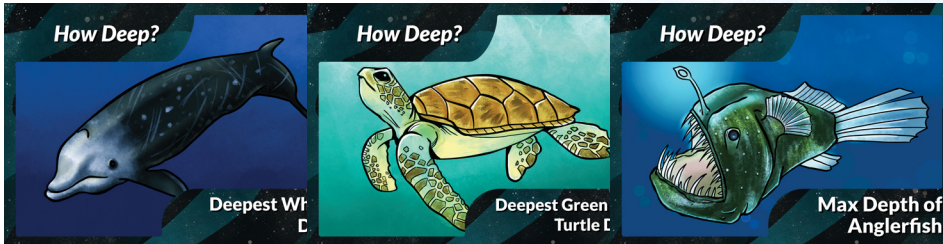


HOW DEEP? SORTING GAME ACTIVITY

Overview:

This activity guide will help informal educators facilitate this sorting game activity in large or small groups in a passive or active setting, with patrons from Pre-K to adult. This simple and engaging activity introduces younger patrons to concepts such as distance and depth and allows older patrons to explore these concepts further. This is an excellent engagement activity that will enable learners to explore the extent of the ocean's depth and the creatures that inhabit it.



Sorting Cards

Materials and Set-Up:

- “How Deep?” sorting games cards (*pages 3-7 of this activity guide*), printed at standard size (*do not enlarge or shrink*) on cardstock and/or laminated
- Space to spread cards out (*i.e. table or a low-foot-traffic floor space*)

Instructions

1. Arrange patrons in groups of 1-9. Hand each patron a card and ask the group to arrange the items in order of shallowest to deepest.
2. Alternatively, for a “passive” program, leave a set of laminated cards out, with one clearly defined “answer key” card.

Target Age:

Family, Multigenerational, Pre-K, Early Elementary, Upper Elementary, Tweens (9-12), Teens, Adults

Prep Time:

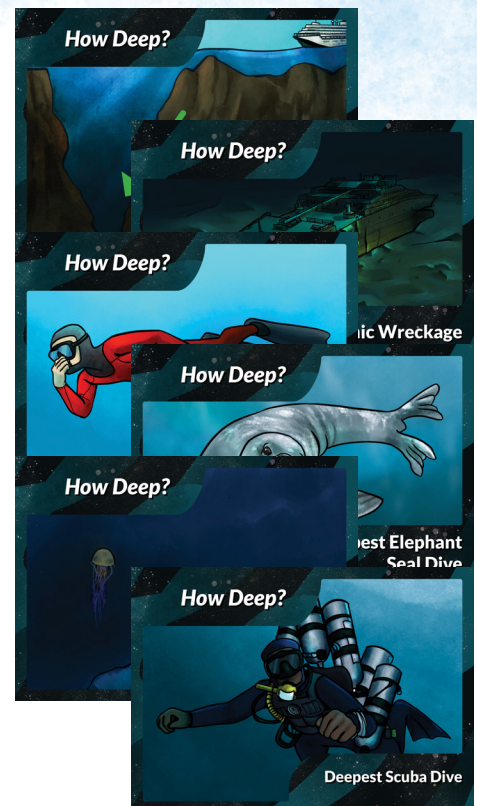
5-10 minutes

Activity Duration:

10-20 minutes

Perfect for:

Open space indoors, libraries



HOW DEEP IS THE OCEAN?

