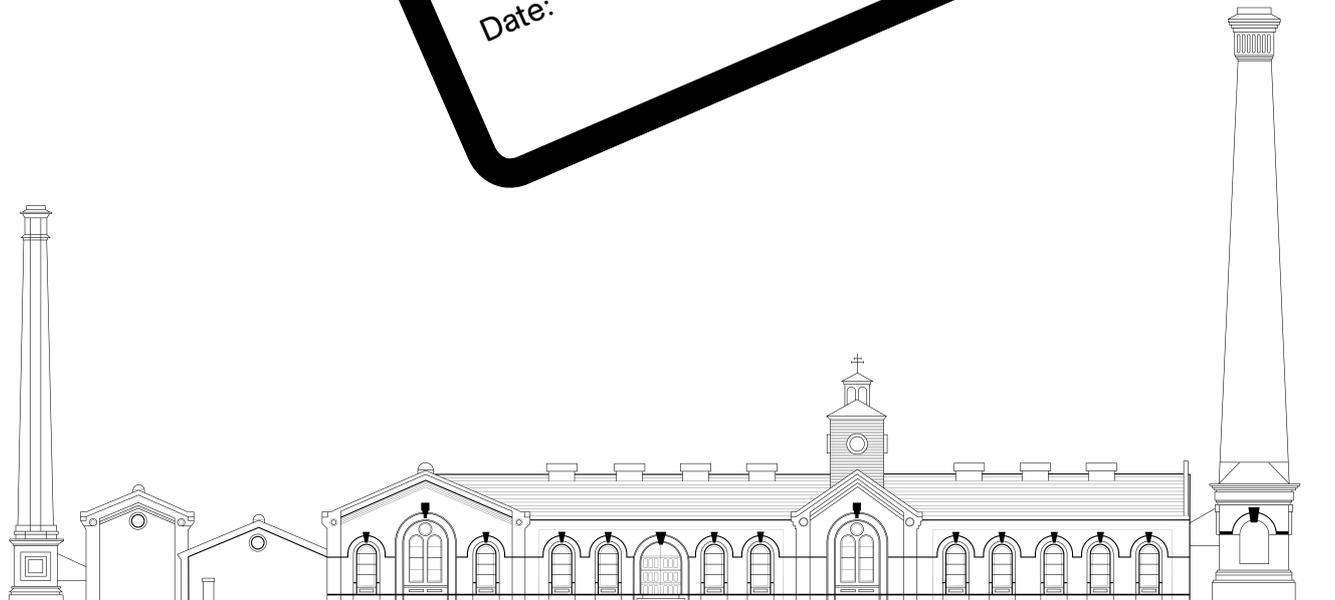
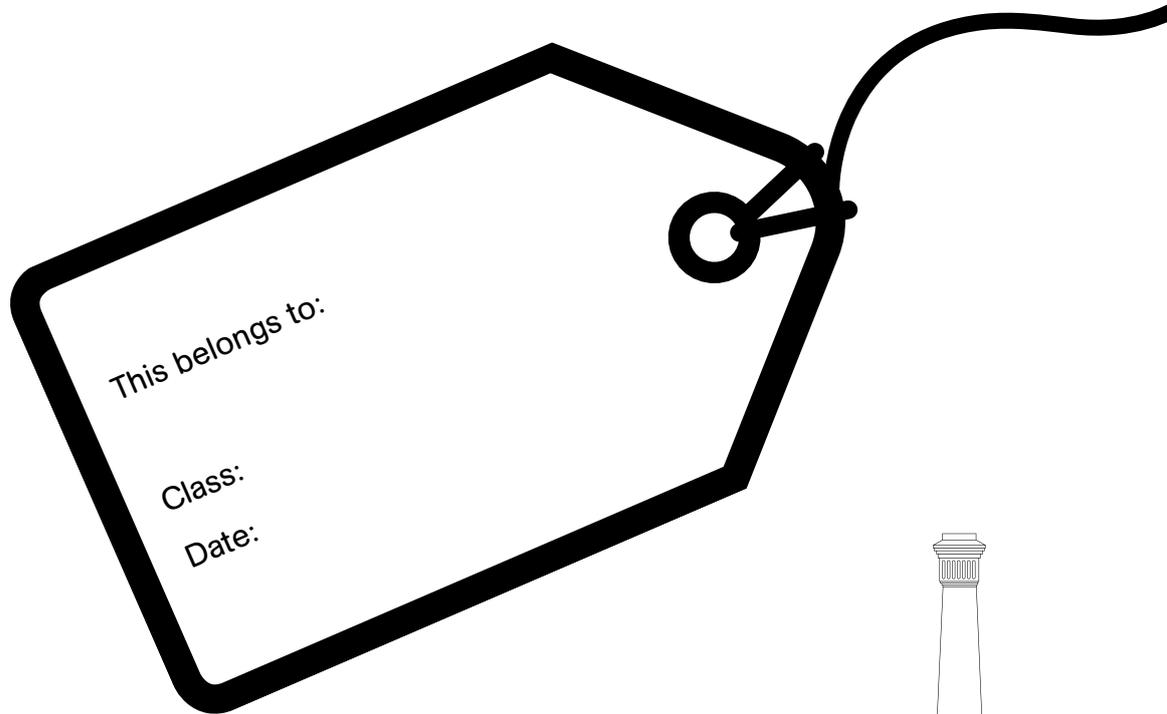


