

MEASUREMENT & STATISTICS

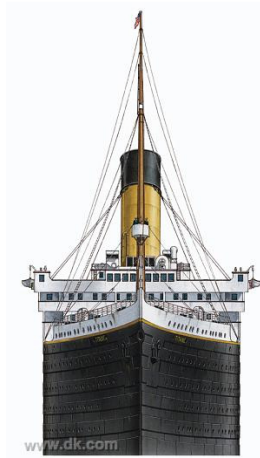
RMS TITANIC



ROYAL MAIL STEAMER TITANIC

INFORMATION & DATA

TITANIC: DAY 1 – BUILDING A SHIP



MARCH 31, 1909 – APRIL 1, 1912

Titanic Dimensions & Statistics

The *RMS Titanic* was an Olympic-class passenger liner owned by the White Star Line. *Titanic* was the largest movable man-made object ever made at the time. Construction of the *Titanic* began on March 31, 1909 and was funded by the American J.P. Morgan and his International Mercantile Marine Co. Approximately 14,000 workers were used to construct *Titanic*.

Passenger capacity:	2,435
First class capacity:	735
Second class capacity:	674
Third class capacity:	1,026
Total crew:	885
Total passengers and crew:	3,320
Decks:	9
Length:	882.5 feet, 268 meters
Width:	93 feet
Weight (with everything on board):	52,310 tons
Water displacement:	52,310 tons
Weight (just the ship):	38,760 tons
Height from bottom to top of funnels:	175 feet
Depth to which the vessel is immersed:	34 feet, 7 inches
Cruising speed:	22.5 knots [About 26 miles per hour]
Top speed:	24 knots [About 28 miles per hour]
Combined weight of 3 anchors:	31 tons, center weighed twice the side anchor
Outer propellers:	23 foot diameter
Center propeller:	17 foot diameter
Rudder:	78 feet high, 101 tons
Rivets:	3 million, 1,200 tons

Engines:	Total 46,000 horsepower
Furnaces to burn coal:	159
Coal used:	Carried 5,892 tons, used 640-825 tons each day
Forward Mast Height:	101.5 feet
Aft Main Mast Height:	97.5 feet
Crow's nest for lookouts:	90 feet above water
Passenger Flotation:	3,560 life belts and 48 life buoys
Lifeboats aboard:	1,186 total capacity (20 lifeboats)
Cost:	\$7.5 million (1912 U.S. Dollars, \$400 million today)
First Class Suites:	28
Elevators/Libraries/Restaurants:	4/2/4
Gallons of drinking water:	14,000 gallons of drinking water each day
Workers:	Worked from 7:50am to 5:30pm each day with a 10 minute morning break and a half hour for lunch.
Each of the four funnels:	63 feet high, 19 feet wide, 24.5 feet long (19m, 6m, 7m)

First-class passengers ate in the largest room on the ship. 114 feet by 92 feet (35m by 28m) It could seat over 550 people.

TITANIC: DAY 2 – LOADING THE TITANIC



APRIL 2, 1912 – APRIL 9, 1912

RMS Titanic first went to sea on April 2, 1912 for its sea trials. After successful trials the ship was ready to begin loading all of the supplies for its maiden voyage.

GALLEY SUPPLIES

Crockery items (pots, pans, baking sheets)	57,600
Glassware	29,000
Cutlery	44,000

CUTLERY

Tea cups	3,000	Dinner plates	12,000
Ice Cream plates	5,500	Souffle dishes	1,500
Wine glasses	2,000	Salt shakers	2,000
Pudding dishes	1,200	Finger bowls	1,000
Oyster forks	1,000	Nut crackers	300
Egg spoons	2,000	Grape scissors	1,500
Asparagus tongs	400		

LINENS

Aprons	4,000	Blankets	7,500
Table cloths	6,000	Bed covers	3,600
Eiderdown quilts	800	Single sheets	15,000
Table napkins	45,000	Bath towels	7,500
Fine towels	25,000	Roller towels	3,500
Double sheets	3,000	Pillow-slips	15,000

FOOD SUPPLIES

Fresh meat	75,000 lb	Onions	3,500 lb
Fresh fish	11,000 lb	Asparagus	800 bundles
Salted and dried fish	4,000 lb	Tomatoes	3,500 lb
Bacon/ham	7,500 lb	Green peas	2,500 lb
Poultry	25,000 lb	Heads of lettuce	7,000
Fresh eggs	40,000	Bread	1,000 loaves
Sausage	2,500 lb	Ground coffee	2,200 lb
Potatoes	40 tons	Tea	800 lb
Rice & dried beans	10,000 lb	Sugar	10,000 lb
Flour	250 barrels	Cereal	10,000 lb
Apples	36,000	Oranges	36,000
Lemons	16,000	Grapes	1,000 lb
Grapefruit	13,000	Jam/marmalade	1,120 lb
Fresh milk	1,500 gal	Ice cream	1,200 qt
Condensed milk	600 gal	Butter	6,000 lb

