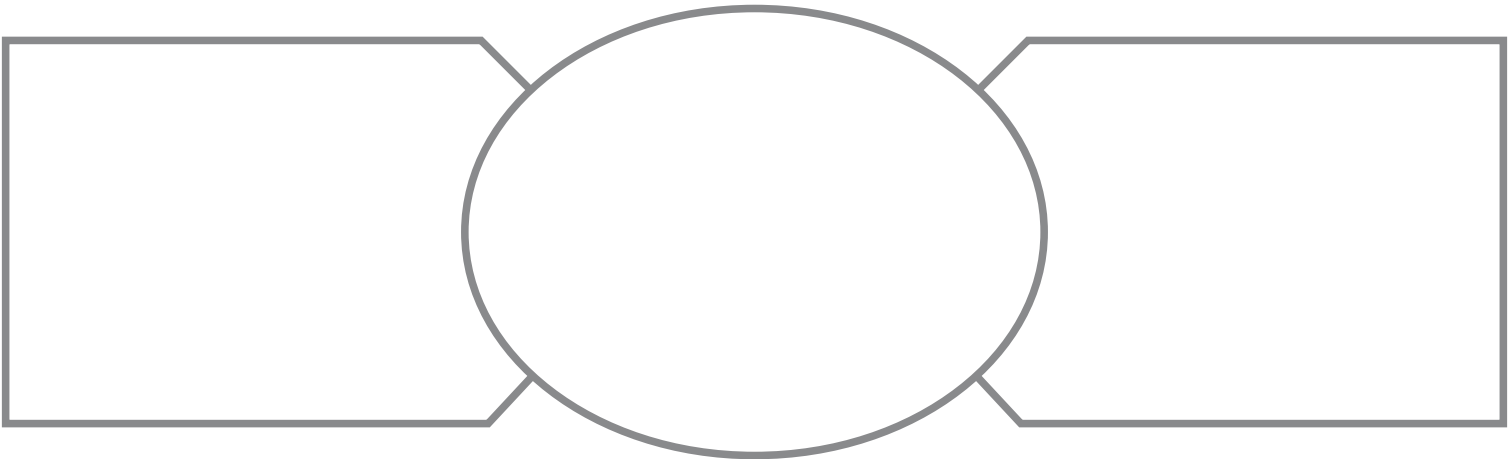
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Candy Chart





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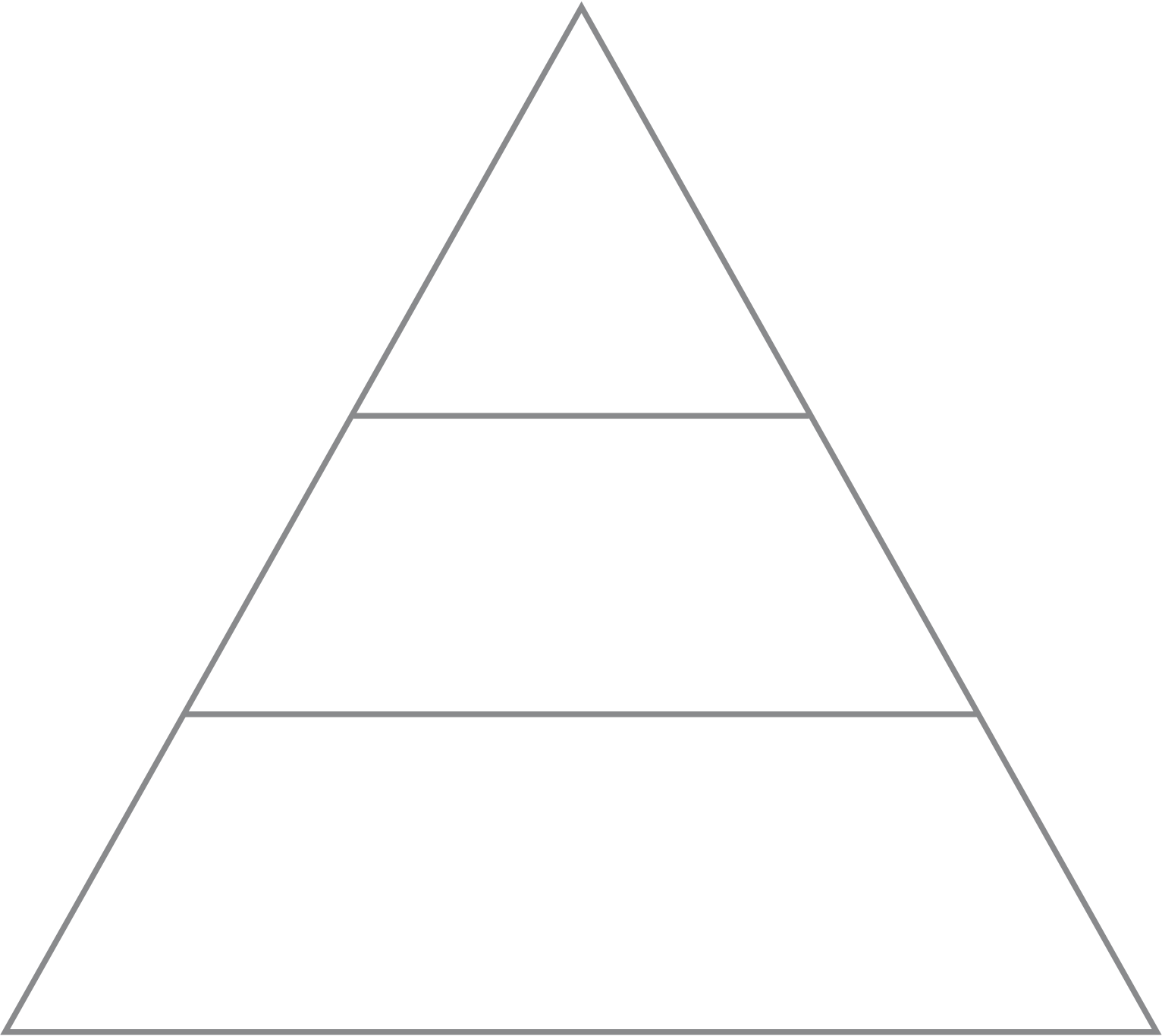
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Pyramid Chart





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Onion Chart

