A Guide to Boat Terminology

We refer to boats here, but the same goes for big ships.

Anchor: An anchor is a heavy item that is dropped down into the water, touching the bottom of the body of water and securing the vessel.

Bow: The front of the boat.

Bridge: The ship's bridge is the commanding station of a ship. It is where the ship is controlled.

Cabin: The cabin is the part of the boat below deck where people can sleep or spend time.

Crow's Nest: A structure in the top part of the main mast of a ship used as a lookout point.

Deck: The deck is a portion of the boat that sits on top of the hull.

Hull: The main body of a boat.

Keel: The keel is a specific part of the hull. It is the main beam that runs from the front (bow) of the boat to the back (stern) and goes through the middle of the vessel.

Line: A line is another word for rope used on boats.

Mast: The tall poles on a sailboat that support the sails.

Mooring: The place on land where a vessel can be secured. This includes all sorts of locations, including wharfs and piers.

Port: The left side of a boat (facing forwards).

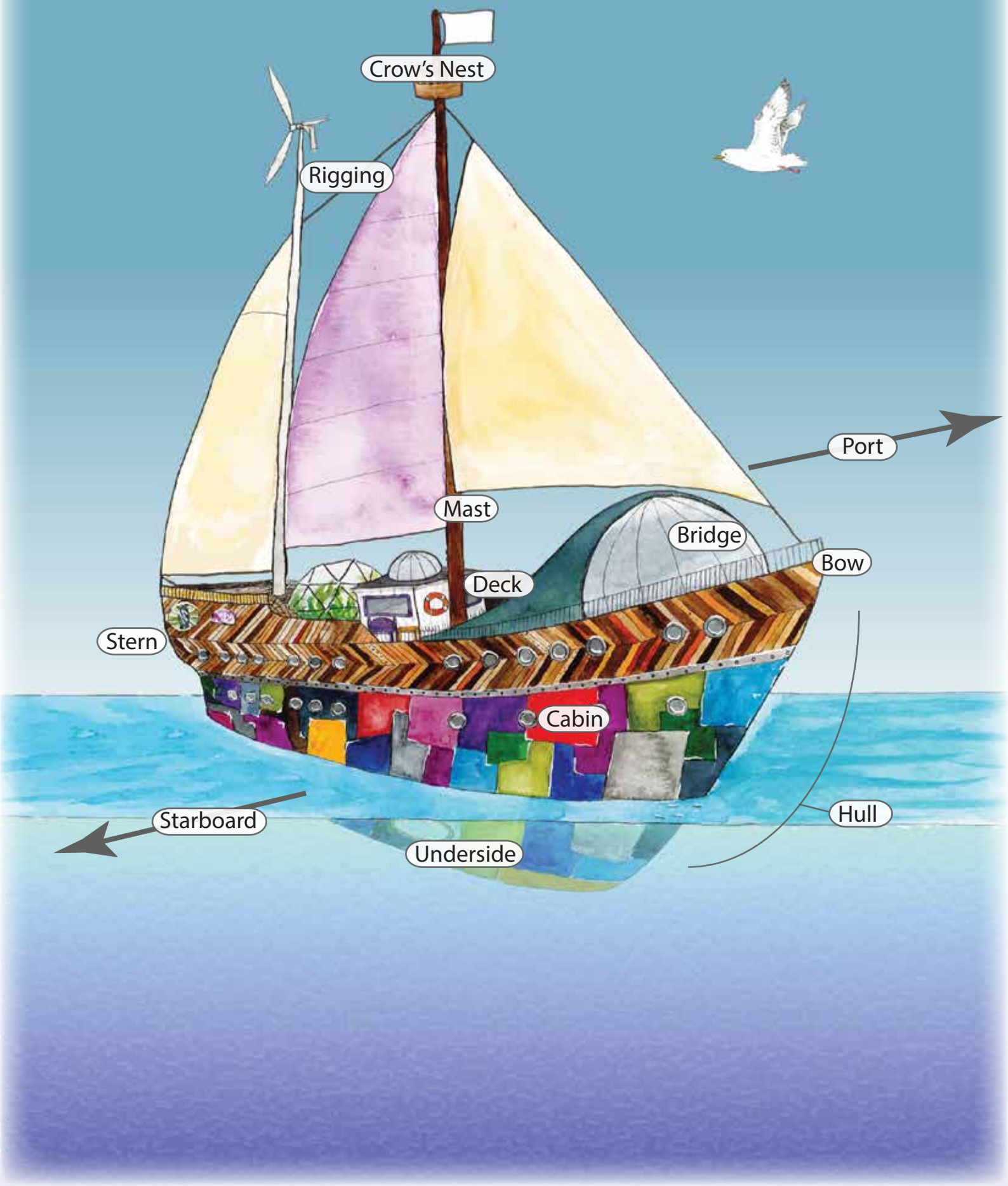
Rigging: Refers to the lines (ropes) that are used to work the masts and sails.

