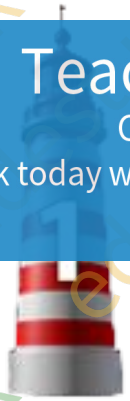
Mapping Skills Fieldwork

Shipping Traffic and Hazards at Sea

Student Introduction

- In these exercises you will practise using land and sea maps to find your way.
- When you take your ferry trip you will see for yourself how ships navigate.



Use the OS Landranger Map "The Isle of Wight" **OR** a map of your own local area to practise using 4-figure and 6-figure grid references. If you use your own area map your teacher will give you some different questions to answer.

Look at the map carefully and fill in the missing information in the table below.

Grid References - Quick Reminder!

The two letters in the corner of an OS map tell you which part of Britain you are in. The Isle of Wight is in the SZ map area.

Read numbers in ascending order (from low to high).

Read the horizontal (across) numbers first and the vertical (up/down) numbers second.

Horizontal lines are known as Eastings, reading from West to East.

Vertical lines are known as Northings, reading from South to North.

For 6-figure references use the grid numbers AND divide your square in your head into 10 little squares to get the last two digits!

Location	4-digit reference	6-digit reference
Egypt Point, Cowes		
Ryde Pier		
Needles Old Battery		
		SZ 655 949
		SU 489 025
		SU 419 108

Why you should learn about grid references...

How can you tell someone where you are?

Using a map, you can give a precise location by using a grid reference.

Under what circumstances is it important to be able to tell someone where you are?

Forgotten how to use Grid References?

No problem! Each OS map has instructions on how to give a grid reference.
Look at the bottom of the Key section!

Alternatively, go to the ED website for an introduction and a video showing you how to do it.

Visit **www.edudest.uk/followup** and type in this document's number **10718**

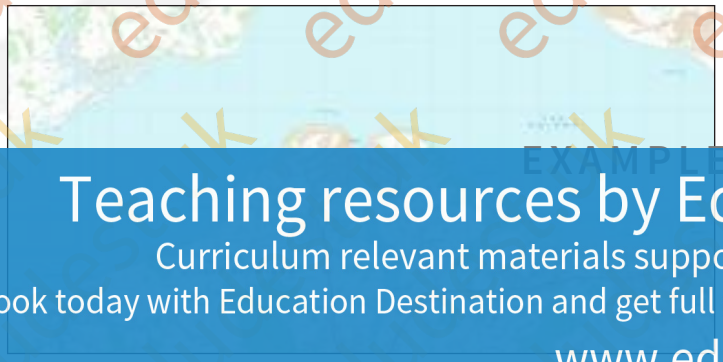
AT SCHOOL

FINDING YOUR WAY AT SEA

Special maps called Admiralty Charts are used by ships and boats.

Visit the following website to see the current admiralty chart for the Southampton area, and compare this with your OS land map.

Go to **www.edudest.uk/followup** and type in this document's number **10718**



Map Comparison

Compare your OS map to the online Admiralty Chart. What do you notice?

Q1 Just by looking at each map, how do you know that one is for land use and the other for use at sea?

Q2 What kind of detail do you think is shown on the Admiralty Chart? Describe as precisely as you can:

Q3 Why do you think the Admiralty Chart is so different and what are its most important features?

Q4 What would you say to someone who is planning to go on a boating tour with an OS map?

ON THE FERRY

BUOYS AND SEA TRAFFIC REGULATION

Buoys are maritime "traffic signs". They are brightly coloured and are anchored to the sea bed so they do not move around.

Whilst you are on your ferry crossing, look at the water around you for buoys and other signs and markers. Answer the following questions:

Q5 Do you think any boat or ship can go just anywhere there is water? Why?

Q6 Are there any traffic rules on water? Who are these for/by?

Q7 Do you know the meaning of those coloured buoys on the water?

RED and GREEN buoys

The **red** and **green** buoys mark the port and starboard edges of a shipping channel. If a ship stays between the two, it is in safe, deep water.