PRE-VISIT ACTIVITIES

TITANIC'S DOCK AND PUMP-HOUSE

Northern Ireland Science Park



Transforming dreams into commercial reality



Titanic's physical footprint in history

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Northern Ireland Science Park
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Information section



Oral activity



Keywords



Written activity



Letter writing



Hello, welcome to Titanic's Dock and Pump-House. My name is Mr Morris and I was a supervisor here in the shipyard in Belfast, which sits on the banks of the River Lagan.

I hear you are planning a visit to the site and I hope to meet you then. When you arrive try not to be disappointed by the approach, which is fairly bare and bleak. You'll have to use your imagination to step back to my time when this was one of the biggest, busiest, most productive shipbuilding yards in the world. The docks and yards here gave direct employment to thousands of people and indirectly to many more in associated industries.



IMAGE LEFT

Titanic in the background, workers leaving to go home
Ulster Folk and Transport Museum

Hello there. I'm Johnny and I was an apprentice at the yard in the early 1900s.

The photograph above shows you what it was like during the five years it took me to learn my trade. In those days some huge ships were built here. You might have heard of the most famous of all – Titanic. Now there was a ship...

Unfortunately, although they said she was unsinkable, she hit an iceberg on her maiden voyage and sank to the bottom of the Atlantic Ocean. Britannic and Olympic, known as Titanic's sister ships were built here too and the enormous Dry-Dock was built to house them.



KEY WORDS



supervisor

the person in charge of a particular area of the yard

shipyard

a place where ships are built

apprentice

someone who is learning a trade

maiden voyage

the first voyage of a ship

associated industries

industries that are not directly involved with, in this case, shipbuilding but are related to it eg rope-making

dry-dock

an enclosed area with floodgates from which the water may be pumped out leaving ships ready for fitting out or repairs

gantry

a structure to support a travelling crane



Study the information supplied by Mr Morris and Johnny and look carefully at the photograph of the shipyard on the previous page. Now decide whether the following statements are **fact** or **opinion**.



Please tick the correct answer

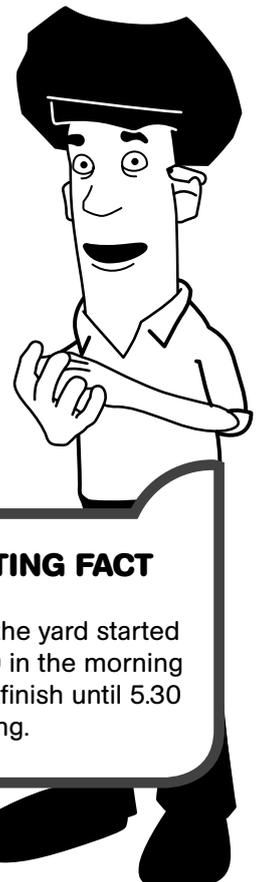
Statement

1. Belfast is situated on the banks of the River Lagan.
2. Nowadays the approach to the shipyard is bleak and bare.
3. In Mr Morris' day Belfast was one of the biggest, busiest, most productive yards in the world.
4. In its heyday thousands of people were employed in the shipyard.
5. It is obvious from the picture that the workers were exhausted at the end of the day.
6. It took an apprentice five years to learn his trade.
7. Johnny really enjoyed working on Titanic.
8. Britannic and Olympic are known as Titanic's sister ships.

