



WORKSHEET

for middle and upper grade levels

Most of these questions can be answered by observing our animals closely and reading the information screens. Some questions require a bit of prior knowledge and critical thinking. It is up to the educators whether pupils should complete the entire worksheet or only select portions.

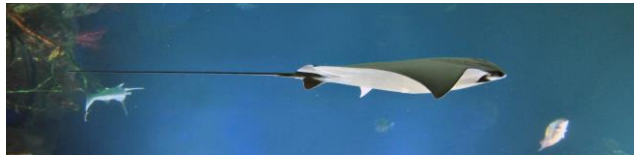
Please follow the zoo rules! Students must remain within view of the adult(s) supervising them!

Have fun looking for our animals, observing them, and figuring out the worksheet answers!

We are always trying to improve our worksheets and would be very happy to receive your feedback!
Please send us a message at guides@haus-des-meeres.at

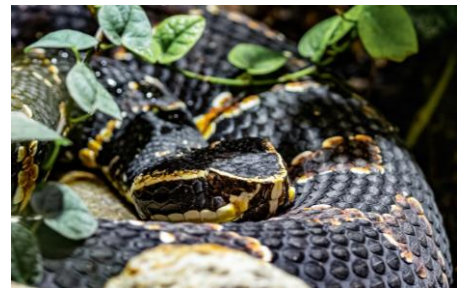
Ground floor: Atlantic Tunnel

The Atlantic Tunnel is the largest tank in the Haus des Meeres with 500,000 litres of water and is home to our cownose rays, eagle rays, and pelagic stingrays. These three species belong to the scientific order *Myliobatiformes* and all possess a venomous sting or barb, which they use in defence. **Look closely at our rays and describe or draw where exactly this barb is located.** Clue: the long, thin tail is not the sting!



1st Floor: Taylor's moccasin

The Taylor's moccasin, or Taylor's cantil, belongs to the pit viper subfamily (*Crotalinae*). As the name suggests, these animals have a pit organ located between the eye and nostril (see picture). **What is the function of this sensory organ?**



1st Floor: Leafcutter ants

What do the leafcutter ants do with the leaves they collect? Clue: These ants don't eat leaves!



1st Floor: Venomous snakes

Find two **venomous** and two **non-venomous** snake species and **fill in the boxes below**. You can tell the types of snakes apart by whether they have this symbol next to their names on the information screens:



Name:
Size:
Habitat:
Venomous: <input type="checkbox"/> Yes <input type="checkbox"/> No

Name:
Size:
Habitat:
Venomous: <input type="checkbox"/> Yes <input type="checkbox"/> No

Name:
Size:
Habitat:
Venomous: <input type="checkbox"/> Yes <input type="checkbox"/> No

Name:
Size:
Habitat:
Venomous: <input type="checkbox"/> Yes <input type="checkbox"/> No

1st Floor: Venomous snakes

When we talk about snakes, the question always arises as to snake is the most venomous? The inland taipan has the chemically most potent venom, although the effect of all snake venom depends on the amount that is injected as well as the size and type of fangs the snake has. Here on our display board you'll find further details about snake fangs.

What do you think? Which is more venomous: a snake with large fangs and a lot of dilute venom OR a snake with small fangs and a small amount of very potent venom? Of which snake would you be more fearful or cautious?

Tick the correct boxes:



I am a **MANGROVE SNAKE**

My fangs are at the front / at the back of the mouth

My fangs are rigid / foldable



I am a **COBRA**

My fangs are at the front / at the back of the mouth

My fangs are rigid / foldable



I am a **GABOON VIPER**

My fangs are at the front / at the back of the mouth

My fangs are rigid / foldable

2nd Floor: Krokkipark

Crocodylians are well adapted to life in water. Their tails are flattened and muscular. **What function do their tails serve?**



Look closely at our Sunda gharial. Its nostrils and eyes are the highest points on top of his head. **What purpose does the location of nostrils and eyes serve?**

2nd Floor: Piranhas

There are numerous dark tales about these famous fish, however, piranhas are ecologically very important animals! They are the sanitary police of the Amazon!

Read the text on the display board thoroughly and try to determine what their main task as sanitary police is.



2nd Floor: Mediterranean Sea

The Mediterranean Sea lies between Europe, Africa and Asia and is 5267 metres below sea level at its deepest. It covers an area of approx. 2.5 million km² and is home to more than 700 species of fish and 35 shark species.