Starboard: The right side of a boat (facing forwards).

Stern: The back part of a boat

Underside: The underside of a boat is the portion of the hull that touches the water. It is also known as the bottom of the vessel.

DID YOU KNOW? Boats are traditionally referred to as 'she'. Historians think this may be the result of links in our language to Ancient English. Or perhaps it dates back to the idea of goddesses protecting ships on dangerous journeys!



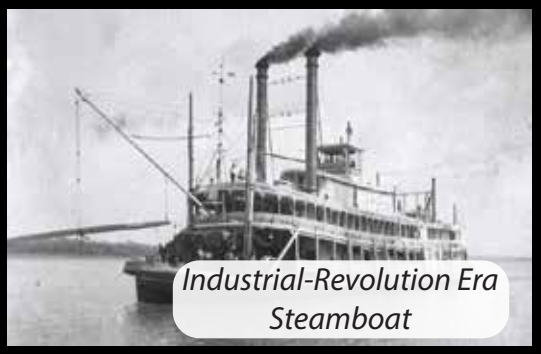
Boats Boats Boats!

What are boats made of?
A huge range of materials have been used to make boats at one time or another:

- The first boats were made from **animal skin**, **bark** or dug out of **wood**.
- In ancient times, boatbuilders then began to build boats from separate planks of wood.
- The Industrial Revolution brought another big innovation: the age of huge **iron** and **steel** ships. Most modern ships are still built from steel today.
- As steel is relatively heavy some larger boats are now made from strong, lightweight metals such as **aluminum**, although this is more expensive.
- Smaller boats are often made from light materials such as **fiberglass** or super-strong plastics like **Kevlar**.

Fun Fact: *A boat has been made from 15,000 ice cream sticks, collected by children around the world! The replica of a Viking longship is 15m long and carried a crew of 20 people on it's*