Fact

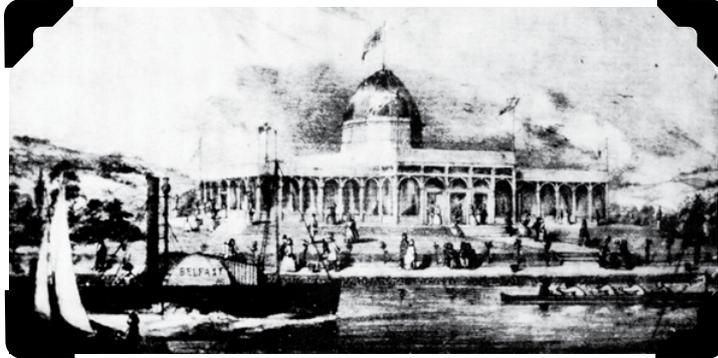
Opinion

Now study the photograph on the previous page carefully and give **5 reasons** how you know it was taken long ago and not today.



FASCINATING FACT

Workers in the yard started work at 6.20 in the morning and did not finish until 5.30 in the evening.



By the early 1800s Belfast Port was well-established and shipbuilding was expanding, but a major problem was the **slob land** to be found at the head of Belfast Lough where the river meets the sea. This meant that only small ships could sail up the river to dock at Belfast Harbour.

A decision was taken to straighten the river and allow ships to sail all the way into Belfast Port. The first cut was made in 1841 by William Dargan the engineer on the project. The mud and sand **dredged** up was dumped on the County Down side of the lough to form an island of seventeen acres known as Dargan's Island.

It was laid out as a public pleasure park reached by a ferry at the price of 1d (four farthings made a penny - 1d). The island was planted with trees and gardens. It became a popular venue for bazaars and fetes and there was an early amusement arcade with penny operated mechanical models including one of a master caning a pupil. There was also a **menagerie** which was in fact Belfast's first zoo. In it the visitors could see pheasants, parrots, a racoon, a golden eagle and monkeys. People who travelled to the island could also bathe as there was row of bathing boxes. The day could be recorded by the photographer who plied his trade there.

KEY WORDS



slob land

sand and mud, which gather at the mouth of a river

dredger

apparatus for clearing mud from a river bed

menagerie

a place where animals are kept for exhibition

Following a visit to Belfast by Queen Victoria the island was renamed Queen's Island in 1849.



A conservatory known as the Crystal Palace was erected there in 1851. Despite its popularity as a place of leisure a shipyard was constructed there in 1853.

IMAGE LEFT

Ticket for the Victoria fete
Ulster Museum



STEP BACK IN TIME

Study the information about Dargan's Island and then take a step back in time. Imagine you are a young person in August 1850 and you are going to Dargan's Island, now renamed Queen's Island, for a day trip with your family. On your return you write a letter to a friend who was unable to go.

A large rectangular area with horizontal lines for writing a letter.

THINK ABOUT...

What did you wear?

Did you take a picnic?
If so, what was in it?

How did you travel to the river/across the river?

What do you think of the new name for the island?

What did you do when you were there?

Did you see anything you had never seen before?

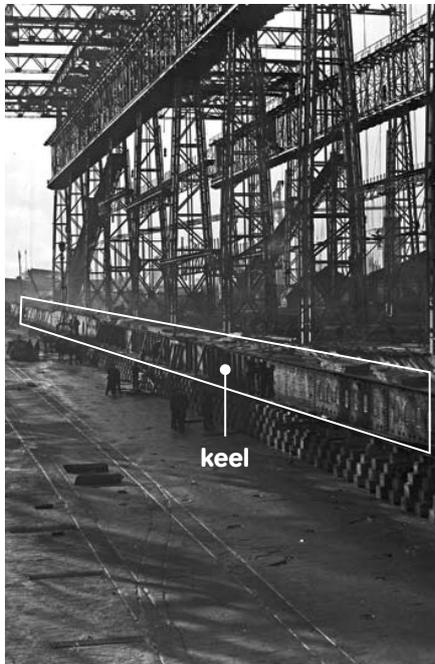
Did you do anything you had never tried before?