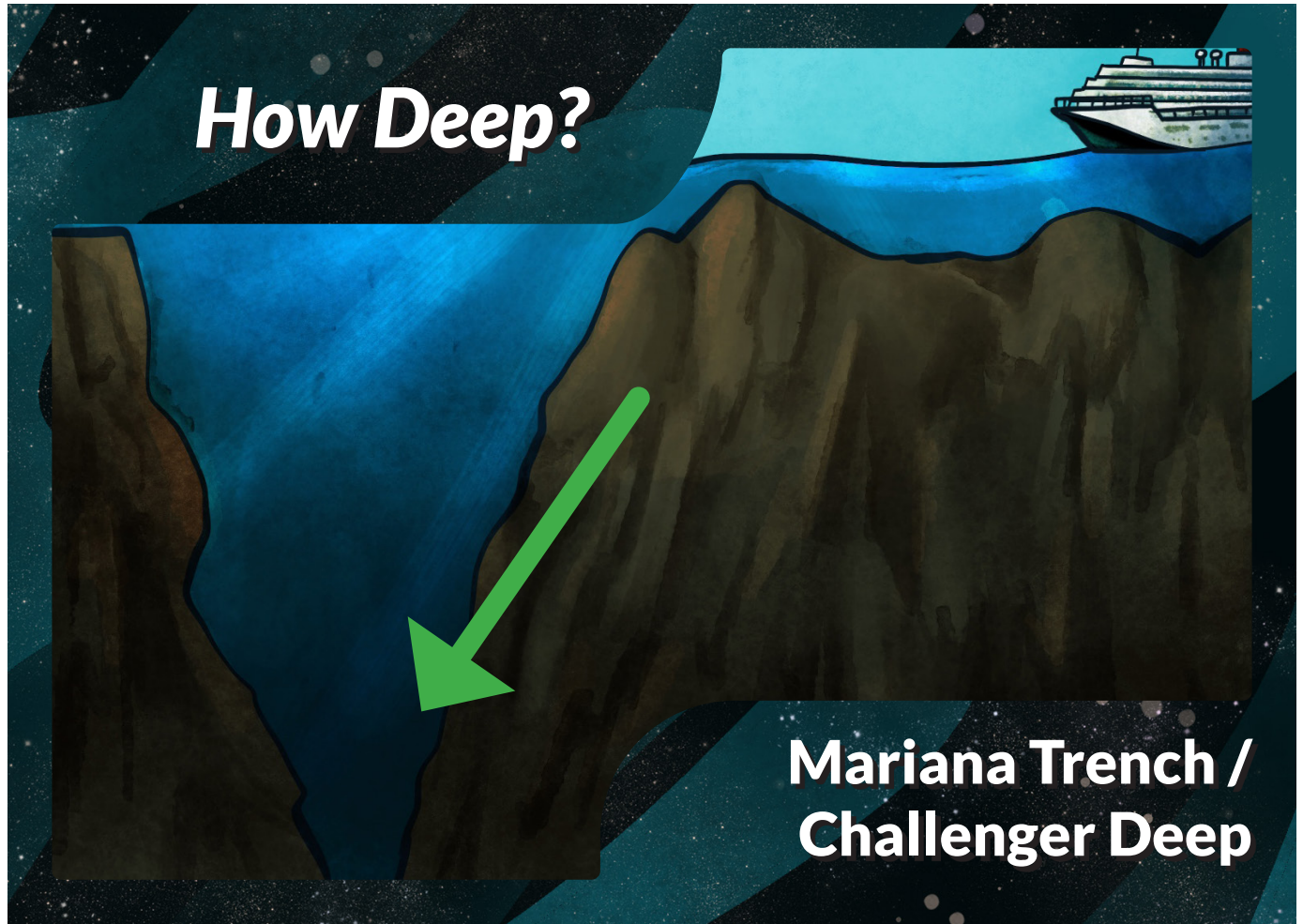
If one were to take a trip to the bottom of the Mariana Trench, they would encounter five different ocean layers along the way. Let's take a look at each of these layers and see what makes them unique.

- ◆ The **sunlit or epipelagic zone** is the top layer of the ocean, extending from the surface to around 660 feet below the surface. As the name suggests, this zone has the most visible light. Heat from the light contributes to the wide swings of temperature that can occur in this zone.
- ◆ The **twilight or mesopelagic zone** extends from around 660 feet to 3300 feet below the surface. Only faint light can penetrate to this depth.
- ◆ The **dark or bathypelagic zone** reaches from around 3300 feet to 13,100 feet below the surface. The only light visible in this zone is produced by the organisms that live there. Most of them are black or red in color because of the lack of light.
- ◆ The **abyssal or abyssopelagic zone** extends from around 13,100 feet to 20,000 feet below the surface and is sometimes called simply "the abyss." The waters of the abyssal zone are near freezing and devoid of light. Very few creatures can make their homes in the extreme pressure of these depths, yet approximately 75% of the ocean floor is believed to be within this zone.
- ◆ The **trenches or hadalpelagic zone** are below the deepest depths of the abyssal zone, starting at around 20,000 feet in depth. The deepest place in the ocean (*the Mariana Trench*) is at a depth of approximately 35,800 feet. Despite the near-freezing temperatures and extreme pressures, life still exists near the very bottom. In 2005, tiny plankton species were discovered in the Challenger Deep, which is the deepest point in the Mariana Trench.