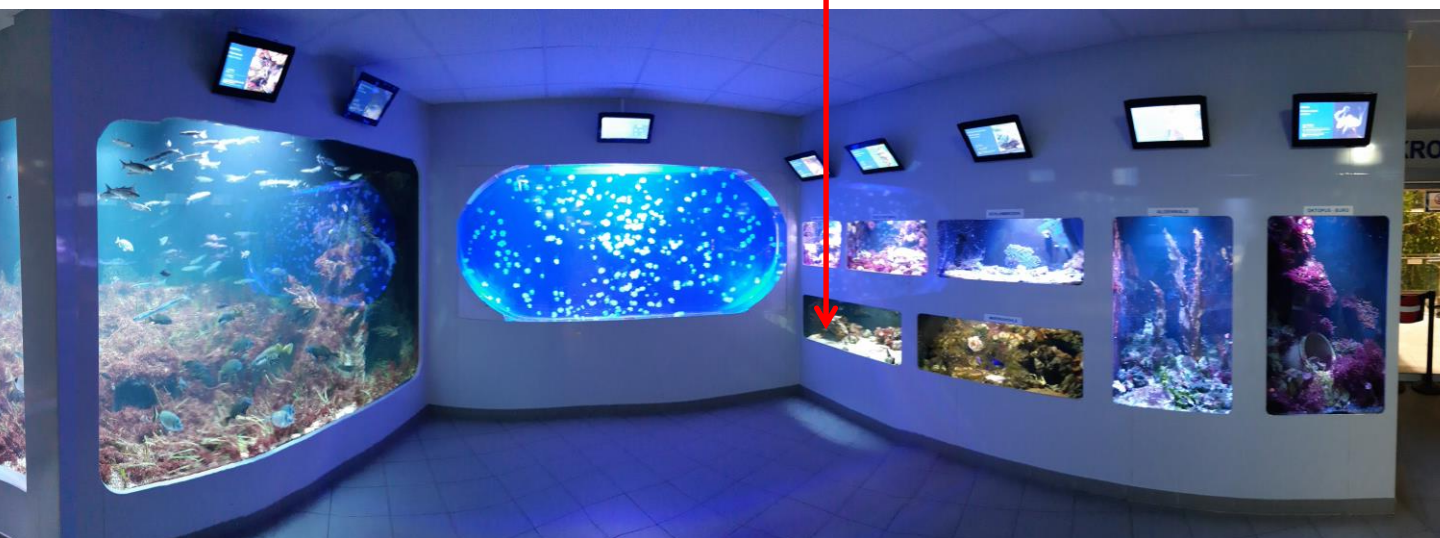
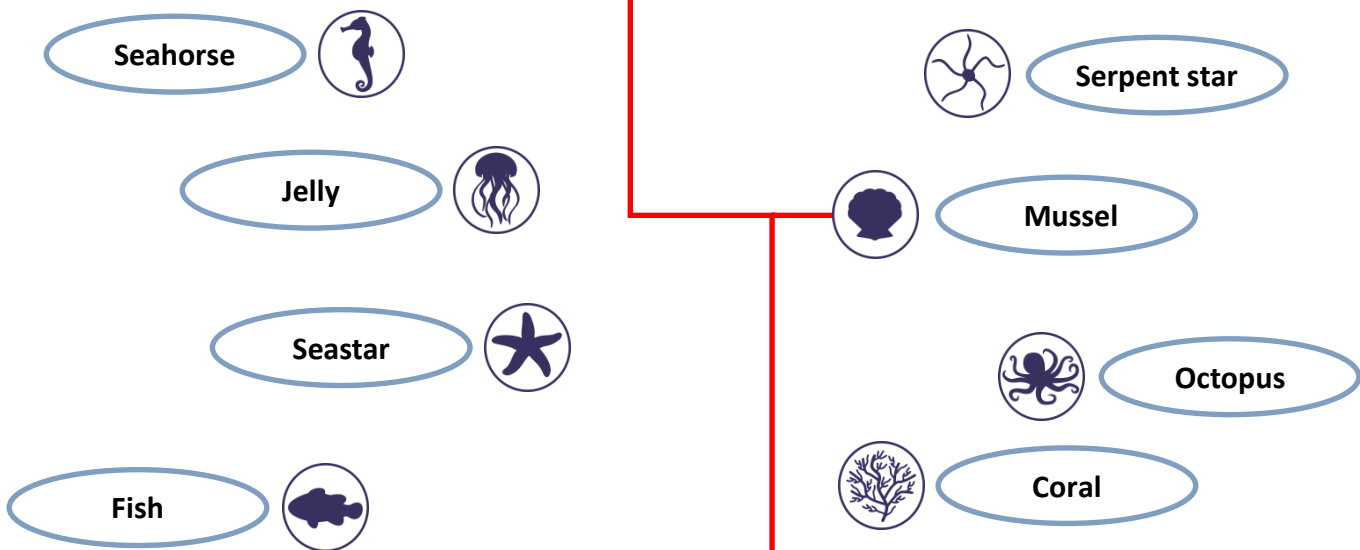
You can find the eight Mediterranean residents below on the second floor. **Match the animals to their taxonomic groups (bold)** and to where you found them in the aquarium.

