

Journey under the Sea



An *Educational Workbook* on Archaeology and the Sea

What is Maritime Archaeology?

Maritime archaeology is also referred to as *underwater archaeology*. It is an activity through which we learn about the past from objects found underwater. Ships are only part of the maritime cultural landscape that also includes old harbours, anchorages, underwater barricades and coastal settlements. Over the past three millennia, thousands of ships have been destroyed in battles and by bad weather. These lie partially preserved at the bottom of the sea waiting to be discovered and studied. Once discovered, these ships will provide us with clues on how people lived, fought, traded and travelled at sea.



Scuba divers may help discover and preserve this maritime heritage but excavations should not be attempted without proper training, equipment and official permits.

Look up the definition of the word *SCUBA* and write it down in the space provided below:

Search tools & techniques

Before a wreck is located, it is often necessary to search archives and ask fishermen where nets get stuck. Wrecks can be located by divers and modern technology, namely, the magnetometer, side scan sonar and multibeam. All these systems can be integrated with GPS positioning software. Most deep sea wrecks can only be investigated using Remote Operated Vehicles (ROVs) as well as other submersibles. These are used because of the dangers posed to humans with deep sea diving.

For information about the vessels and equipment used by the Aurora team to locate, map and survey shipwrecks and artifacts on the ocean floor log onto <http://www.auroratrust.com/equipment.html>



Dating

The two main techniques used for dating wood from shipwrecks are **C-14 (Carbon Dating)** and **Dentochronology**.

Choose one from these two techniques and write a brief definition:

In addition the age of a wreck can often be determined by the type of materials used in construction and from loose objects such as bottles, pottery, clay pipes, coins, pewter objects, anchors, cannons and bones as well as by the analysis of pollen and seeds that may be found on the site.

Task 1

Vessel Types

The numerous shipwrecks brought to light through underwater excavations revealed an extraordinary variety of vessels.

Descriptions



Trireme

The trireme derives its name from its three rows of oars on each side. It had a mast which supported a large rectangular sail. This warship was used by the ancient civilizations of the Mediterranean, especially the Phoenicians, ancient Greeks and Romans. As a ship it was fast, agile and very maneuverable. Various forms of this vessel remained the dominant warship in the Mediterranean for well over a thousand years.



Roman Merchant Ships

These were broad-beamed and had a large square sail at the bow. Since they were sailing ships, they had no rowers. In fact, they only had two steering oars at the stern, where there was a kind of figure-head, shaped like a swan's neck. These vessels transported oil, wine, fruit, grain, and cattle. When the Romans began to fight at sea, the merchant ships served to carry foodstuffs, troops, horses, and war-machines.