Extensions:

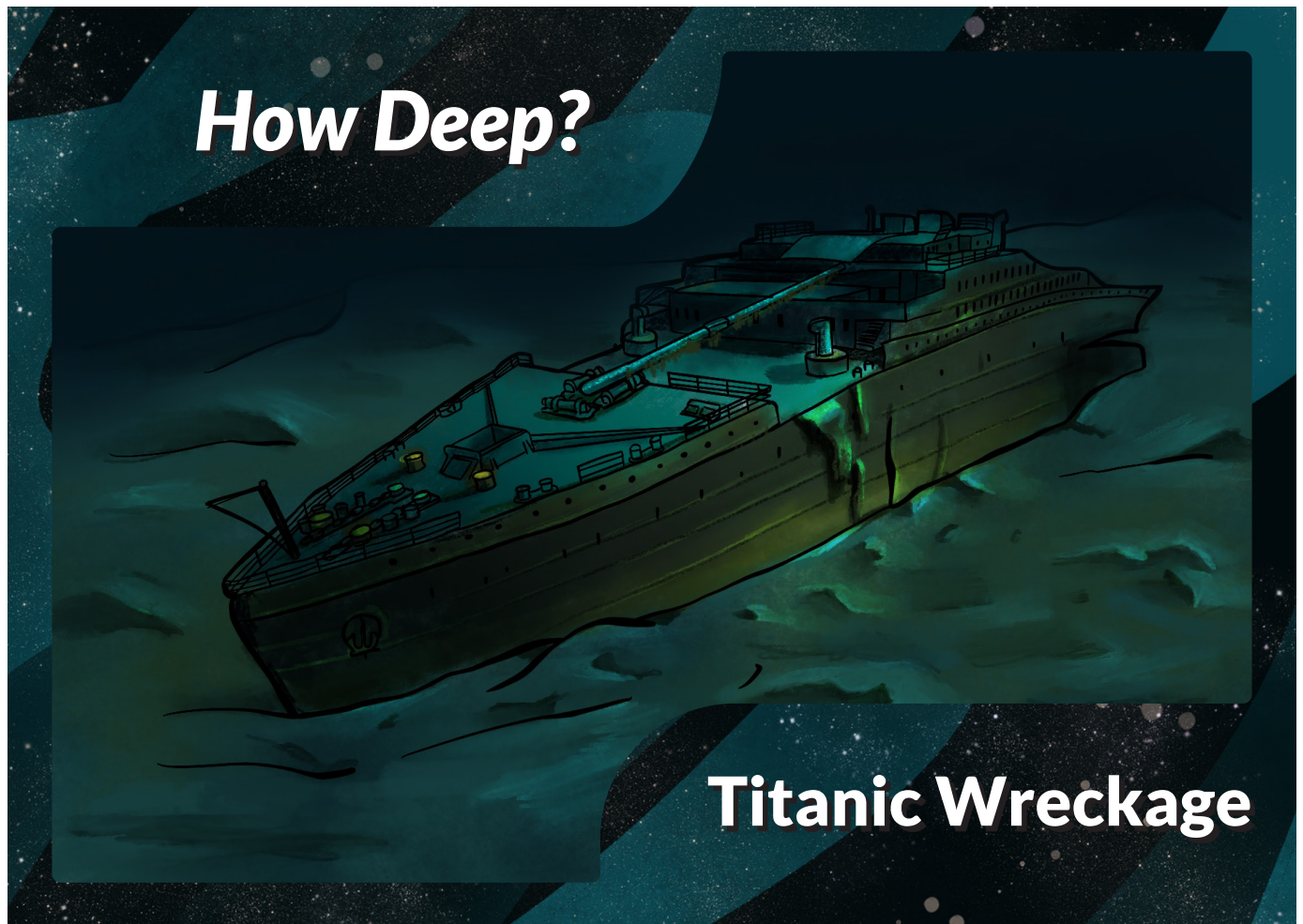
- Instead of following the simple instructions described here, ask participants to line up in a different order. Or, ask them to come up with their own order. Also suggest sorting the cards into groups, rather than a linear order. This is a great introduction to categorization and taxonomy for younger participants, and a great icebreaker/conversation starter for older participants.
- Pair this activity with other Sorting Games, including "How Big," "How Far," "How Hot," and "How Fast." The Sorting Games activity guides provides in-depth instruction on facilitating this style of activity and key concepts that it can help unlock.
- This activity can easily be distributed as a "Take and Make." Print the cards on cardstock and/or laminate them, shuffle their order, put the "answer key" card at the front of the stack, and secure them with a rubber band or paperclip.
- Don't have a color printer? Instead, encourage older tween and/or teen patrons to sketch cards for younger patrons to sort.