Echinoderms – Echinodermata
All echinoderms have five axes of symmetry

Cnidarians – Cnidaria
All cnidarians have characteristic stinging cells (nematocysts)

Molluscs – Mollusca
Head and foot work together as a functional unit

Vertebrates – Vertebrata
Animals with a backbone – includes amphibians, reptiles, fish, birds and mammals



3rd Floor: Ribbon morays

Because morays do not have paired fins or an operculum (gill cover), they are often mistaken for snakes although they are, in fact, bony fish. Individual ribbon morays express three different striking coloration variants. **What does the colour of a ribbon moray tell us about it?**



3rd Floor: Anemone and clownfish symbiosis

The word symbiosis comes from the Ancient Greek and means “living together”. A symbiosis is a relationship between two different species in which both benefit from the arrangement. Anemones are cnidarians and collect their prey using their stinging cells (nematocysts). Clownfish (also known as anemonefish) form a symbiotic relationship with sea anemones, where the fish find protection from enemies by hiding between the anemone’s stinging tentacles. The clownfish have a mucus layer covering their bodies, which protects them from the anemone’s nematocysts. Predators, however, are sensitive to the stinging cells. The anemone benefits from this relationship too, as the clownfish protect it from potential predators, including butterflyfish.

The orange clownfish is not the only anemonefish on this floor. Which other anemonefish species can you find on the 3rd floor?

4th Floor: Seahorses

Seahorses are very interesting fish, even if they don't look exactly the way you would expect a fish to look. Their tail fins have evolved into a curly tail. Watch how the seahorses swim. **For what do they use their tails for?**



Seahorses have another unique trait: pregnant seahorses are always male! The females lay eggs and the males carry them until 100 to 200 baby seahorses are born. Read the display boards and take a closer look at the seahorses. **Which feature helps you tell males and females apart?**

6th Floor: Local fish

On this floor you'll find some of the most well-known fish in Austria, including the Wels catfish, the common bream, and the common carp. The carp is broadly distributed across most of Europe. According to a new study, other animals may help carp spread to new bodies of water. **Which animals assist the carp?** Clue: If you're uncertain, read the information on the display.

Ducks

Deer

Dogs

7th Floor: 360° Shark tank

While observing the sharks in this tank, you may notice that the blacktip reef sharks are always moving. These species must swim constantly to keep water flowing through their gill slits; otherwise, they are unable to breathe. This isn't the case for all sharks. The other shark species in this tank don't have to swim constantly and can even rest at the bottom of the tank.

Which shark species are they?

If you look closely at the sharks, you may get the impression that they look quite soft and smooth to the touch. In fact, shark skin is quite rough, as it is covered in tooth-like scales called dermal denticles or placoid scales. Because of these scales, sharks can save energy while swimming, as the texture of their skin reduces drag in the water, making their movement through the water more efficient.

7th Floor: Gila monsters

Gila monsters live in arid habitats in the American Southwest. Their main food source is eggs, though they also eat small prey.

They are...

... venomous and inject the venom into their prey by:

... non-venomous and catch prey by:



8th Floor: Chameleon

Chameleons are very slow-moving animals, but they eat very fast-moving insects. To catch their prey, they use their tongues, which can be as long as the chameleon's entire body.

Describe in your own words how they manage to catch insects.



8th Floor: Grotto

Cave tetras are fish that are adapted perfectly to life in caves.

As such, they have:

No eyes → They don't need them. They can sense their environment with their lateral line organ.

Two eyes → This way they can see a bit, especially if it gets lighter.

Six eyes → With more eyes they can even see in darkness.

9th Floor: Komodo dragons

Komodo dragons can reach a length of up to 3 metres and are the largest living lizards in the world. There are a lot of stories and rumours surrounding them, but which ones are true?

Mark the correct answers:

- They can smell prey 4 km away.
- They can hold their breath for an hour.
- Female Komodo dragons need males to reproduce.
- They can weigh up to 200 kg.
- They are venomous.
- They can eat up to 80% of their body weight in food at one time.
- Their tongues have three tips.
- In the wild they live on every tropical island.



10th Floor: Caribbean hammerhead shark tank

Like skates and rays, hammerhead sharks are cartilaginous fish. They are remarkable for their unique head shape, the function of which is still not fully understood. It is believed, that because of the surface area of their broad noses, they receive more sensory input and can swim sharper curves. There have also been observations of hammerhead sharks holding prey down on the seafloor with their heads.

Besides the hammerhead sharks, there is another cartilaginous fish in this tank. Which species is it?

Cartilage has different features than bone. **What advantages would an animal gain from a cartilaginous skeleton rather than a bony skeleton?**

Super! You did it!

Which animal in the Haus des Meeres did you like the best?
My favourite animal at the Haus des Meeres is: _____