SALARIES

	Monthly salary	Today's \$ equivalent
Captain E.J. Smith, <i>Titanic</i>	£105	\$125,000
Captain Rostron, <i>Carpathia</i>	£53	\$63,100
Seaman Edward Buley	£5	\$5,950
Look-out G.A. Hogg	£5 and 5 shillings	\$6,250
Radio Operator Harold Bride	£48	\$57,150
Steward Sidney Daniels	£3 and 15 shillings	\$4,460
Stewardess Annie Robinson	£3 and 10 shillings	\$4,100
Skilled Shipyard workers	£8	\$9,520
Unskilled workers	£4	\$4,760

TITANIC: DAY 3 – SET SAIL



APRIL 10, 1912 – APRIL 13, 1912

WELCOME ABOARD!

Passengers boarded on the morning of April 10, 1912 and *Titanic* set sail at noon that day.

TICKETS, PLEASE!

	Then	Today's \$ equivalent
First class (parlor suite)	£870/\$4,350	\$83,200
First class (berth)	£30/\$150 average = £86	\$2,975
Second class	£12/\$60	\$1,200
Third class	£3 to £8/\$40 average = £7	\$298 to \$793

TITANIC PASSENGER INFORMATION

Total on board <i>Titanic</i>	2229
Passengers	1316
Crew	913

TITANIC PASSENGERS (not including crew)

	1st Class On Board	2nd Class On Board	3rd Class On Board	Total
Men	175	168	462	805
Women	144	93	165	402
Children	6	24	79	109
Total	325	285	706	1316

TITANIC BY NATIONALITY (more than 50 passengers)

	Passengers
Britain	327
United States	306
Ireland	120
Sweden	113
Syria	81
Finland	59

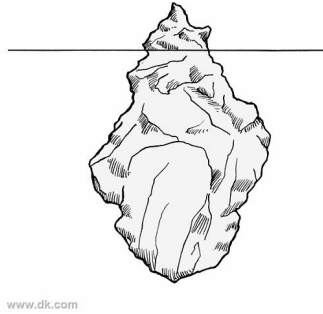
First stop:

From Southampton, England to Cherbourg, France, 67 miles, 108 km, actually sailed 89 miles

Next:

Left France at 8:10pm on 4/10, Arrived Queenstown, Ireland at 11:30am 4/11 Sailed 315 miles

TITANIC: DAY 4 – ICEBERG



APRIL 14, 1912

At the time the *Titanic* sank most people believed that the iceberg inflicted a continuous 300-foot-long gash down the side of the ship. In a 1996 expedition to the ship, scientists used new sonar technology to see through the 45 feet of mud that covered *Titanic's* bow. They found the *Titanic's* wound was in fact a series of six thin slits, some less than an inch wide. The total area of damage was only about 12 square feet – about the size of a human body.

Iceberg Statistics

Icebergs come in a range of sizes and shapes.

Growlers:	less than 3 feet high and 16 feet long	
Bergy Bits:	3-13 feet high and 15-46 feet long	1-4m, 5-14m
Small:	14-50 feet high and 47-200 feet long	5-15m, 15,60m
Medium:	51-150 feet high and 201-400 feet long	16-45m, 61-122m
Large:	151-240 feet high and 401-670 feet long	46-75m, 123-213m
Very Large:	Over 240 feet high and 670 feet long	75m, 214m

A glacier flows toward the sea at a rate of up to 65 feet per day. When the glacier reaches the sea, huge chunks or slabs are weakened and broken off becoming icebergs. Most icebergs melt before reaching the ocean. Of the 15,000 to 30,000 icebergs produced yearly by the glaciers in Greenland, only 1% make it to the ocean.

Very few icebergs are found south of the line of 48 North latitude as most melt before reaching this point. *Titanic's* iceberg collision took place just below 42 degrees latitude.

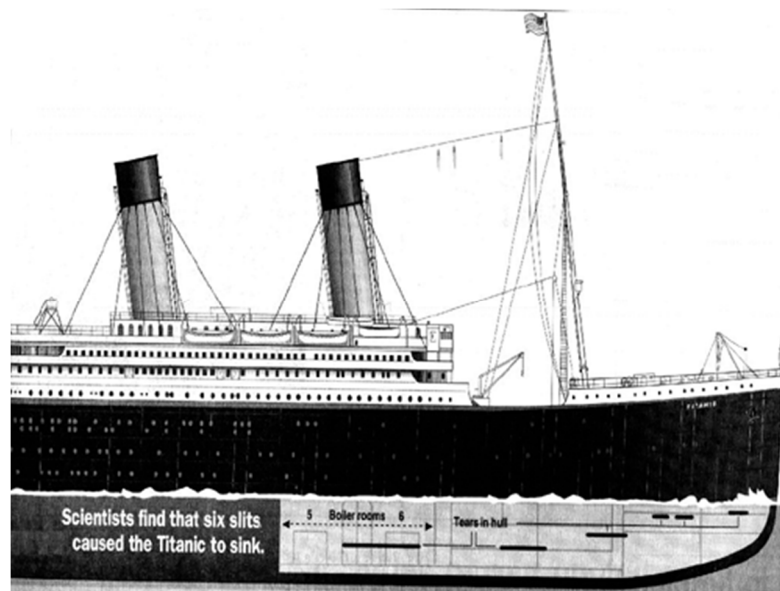
About 7/8ths of an iceberg is below the water line. According to eyewitness reports *Titanic's* iceberg was 50-100 feet high and 200-400 feet long.