How Deep?



**Mariana Trench /
Challenger Deep**

How Deep?



Titanic Wreckage

How Deep?



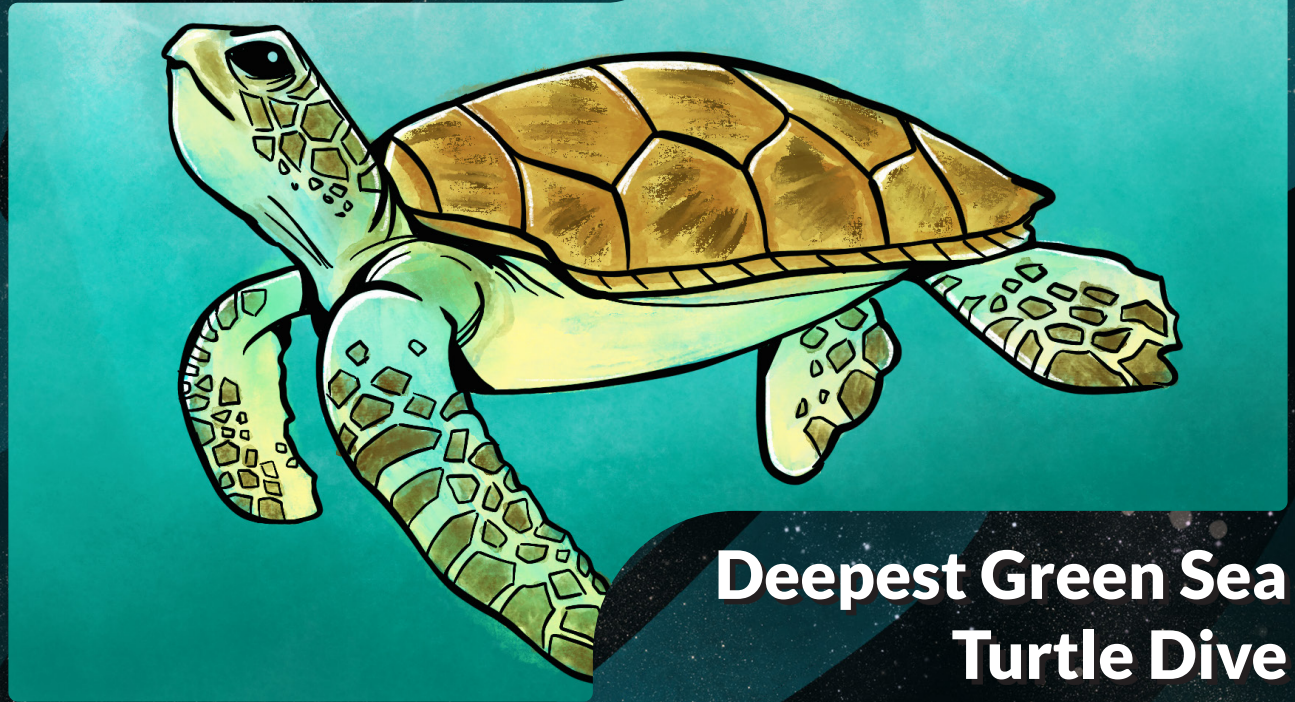
**Deepest Human
Free Dive**

How Deep?



Deepest Scuba Dive

How Deep?



**Deepest Green Sea
Turtle Dive**

How Deep?



**Complete Darkness /
“Midnight Zone”**

How Deep?



**Deepest Whale
Dive**

How Deep?



**Deepest Elephant
Seal Dive**

How Deep?



Max Depth of Anglerfish

How Deep?

Shallowest to Deepest:

1. Deepest Human Free Dive (253 meters / 830 feet)
2. Deepest Green Sea Turtle Dive (290 meters / 960 feet)
3. Deepest Scuba Dive (332 meters / 1090 feet)
4. Complete Darkness - "Midnight Zone" (1000 meters / 3,280 feet)
5. Deepest Elephant Seal Dive (2133 meters / 6998 feet)
6. Max Depth of Anglerfish (2500 meters / 8200 feet)
7. Deepest Whale Dive (2992 meters / 9800 feet)
8. Titanic Wreckage (3840 meters / 12,600 feet / 2.4 miles)
9. Mariana Trench / Challenger Deep (10,935 meters / 35,876 feet / 6.8 miles)

Answer Key