How did you feel about the day's experience?

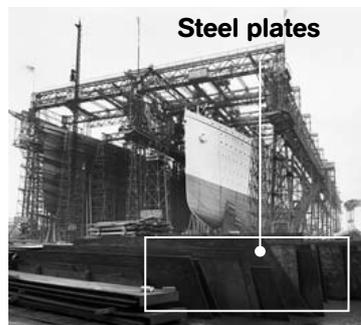
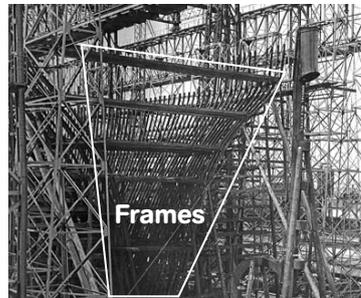


FASCINATING FACT

On Dargan's Island there was a penny operated mechanical model of an executioner removing the head of Charles I.



Ulster Folk and Transport Museum



The first stage in building a ship is to lay the **keel**, which is the strong structure along the bottom to which the frame is attached. The **keel** of Titanic, which was ship number 401, was laid on 31st March 1909.

Once the **keel** is completed the framing begins. The frames will give the ship its shape and provide a structure for the plates. Titanic was fully framed by the 6th April 1910.

Steel plates were riveted to the frames to form the surface of the ship, keeping things out and keeping things in. Titanic's plating was completed by 19th October 1910.

KEY WORDS



keel

the strong structure that forms the first part of the ship

hull

the completed shell of the ship

propeller

the device with large blades that make the ship move through the water

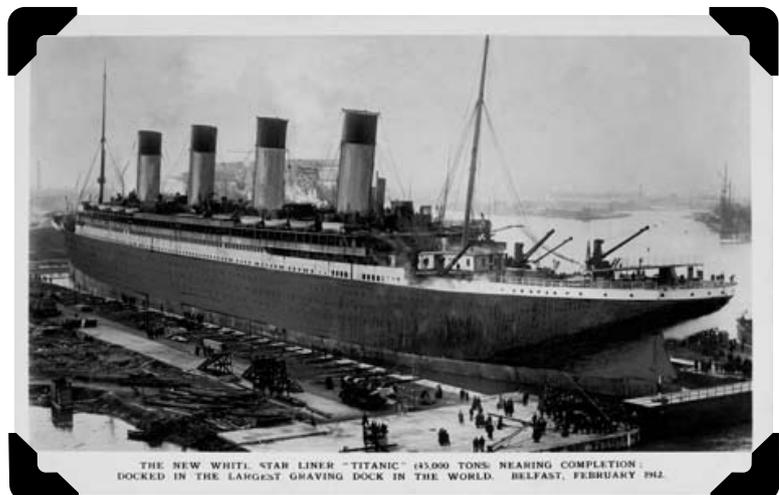
funnel

a metal tube that takes waste gases and smoke from the ship

rivet

metal peg hammered on both ends for fastening steel plates together

Before the ship is ready to be launched it needs engines fitted, propellers installed and funnels added. Titanic was ready for launching on the 31st May 1911.