When the ship is heading into the docks or harbour, **red = port = left** and **green = starboard = right**.

When the ship is **leaving** the docks or harbour, the **opposite** is true.

At night the most important buoys have a flashing light on top so they can be seen more easily.

YELLOW buoys

Yellow buoys are used to show exclusion zones - areas which are set aside for swimmers, water-skiiers, boat races etc.

Cardinal Marks (Buoys)

Yellow and Black buoys mark areas that are not safe for ships and boats, because there is a hidden danger under the water. This could be rocks, a sand bank, a shipwreck etc.

Ships must stay either North, South, East or West of these marks to be safe.

Can you guess which buoy is for which compass direction?
Look at the shape that the two black cones make.

We've labelled one of the cardinal marks "Stay North to be safe".

TASK: Now mark the other three correctly.

Ship Shape!

In order to find your way safely into a harbour you need to know where **starboard** and **port** are on your boat or ship.

The harbour entrance has **red buoys** on the **port side** (left) and **green buoys** on the **starboard side** (right). So long as your port side is on the same side as the red harbour buoy, then you're heading the right way into the harbour!

Look at the following diagram:

The front of a ship is called the **bow**

Port is always the **left-hand** side of the ship when you're facing the bow.

In the past, ships had an oar on the right side to steer with. This meant they could only moor (tie up) on the left side, which is why it is called port.

Starboard is always the **right-hand** side of the ship when you're facing the bow.

In the past, ships had an oar on this side for steering which meant they could not moor (tie up) in a port on this side.

The rear part of a ship is called the **stern**

Well I never!

Now that you know what the sides of a ship are called, you might notice something unusual about the Red Funnel ferry you are on today.

Because it is a "roll on, roll off" ferry, which means that vehicles drive on one end before they leave port, and drive off the other end on arrival, the bow and stern switch sides on each crossing!

If you look at the top of the ship to the bridge, where the captain steers from, you'll notice it is in the middle of the ship with windows all around. You'll also see two flagpoles - one at each end - so that a flag can always fly at the rear. On each side of the ship the navigation lights can be set to red OR green depending which way it is travelling!

Rules of the Water

The traffic rules for boats and ships on water are very complicated.

Here are some simple rules that everyone should know!

- **Boats and ships do not have brakes!**
  - They cannot stop suddenly, only slow down.
  - Rules help avoid accidents caused by this fact.
- **Working vessels have right of way over leisure craft**
  - Stay away from ferries, dredgers, fishing boats etc.
- **Large vessels have right of way over smaller ones**
  - They need to stay in the deep water channels or they might run aground.
  - They can't move quickly enough to get out of the way.

Before taking your boat out, learn shipping traffic you ought to take a training course to understand everything that is needed!

Now that you know more about traffic in international waters, let's answer those questions again! *How much more detail can you add now?*

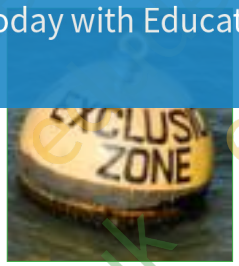
Q5 Do you think any boat or ship can go just anywhere there is water? Why?

Q6 Are there any traffic rules on water? Why are these in place?

Q7 Do you know the meaning of those coloured buoys on the water?

Spot The Buoys!

» With your partner try to spot as many **red**, **green** and **yellow**/black buoys as you can.
» Use the landmarks around you to mark their approximate locations on the map.
» Keep looking for more buoys to add, and by the time you finish your crossing you should have a simple route map!



Q8. Where did you start your journey? (Southampton or East Cowes). **Mark it on your map.**
Is the route the same both ways? If not, why not?

Q9. Why does the ferry not take the shortest straight route? Make a guess:

BACK AT SCHOOL

What happens when a large vessel does NOT stick to the shipping channel marked by the red / green buoys?

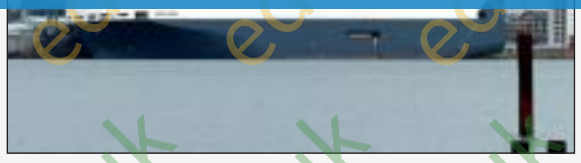
The following two case studies will give you an idea!