Ancient-style longboat

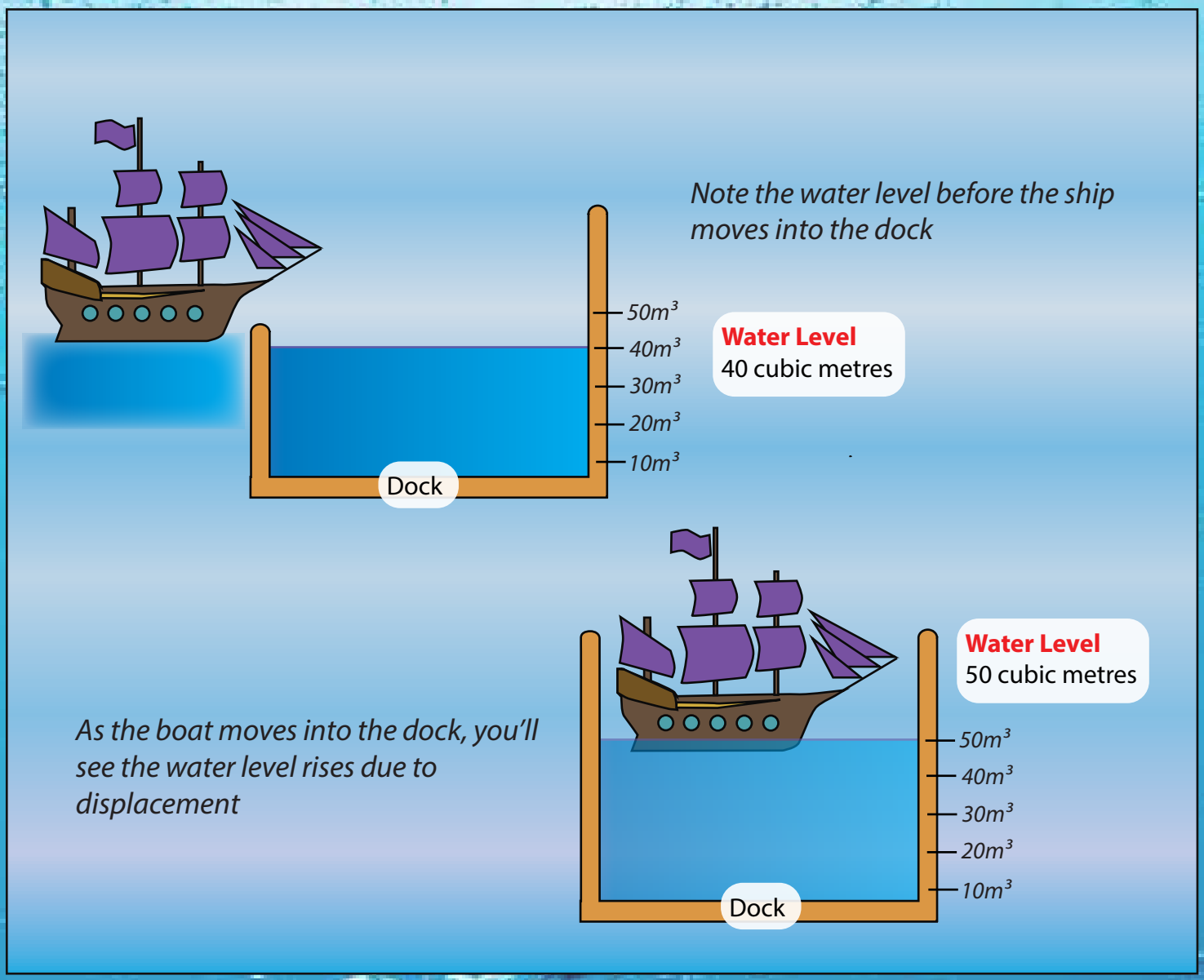

Industrial-Revolution Era Steamboat


"Sea Heart Viking" boat made out of ice cream sticks

How do you weigh a ship?
Have you ever noticed that when you get into the bathtub, the level of the water gets higher? This is called **displacement**. The amount of water that is displaced by your body weighs the same amount as your body does.
A ship will also displace its own weight of water. Therefore, you can work out the weight of a ship by working out how much water it displaces. To do this you must:

1. Measure the water level in a dock with no ship.
2. Measure the water level in the dock once the ship is in it.
3. Multiply the difference with the **density** of water to find the weight of water displaced.
4. The weight of water displaced = the weight of the ship

Did you know? *A scientist named Archimedes discovered displacement over 2,000 years ago as he was experimenting with water in his bathtub. Because of this, the idea of displacement is named the* **Archimedes Principle.**



How Do Boats Float?

What floats? A lump of metal or rock usually doesn't, while a feather does. But would you make a boat out of feathers?
Boats need to be made from strong materials to be able to carry, yet these can be heavy.
How can they still float?
It is due to something called **buoyancy**. A huge metal boat can be very heavy but still floats because it has a lot of air inside it. This means it has a lower **density** than water: it is light for its size compared to water. If it was solid metal all the way through it wouldn't float.