Titanic in Dry-Dock
Father Browne

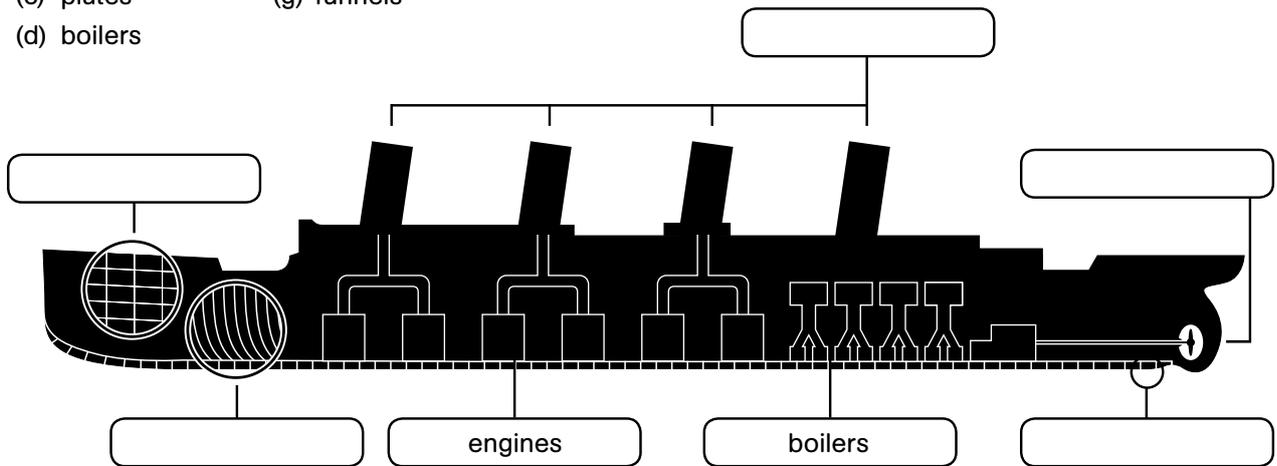


FILL IN THE BLANKS

Study the diagram of the ship and identify the:

- (a) keel
- (b) frames
- (c) plates
- (d) boilers
- (e) engines
- (f) propellers
- (g) funnels

Insert the correct word in the blank spaces that are remaining.



People say that there are some similarities between the structure of a ship and the structure of the human body. Examine the diagram of a human body and by drawing a line, link the similarities together:

- | | |
|-------------------|------------------|
| Keel | Ribs |
| Frames | Legs |
| Plates | Lungs |
| Boilers | Heart |
| Engines | Back Bone |
| Propellers | Skin |
| Funnels | Stomach |



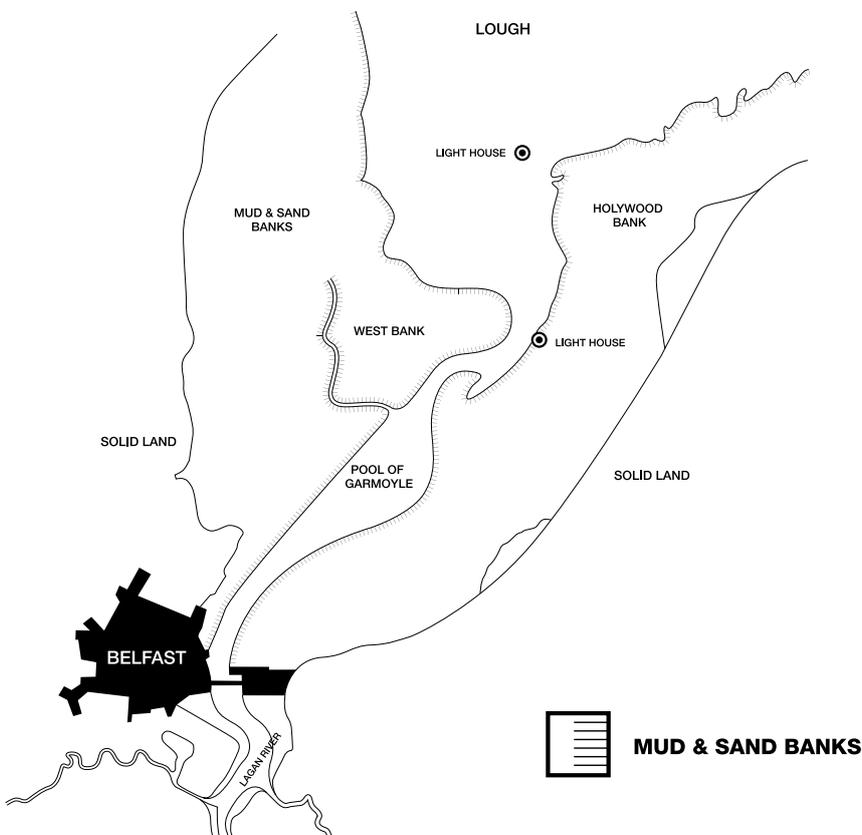
FASCINATING FACT

It took 3,000,000 – yes 3 million, rivets to complete Titanic. They were fastened either by hand or by a hydraulic press.