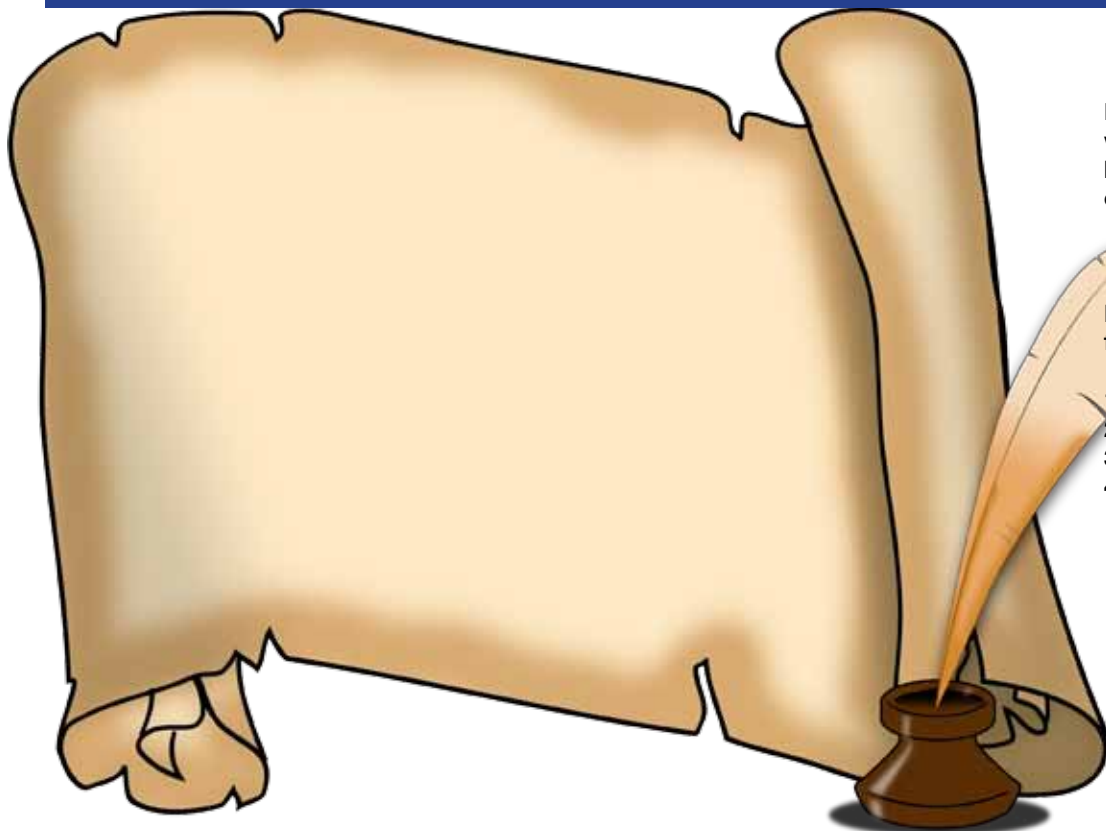


Carrack

The Carrack evolved when the shipbuilding traditions of the Atlantic and Mediterranean merged. It became one of the most important vessels of the late Middle Ages. It could be said that these were the first proper ocean-going ships in Europe: large enough to be stable in heavy seas, and roomy enough to carry provisions for long voyages. They had a large rounded stern and a bowsprit (a long pole, extended forward from the vessel's prow: the forward most part of a ship's bow). Most of the sails were square but the sail on the back of the vessel was shaped differently (a lateen sail) so as to give better balance and hence sailing qualities.

*Note: The front end of a ship is called the **bow**, while the rear end of a ship is called the **stern**.*

Design your own . . .



Design your own vessel, while allowing yourself to be inspired by the various examples above.

In your design include the following features:

1. One row of oars
2. Two masts with sails
3. A high stern
4. A figure-head

Did you know...

The world's oldest ship finds are on land. The oldest boat type is possibly the log boat, dug out from tree trunks.