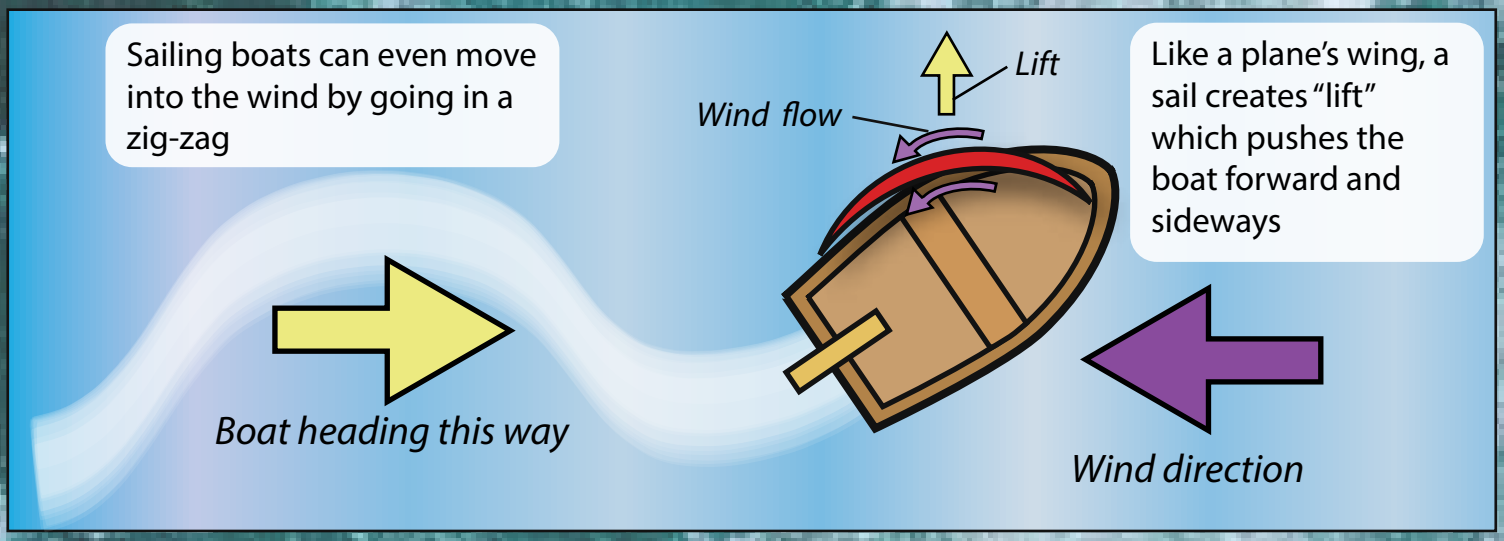
There is a buoyant force, upthrust, pushing up towards the boat from the water. As the boat pushes water away (**displacement**), the water pushes back on the boat. If the upthrust is the same as the force of the boat pushing down the boat will float. How much water the ship pushes away changes the upthrust. Larger, heavier ships are designed to push away more water.

Did you know? *Ships float higher in sea water than in fresh water because salt makes the sea water