Belfast had a reputation as a port and shipbuilding centre as far back as the 17th century and by the end of the 18th century there were several good reasons why this development might continue.

Looking at the map (below) you can see that Belfast is well situated to handle **trade**. The river had a deep and wide entrance and there was a safe place for ships to **anchor** at the Pool of Garmoyle.



Despite these advantages there were also several disadvantages including a problem of shallow water with mud and sandbanks at the mouth of the river. The main port was situated along a river which **meandered** creating very difficult access. On top of this, materials needed for shipbuilding, namely iron and coal, were not available locally and the local supply of wood, a further necessity, had already been used up.

Belfast businessmen realised that if their business was to develop the problems would have to be overcome. They formed an organisation which was to become the Belfast Harbour Commissioners and set about straightening the river, removing the mud and sand, and enabling large vessels to reach Belfast. Coal, iron and wood were **imported** from England and shipbuilding was developed on the County Down side of the river. **Donegall Quay** and the new Harbour Office were on the site of the old shipyards on the County Antrim side of the river.

KEY WORDS



trade

business carried out to make a living

anchor

to take a hold on the bed of the sea

meander

to twist and turn

import

to bring goods into the country from another place

quay

a loading wharf or landing place for ships



FASCINATING FACT

By 1912 the amount of goods handled annually by Belfast docks passed the 3,000,000 ton mark. Belfast had become the third largest port in Great Britain with only London and Liverpool handling more.



WILLIAM RITCHIE

William Ritchie was a shipbuilder from Ayrshire in Scotland who came to Belfast in 1791 bringing with him his own workforce, materials and equipment. William set up a yard and in 1796 he started to construct the first dry-dock in Belfast.



EDWARD HARLAND

Edward Harland was a Yorkshireman who was manager of Hickson's yard from 1854. When Hickson ran into financial difficulties in 1858 he sold it to Edward Harland for £5000, which was a loan from a family friend, GC Schwabe, who was a Liverpool merchant.



GUSTAV WOLFF

Gustav Wolff was the nephew of Schwabe and Harland's personal assistant. In 1861 he became a partner in the firm that became known as Harland & Wolff.



THOMAS ANDREWS

Thomas Andrews was managing director for Harland & Wolff in charge of design. He sailed on Titanic and was last seen in the first-class smoking room, staring into space with his life jacket in front of him.



BRUCE ISMAY

Bruce Ismay was chairman of the White Star Line. Ismay travelled on Titanic and survived but was haunted for the rest of his life by the tragedy.



WILLIAM PIRRIE

William Pirrie joined Harland & Wolff as a gentleman apprentice in 1862. He was an excellent draughtsman and became a partner in the company in 1874.



ROBERT THOMPSON

Robert Thompson was chairman of the Harbour Commissioners from 1893 and oversaw the introduction of the only graving dock in the world big enough for liners such as Titanic and Olympic.

KEY WORDS



workforce
the people who work in a particular industry

White Star Line
the marine company that owned Titanic and many other ocean-going liners

merchant
a businessman

draughtsman
a person who draws plans



PHOTOGRAPHS

With a partner study the photographs of the famous names connected to the Belfast shipyard. Discuss the following;

- What do the photographs tell you?
- What type of man do you think each man was from looking at his photograph?
- Which of these men would you like to find out more about?
- What would you like to find out?

RESEARCH

Use traditional or digital sources to do some research about two of the men.

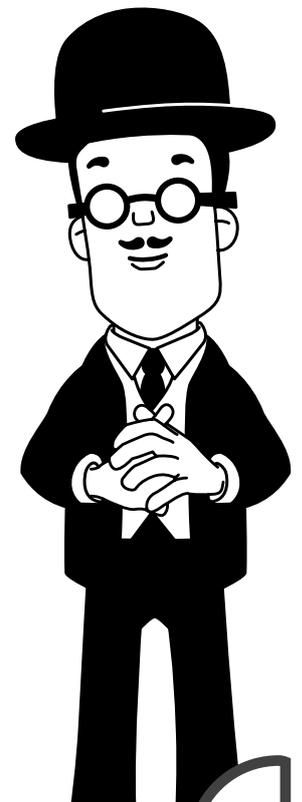
ROLE PLAY

One partner will assume the role of **Edward Harland** while the other will become **Gustav Wolff**. Devise a short scenario where the two men are negotiating their partnership. Perform the scene for the rest of your class.