Task 3

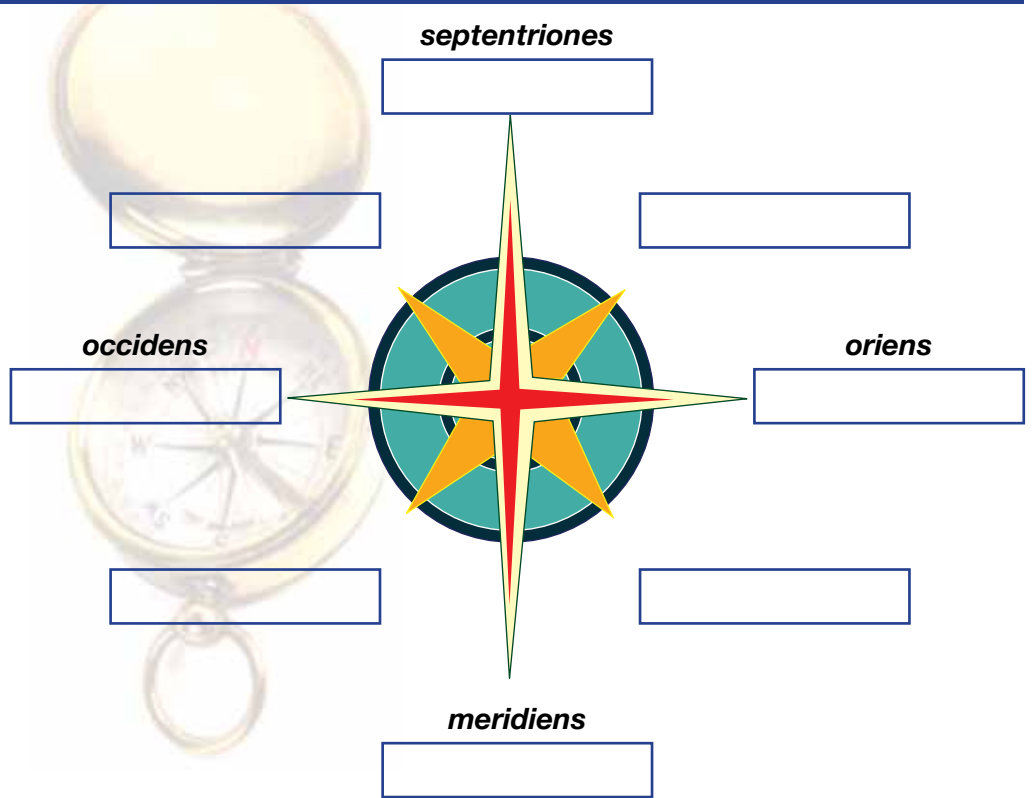
Navigation

The Compass

The compass is a magnetic instrument that is used for navigation with a needle (or pointer) that always points North. It was introduced in Europe in the 12th century.

The compass has four main directions called *cardinal points*. These are North, South, East and West. Between these points are *half cardinal points*.

The image of a Compass, on the right, has its main points labelled in Latin. Can you translate these words into English? Can you also look up and label the half cardinal points?



Maps ...

Cartography is the art and science of making maps.



Map of Europe & the Mediterranean from a 19th c. copy of the Catalan Atlas of 1375

The first whole-world maps began to appear in the early 16th century, following voyages by Columbus and others to the New World.

Identify 3 distinctive features that render early maps, such as that on the left, different from modern cartography.

1. _____
2. _____
3. _____

Did you know ...

The oldest known maps are preserved on Babylonian clay tablets from about 2300 B.C.

Task 4

Ancient Trade






Match-Up

Read the text:

In ancient times, goods were transported throughout the known world. As early as 2500 BC, obsidian was transported by travellers from the island of Lipari to other parts of the Mediterranean. The sea provided the means to connect places and people. Civilizations such as the Phoenicians and Greeks created large trading networks that extended out of the Mediterranean and into the Atlantic Ocean. The movement of people, goods and ideas reached its peak during the Roman period. Grain from North Africa, slaves from the Balkans, marble from Greece and olive oil from Spain were transported in large quantities to supply the city of Rome. Every year, thousands of ships laden with goods would leave from ports throughout the Mediterranean and sail to Portus, a massive manmade port at the mouth of the river Tiber. From there, goods would be loaded onto barges and sent up the river to the city.

Label and Match the traded goods with their place of origin...

The first one has been done for you!

- 1.  1. Marble - E
- 2.  2. _____
- 3.  3. _____
- 4.  4. _____
- 5.  5. _____



"All Roads lead to Rome"

What compass direction would a mariner travel to transport the goods to Rome from their country of origin?

The first one has been done for you!

- 1.  1. North-West
- 2.  2. _____
- 3.  3. _____
- 4.  4. _____
- 5.  5. _____

In ancient times, the main object used for carrying goods was the **amphora (pl. amphorae)**. In a shipwreck, amphorae may often tell the age and nationality of the wreck. Over the centuries these evolved in shape and size depending on the place of origin.