denser! Ships also float higher in dense cold seas than in warm tropical ones, which mean they also float higher in the winter months.*

How Do Boats Move?

Superb Sails

Some boats have a sail to catch the wind, which pushes the sail taking the boat along with it.



Mighty motors

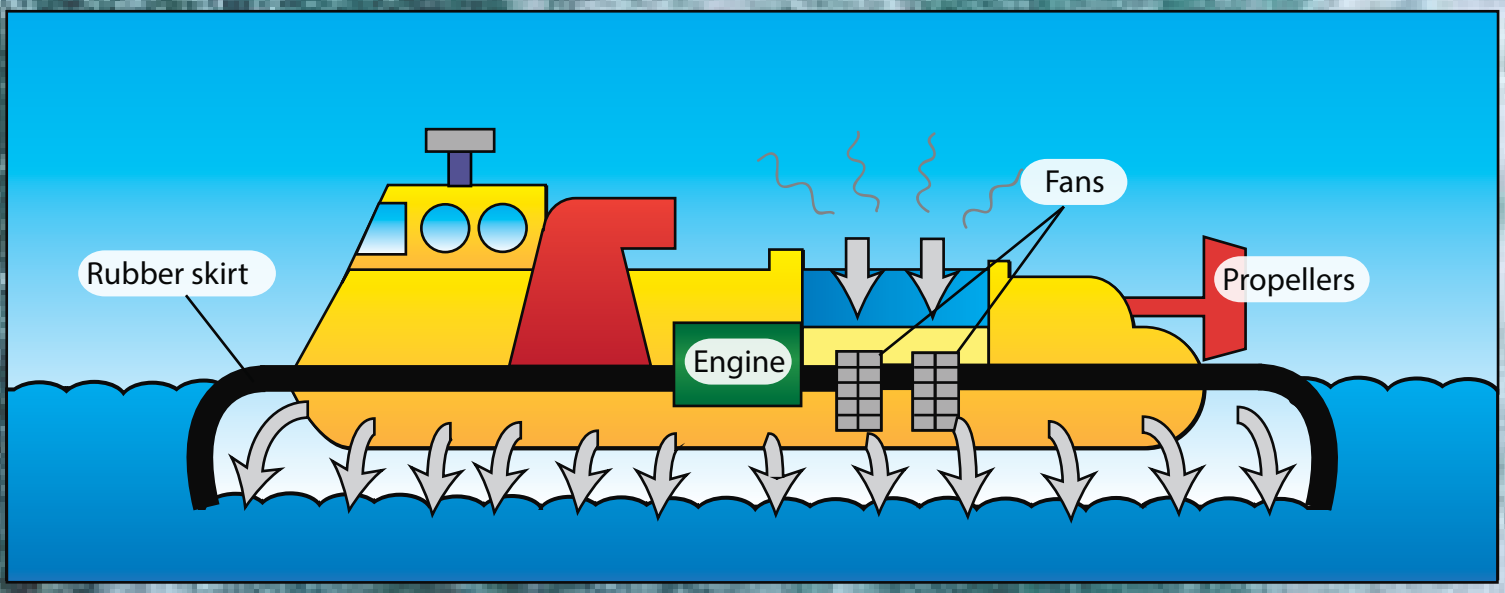
Boats with motors are powered by an engine which turns an underwater propeller at the back of the boat. A propeller is made up of several angled blades that push the water backwards.