DISCUSSION AND PRESENTATION

For this activity the class needs to be divided into 5 groups. Each group will be allocated one issue to discuss before making a short presentation to the rest of the class outlining the issue and the conclusions reached by the group.

1. What reasons might Ritchie have had to bring his own workforce to Belfast? How do you think local people might have reacted to Ritchie and his workforce?
2. Why do you think the owner of an ironworks might want to own a shipyard? How do you think Hickson felt when he had to sell his yard?
3. Ismay was haunted by the tragedy of Titanic. Give reasons why you think this might have happened.
4. William Pirrie started work in the yard as a gentleman apprentice. What do you think this term means? How might his working life have differed from an ordinary apprentice?
5. The Dry-Dock that housed Titanic and the Olympic was named after Robert Thompson but is known today as Titanic's Dock. Which name do you consider to be better and why?



FASCINATING FACT

The first ships built by Harland & Wolff were for the Bibby Line and they were revolutionary in design. They were long and narrow with iron upper decks to increase strength and flatter bottoms to increase capacity. Critics named them Bibby Coffins.



The Titanic's Dry-Dock was the biggest dry-dock in the world when it was opened on Saturday 1st April 1911.

THE DRY-DOCK

A graving dock or dry-dock is an area used for tasks such as cleaning, painting and repairing a ship.

This explains why the dock had to be dry but to bring the ship into the dock it needed to be full of water. So how did they do it?

To begin with, the dock would have been full of water so they had to close the **caisson gate** and pump out the water through the grills on the bottom of the dock. Next the **keel blocks** were laid in the base of the dock and wooden blocks placed on top of them to act as a cushion. The valves were then opened to allow the dock to fill up with water. To make sure that the **keel blocks** had not moved divers, known as hard-hat divers, went down into the dock to check that all was well.

Next step was to open the **caisson gate** so that the ship could be hauled into the dock by ropes, which were pulled by the **capstans**. Then the **caisson gate** was closed again so that the huge pumps could pump out the 21 million gallons of water. When this happened the ship was left sitting on the **keel blocks** ready for the work to begin.



Olympic class liner in the Dry-Dock

Ulster Folk and Transport Museum

THE PUMP-HOUSE

Another engineering marvel on the site was the Pump-House, which houses the steam driven pumps that drained the water from the dock. They could drain all 21 million gallons from the dock in about 100 minutes. Even today the operational workings of the engines, pumps and related machinery are astounding.

TITANIC

At the time of its maiden voyage Titanic was the biggest ship ever built. She was an ocean-going liner designed to provide a regular service across the North Atlantic to America. To give you some idea of her size look at the picture and see how she towers above the Pump-House which is on the left of the image.

KEY WORDS



caisson gate

the huge gate which closed water out of the dock

keel blocks

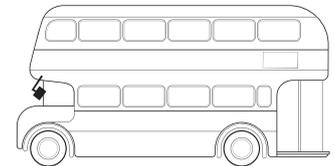
large blocks of metal on which the ship rests when dry-docked

capstan

a revolving barrel for winding in cable or rope

liner

a passenger carrying ship which belongs to a line eg White Star Line



At 850ft long the Titanic's Dry-Dock could easily accommodate 26 double decker buses end to end



THE DRY-DOCK

With a partner study the description of how the Dry-Dock works, and discuss it together. Write each step of the process on cards. Mix them up and then work together to put them into the correct order.

When you feel you understand the process use the space below to draw a flow chart of each step.



FASCINATING FACT

Eight people were killed while working on the building of Titanic. The last victim was killed by a falling wooden post just before the launch.

THE PUMP-HOUSE

There were other pump-houses on the docks before this one was built. What do you think made this one so special?

TITANIC

When Titanic was built she was the biggest ship ever built. Do some research to find out about ships built since then that are bigger.