Some Amphorae Types...

Phoenician Amphora
 Dating 8th-5th c. B.C.
 Origin: Central Med.
 Contained: Wine



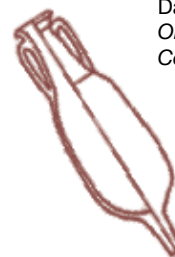
Etruscan Amphora
 Dating 7th-6th c. B.C.
 Origin: Etruria
 Contained: Wine



Greek Amphora
 Dating 8th-6th c. B.C.
 Origin: Attica
 Contained: Oil



Roman Amphora
 Dating 1stc. B.C.-2ndc. A.D.
 Origin: Spain
 Contained: Fish paste



Task 5

Preservation and Conservation

Is there a difference?

Planning the preservation of objects recovered from an underwater site is of utmost importance. **Preservation** is keeping the artifact safe from decay and eventual destruction. **Conservation** is part of the process of preservation. After having received an object, the conservation process begins. Conservation procedures include cleaning, documentation and analysis, and finally, stabilization. Stabilization is important because the change of environment from the sea to the air often leads to deterioration.

Destructive Archaeology

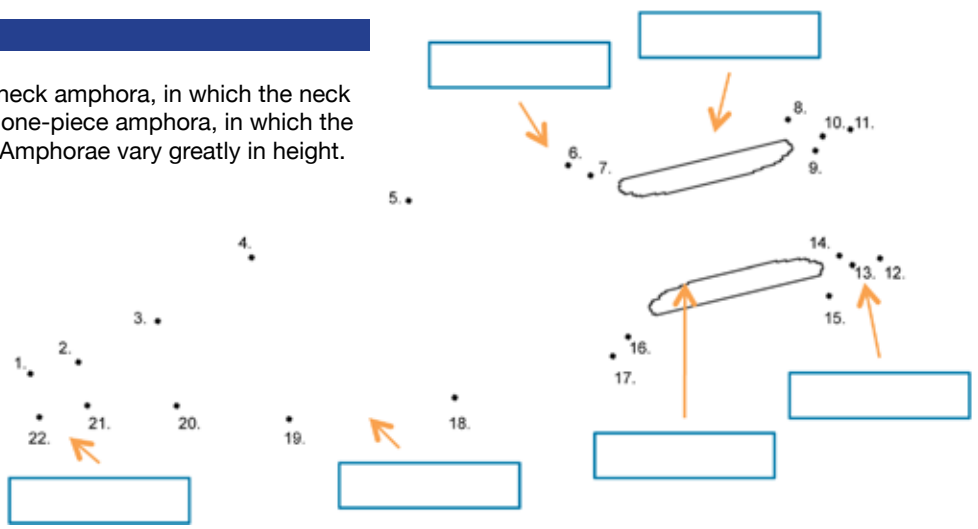
Archaeology is the scientific study of past cultures and the way people lived based on the things they left behind. Artifacts are usually found buried in the ground because, over time, soil builds up and covers the things left on the ground. That is why archaeologists dig up dirt, excavate, to find the artifacts. Most investigation methods in archaeology are destructive. A site is destroyed when it is excavated. Therefore, we may extend this by saying that we destroy what we study. Due to this, archaeologists are well aware of the importance to excavate just as much as necessary and to document the investigation as thorough as possible. Future analysis may need just those tiny details that may seem insignificant today to reveal further information on a find.

Discover ...

Two principal types of amphorae are the neck amphora, in which the neck and body meet at a sharp angle; and the one-piece amphora, in which the neck and body form a continuous curve. Amphorae vary greatly in height.

Can you join the dots and discover what type of amphora this is?

Label the amphora with the words provided: NECK, HANDLE, FOOT, BODY, RIM, SHOULDER.



Provenance

The careful investigation of objects *in situ* (in the original location and arrangement) usually gives far more valuable information, than just the object by itself.