Powerful paddles

Oars and paddles work by pushing against the water. Paddles are easier to maneuver than oars, but they are not so **efficient**.

Amazing ACVs (air-cushion vehicles)

Hovercrafts are air-cushion vehicles. They can go faster as they hover about the water on a cushion of air and aren't slowed down by moving through water.
Fans blow air through the **rubber skirt** at the bottom, pushing the hovercraft just above the water surface. At the same time, other engines turn propellers at the back to push the hovercraft forwards.

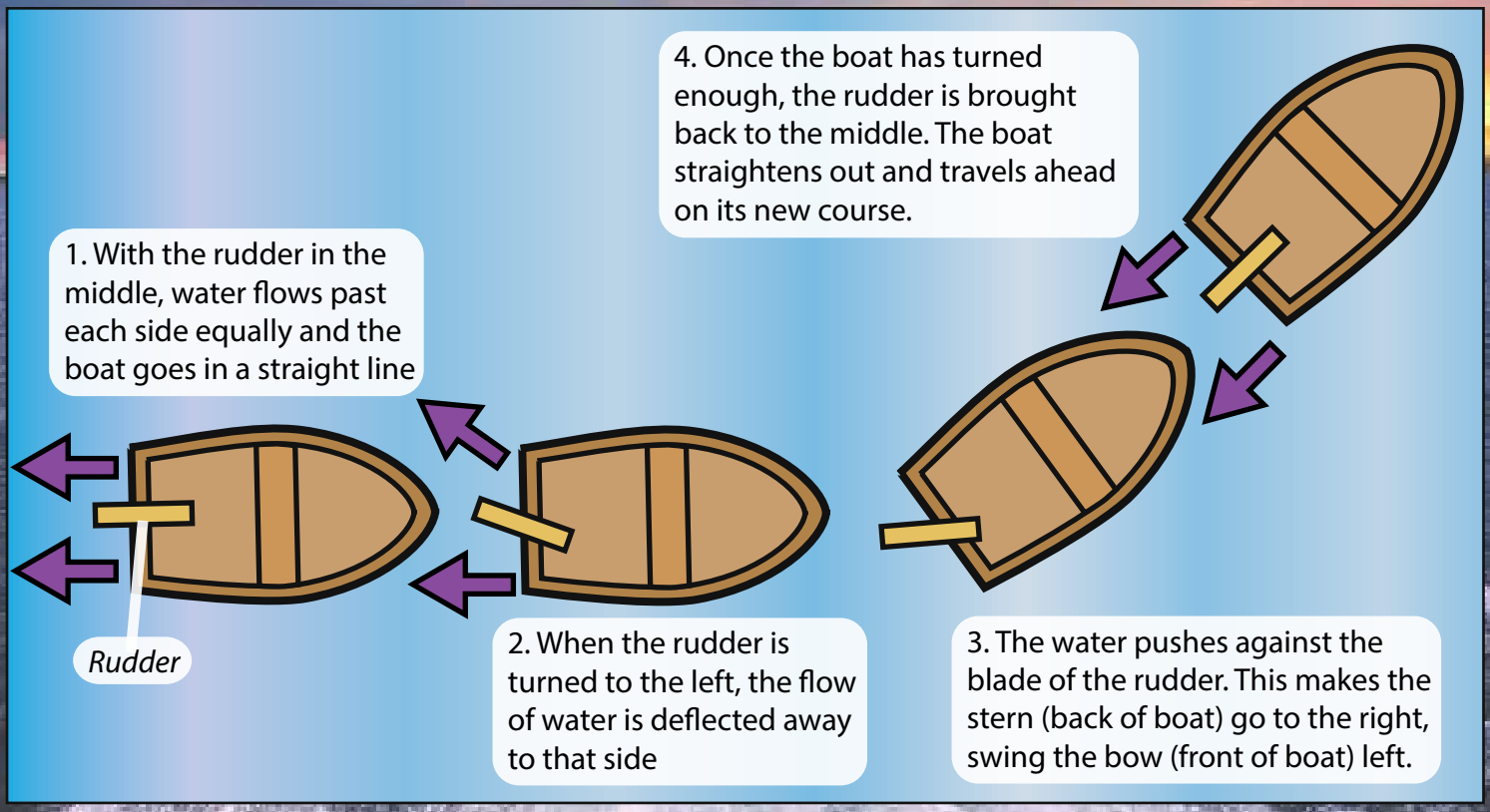


Steering Away

Sailors steer boats using a **rudder**. Rudders work by cutting into the flow of water and are controlled by a **tiller** (handle) or wheel.

- Many large boats have twin **propellers** and can also be steered by running the engines at different speeds or in different directions.
- Large modern ships have a computerized autopilot which automatically adjusts the rudder and engine speed to follow a set course.
- Sailing boats also have a **daggerboard** to stop the sailing boat from being pushed sideways by wind or current.

Fun Fact: *The steering wheel first appeared on ships around 1700.*



Remarkable Radar

Radar is used to show the position of the coast and other ships. It uses a **radio signal** that bounces back off the targets as an echo.

Did you know? *The word "radar" is formed from the first letters of the term "radio detection and ranging."*

Different Boats

There is a huge variety of boats of different types and sizes. This is just a selection:

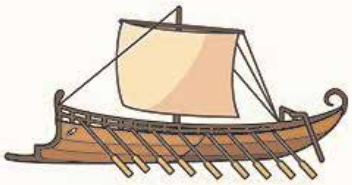
Small Boats

Whitewater Slalom Canoe

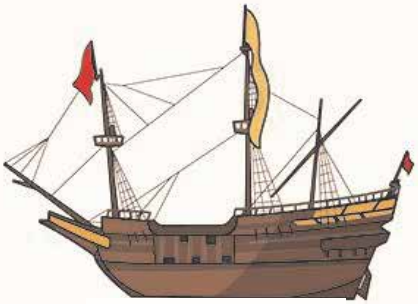
Dory

Pontoon

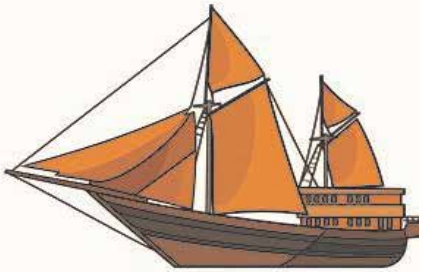
Medium Boats



Bireme

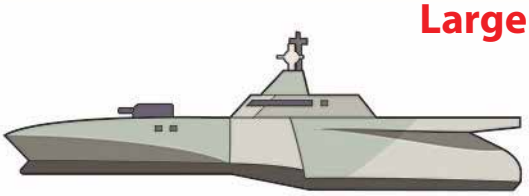


Fluyt

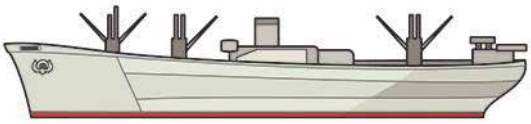


Pinisi

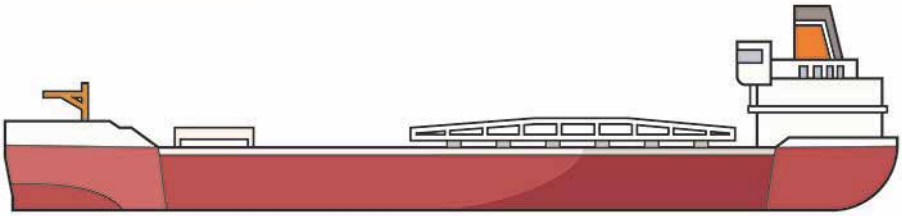
Large Boats



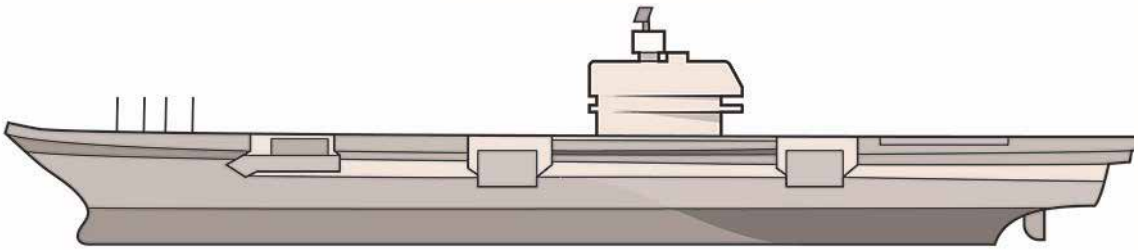
Frigate



Liberty Ship



Lake Freighter



Aircraft Carrier

Different Boats

Lifeboats

A **shipboard lifeboat**, also known as a liferaft, is a small, stiff or inflatable boat carried by ships to be used in emergencies. Lifeboats are required by law to be on larger ships.
Rescue lifeboats are used to attend a boat in distress, to rescue crew and passengers.

Lifeboats can be all-weather or inshore. **All-weather** lifeboats can go at high speed, can be used in any weather and will turn themselves back over if they capsize! **Inshore** lifeboats usually work closer to shore, in shallower water, close to cliffs, among rocks or even in caves.

Did you know? *The first lifeboat was designed in 1790 by Henry Greathead. It required a crew of twelve men and 20 people could be saved at a time. It was lined inside and outside with cork, making it almost impossible to capsize. 20 people could be saved at a time.*

Inuit Kayak

Inuit kayaks are made from sealskin stretched over a frame of whalebone or wood and are mainly used for fishing. The fisherman sits in the middle of the boat, which is covered except for around the manhole.
Fun Fact: *A kayak can be rolled over and back without it taking on water, as an apron keeps the cockpit watertight.*

Chinese Junk

A Junk is a type of ancient Chinese sailing ship. Junks were used as seagoing vessels as early as the 2nd century AD (over 1800 years ago) and are still in use today! It is considered one of the most efficient ship designs and was used throughout Asia for extensive ocean voyages.
Did you know? *Junk boats are still commonly used in Hong Kong's natural harbors and islands*

Different Boats

Rowing Boats

Rowing boats are moved on water using human muscle power, pulling at **oars**.
Rowing can also be a sport, where competitors row alone (a single skull), or in teams (crews) of different numbers. Boats used for rowing competitions are called **shells**.
Fun Fact: *Rowing boats can be transported around the world. Tehri boats, for example, are small boats that are built in a small fishing village in Finland (where Tiikat is from), but are also commonly used in the Norfolk Broads, in England!*

Catamarans

A catamaran is a very popular **double-hulled** sailing boat, featuring two **parallel** hulls of equal size joined by a frame. It is often referred to as a **"cat"**, a fact Tiikat loves!
Catamarans are able to glide through the water with great speed as they have less contact with the water, so there is less **water resistance**. They are also more stable than boats with one hull.