In each case, in groups or the whole class, here are some of the questions you may wish to discuss:

- What were the reasons for each disaster?
- Can any of what happened be justified?
- What is the role of human failure in such cases?
- What is the cost of such a disaster?

CASE STUDY ONE - *MV Hoegh Osaka* - Vehicle transporter

On Saturday 3rd January 2015, *Hoegh Osaka* left Southampton loaded with cars and machinery on its way to Germany. At 8:15pm it was deliberately run aground on Brambles Bank in the Solent.



The decision to ground the ship was taken in order to avert a much more dangerous situation out at sea as the ship was listing (tilted) dangerously to one side.

What are the consequences?

During the night a major air and sea rescue effort was needed to save the 25 crew from the stricken vessel.

Over the next few weeks teams of divers and engineers worked round the clock to make the ship safe to be towed back to port where it could be unloaded and repaired.

On 22nd January, almost three weeks after the grounding, the ship was successfully towed back to Southampton and unloading of the cargo began. Many cars and other vehicles were badly damaged or destroyed, but most were found to be in perfect condition.

On 10th February she sailed to Falmouth in Cornwall for repairs. On 20th February 2015, just 6 weeks after this disaster, *Hoegh Osaka* returned to service.

More details...

Using the internet, visit **www.edudest.uk/followup** and type in this document's number, **10718**. There you will find several links to video clips describing various aspects of this disaster.

MV Hoegh Osaka images by Nige Brown and Geni, both reused under CC-BY-2.0

CASE STUDY TWO - *Costa Concordia* - Cruise Ship

What happened and why?

On 13th January 2012 in calm seas and reasonable weather, *Costa Concordia* struck a rock near to an island (Isola del Giglio) on the western coast of Italy.

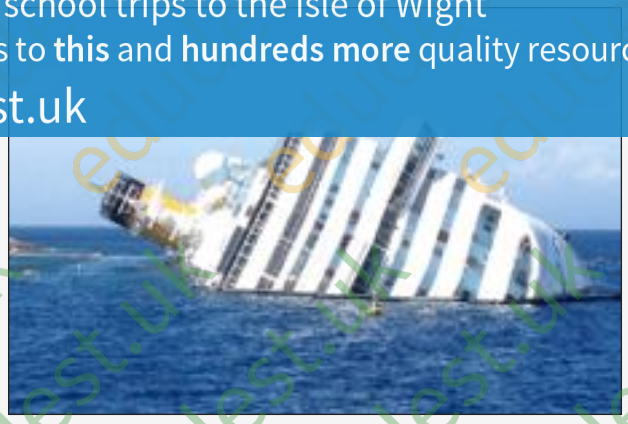
A huge gash was torn in the hull which soon flooded parts of the engine room resulting in complete power loss.

The ship drifted towards the island where it came to rest in shallow waters with most of the starboard side flooded.

What are the consequences?

Costa Concordia had 4,229 passengers and 1,023 crew. 32 people died.

It was originally thought that all passengers had to be evacuated within 30 minutes of an order to abandon ship, it took over 6 hours and of course some passengers were sadly left behind.



The ship also carried 2,380 tonnes of fuel which needed to be safely removed to prevent an ecological disaster. This took two months.

The salvage operation to re-float the ship took over two years and cost approximately £1.5 BILLION. After a 4-day journey under tow the ship arrived in Genoa, Italy and was scrapped.

The captain of the vessel, Francesco Schettino, was jailed for 16 years after being convicted of multiple counts of manslaughter, causing a shipwreck and abandoning ship before all his passengers had been evacuated.

More details...

Using the internet, visit **www.edudest.uk/followup** and type in this document's number, **10718**. There you will find several links to articles written about this disaster.

Costa Concordia images by Cezary Piwowarski, reused under CC-BY-2.0 and paolodefalco75, reused under CC-BY-3.0