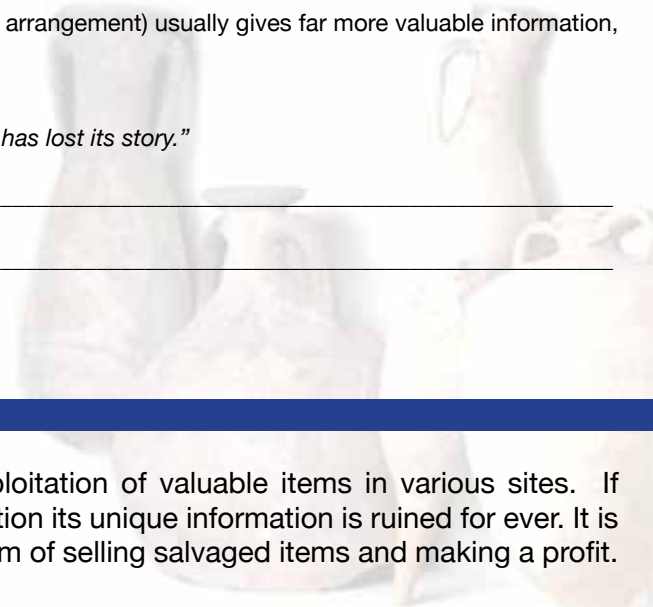
State whether you agree with the following statement or not:

"An object without provenance (without knowing where it came from) has lost its story."

Why?

Treasure Hunting

Treasure hunting is the commercial search for and exploitation of valuable items in various sites. If artifacts are salvaged with no archaeological documentation its unique information is ruined for ever. It is not ethically acceptable to plan an excavation with the aim of selling salvaged items and making a profit.



Exhibition

Design a poster putting forward the idea of preserving our underwater cultural heritage and its importance.

Media: Pencil Colours, Paint, Mixed Media or Digital Artwork.

Send as: JPEG

Send your entries to:
info@auroratrust.com

Selected artwork will be exhibited on the Aurora website: www.auroratrust.com

The **Aurora Trust** was formed by Craig Mullen and Ian Koblick to advance the world's understanding of the ocean environment, most particularly its marine cultural heritage hidden for thousands of years on the seafloor, and to educate the public concerning the historic role the oceans have played in connecting different cultures: its commerce and conflicts.

Aurora has assembled a world class team of marine archeologists and ocean scientists to undertake exploration of the seafloor in search of the lost remains of our maritime past. The **Aurora** team, utilizing state of the art tools to explore the ocean depths, has made numerous magnificent discoveries in the marginal waters of countries bordering the Mediterranean Sea.

To help disseminate its discoveries and publicize those of other similar groups exploring the words oceans, **Aurora** has established the **Aurora Institute for Marine Studies (AIMS)** to serve its educational objectives. **AIMS** provides educational forums: sponsors academic research and related publications to broaden the spread of knowledge."

The **Aurora Institute of Maritime Studies (AIMS)** was set up as the educational arm of the Trust. To date **AIMS** has participated in a number of activities.

The main objectives of **AIMS** are to:

- To initialize an education campaign at various levels aimed at highlighting the maritime heritage of the Mediterranean.
- To organize and manage an outreach campaign aimed at protecting the maritime heritage of the Mediterranean.
- To develop courses related to maritime archaeology and other facets of maritime heritage.
- To set up and manage exhibitions related to underwater archaeology and maritime heritage.
- To remain actively involved in the research of the Mediterranean's maritime heritage.
- To kindle cooperation with similar units and institutes overseas.
- To organize symposia and conferences related to maritime heritage.
- To publish books and other material related to maritime cultural heritage.

www.auroratrust.com

Published by Aurora Trust - Ocean Exploration and Education Trust
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Front Cover Image: Roberto Rinaldi - AURORA Trust
Photo of Aurora's ROV on a shipwreck discovered off the coast of Ventotene, 2009