Did you know? *The catamaran's main design has existed for over 3000 years! The Polynesian peoples used catamaran style wooden rafts to make long voyages to faraway islands in the Pacific Ocean.*
To navigate difficult waters, Polynesian navigators amazingly used, and still use, their knowledge of the stars, ocean currents and swells, wind and cloud patterns, the rise and fall of the sun, colours of the sea and sky, weather, seasonal information, and the migration of animals such as birds.
The modern catamaran was first designed by an American named Nathanael Herreshoff in around 1870.

Floating Homes

Many people live on boats around the world

The Moken, South East Asia

The Moken people are a **nomadic** people living on boats in the waters off Burma, Thailand, Malaysia and Borneo. They follow unique customs and traditions and speak their own language.

Fun Fact: *The eyesight of the Moken underwater is so sharp that researchers have studied it to learn the secret! This fantastic underwater vision allows Moken children to see underwater while they search for food.*

Amsterdam, Netherlands

Amsterdam is famous for its canals, of which there are 165 threatening through the city! 2500 houseboats line these canals and many have been afloat for more than 100 years. There is even a Houseboat Museum that people can visit.

Fun Fact: *One of Amsterdam's houseboats is for cats! While cats are not particularly fond of water, this one is a special refuge for cats.*

Floating Homes

Some animals also live floating on water!

Grebes

Grebes are a type of bird that build their nests as floating platforms for their eggs. We can think of these as their version of houseboats!

Did you know? *Some grebes find it difficult to walk on land because their feet are so big. They are much better at swimming and diving in water.*

Roman Chickens

Ancient Romans took chickens on board military ships to predict the outcomes of battles. If the hens ate, they believed there would be victory.

Fun Fact: *Roman general Publius Claudius Pulcher tried this trick before the Battle of Drepana in 249 B.C. The birds did not eat, but he ignored the bad omen and threw the birds overboard. The Roman fleet was then nearly wiped out!*

Simon the Cat

Many animals lived on military boats: Simon the cat was one of them. He served on the British Royal Navy ship HMS Amethyst which was trapped on the Yangtze River in China after being attacked.

Did you know? *Brave Simon was awarded the prestigious Dickin Medal for surviving injuries, killing off a rat infestation and raising the crew's morale! This was the first time a cat had been awarded a medal by the British military.*

Ship or Boat?

While ships are sometimes referred to as boats, the main difference between a ship or boat is the size. The most important thing to remember is "**a ship can carry a boat, but a boat cannot carry a ship**". Technically speaking, a type of water transport that weighs at least 500 tonnes (500,000kg) or above is categorised as a ship.

Other differences between ships and boats can be where they operate, their use, how they are built and what their crew is like.

Ships operate in oceanic areas and **high seas** whereas boats are more likely to be used in smaller/restricted waterways. Imagine a huge ship trying to travel down a small river! Ships are used to carry a large number of people, or a large amount of cargo. Boats, on the other hand, can have a wider variety of uses.

Since ships are required to be operable for longer time-duration and travel across oceans, they are manned using advanced engineering, heavy machinery, and navigational systems. Boats can be a bit simpler, though they aren't always!

Ships are huge in size and therefore they are operated by professionally trained navigators and engineers. On the other hand, the size of the crew on a boat depends on the size of the boat. It can be one person or a full-fledged crew depending on the size and purpose of the boat.

Did you know?
Submersibles (submarines) are referred to as boats, not ships.
This is mainly because of the fact that in the earlier centuries, submersible vessels could be hoisted on ships until they were required to be used in naval operations.

Supersized Ships

The biggest ship that has ever existed is the ***Seawise Giant,*** a 458.46m oil tanker. It was broken up in 2009, but was the largest ship ever by length, displacement and dead-weight tonnage (how much weight a ship can carry).

Huge ships are not very environmentally friendly and produce a huge amount of **carbon dioxid**e emissions. Engineers are trying to fit them with better systems to improve this. Oil tankers are even less environmentally friendly because they carry massive amounts of oil, which is a **fossil fuel** and there is always the danger of an oil spill, which can destroy a huge number of animals.

Fun Fact: *The biggest passenger ship is the* Symphony of the Seas*, which is 362m (1188ft) long and can carry up to 6,680 people.*

Seawise Giant

Symphony of the Seas