Iceberg Count South of 48 degrees N in the North Atlantic, 1900-1912

Year	April Total	Yearly Total
1900	5	88
1901	4	81
1902	1	48
1903	166	802
1904	63	266
1905	373	822
1906	49	428
1907	162	635
1908	39	207
1909	134	1041
1910	34	51
1911	112	374
1912	395	1038

The 395 in 1912 was the most in April until the year 1970 (501).

When scientists explored the *Titanic's* hull they found there were actually six openings in the ship. Some were barely as wide as a human finger. The first openings occurred just below the water line. The next areas of damage are further below the surface, about 20 feet below the water line.



The second slit is 1.2m long, third 1.5m, fourth 4.6m, fifth 10m long.
The total area of all of the slits was less than 12 square feet.

Immediately after impact water began rushing into her hull at a rate of almost 7 tons per second. Although the holes in *Titanic* were small, the high pressure 20 feet below the water line would have forced water into the ship faster than through a fire house.

- 11:39pm** Iceberg first seen
- 11:40pm** *Titanic* strikes the iceberg (37 seconds between Lookout Fleet's warning and the impact with the iceberg)
- Midnight** *Titanic* has taken on 7,450 tons of water and the bow is starting to sink
- 12:40am** One hour after impact, *Titanic* has taken on 25,000 tons of water
- 2:00am** *Titanic* is flooded with 39,000 tons of water, forcing the bow underwater and heaving the stern into the sky
- 2:20am** *Titanic* has sunk

Radio as a means of communication was still relatively new in 1912. *Titanic's* communication system had the most powerful radio shipboard transmitter available with a range of 500 miles. Most ships had no radios and even those with radios usually only had sets with a range of 200 miles.

Titanic received at least seven radio messages concerning icebergs.

When the *Titanic* began to sink, *Carpathia* was 58 miles away. It took four hours to get to the site where *Titanic* sank. It arrived two hours too late. The closest known ship was the *Californian*, which according to its calculations was about 19 miles to the north during the critical time period. The *Californian's* sole wireless operator, Cyril Evans, went to bed 10 minutes before the *Titanic* struck the iceberg and never heard *Titanic's* wireless calls for assistance.

Birma – 100 miles away

Mount Temple – 50 miles away

Baltic – 300 miles away

Messages cost \$3.12 for the first ten words and 35 cents for each additional word.

Law: 10,000 ton ships or over had to carry at least 16 lifeboats. *Titanic* was 53,000 tons.

Time launched	Lifeboat number	Capacity	Occupants
12:45am	7	65	19
12:55	5	65	41
12:55	6	65	28
1:00	3	65	32
1:10	1	40	12
1:10	8	65	28
1:20	10	65	55
1:25	14	65	60
1:25	16	65	50
1:30	9	65	56
1:30	12	65	40
1:35	11	65	70
1:40	13	65	64
1:40	15	65	70
1:45	2	40	25
1:50	4	65	40
2:00	C	47	42
2:05	D	47	40
2:20	A	47	13
2:20	B	47	30

After the accident the *Titanic* fell 2.3 miles under the water.

Temperature the day the *Titanic* sank

Noon	Air: 50	Water: 56
4 pm	Air: 37	Water: 36
8 pm	Air: 30	Water: 32
Midnight	Air: 27	Water: 28
April 15 - 4am	Air: 29	Water: 29

TITANIC: DAY 5 – RESCUE

APRIL 15, 1912

TITANIC PASSENGER INFORMATION

Total on board Titanic = 2229

Passengers = 1316

Crew = 913

Total Survivors = 713

Passengers = 498

Crew = 215

Total Life Boat Capacity = 1178

Lifeboats = 20

Lifeboat Capacity = 32

TITANIC PASSENGERS

	1st Class On Board	1st Class Survived	2nd Class On Board	2nd Class Survived	3rd Class On Board	3rd Class Survived
Men	175	57	168	14	462	75
Women	144	140	93	80	165	76
Children	6	5	24	24	79	27
Total	325	202	285	118	706	178

TITANIC PASSENGERS BY CLASS

	Survival Rate	Male	Female
First Class	62%	34%	97%
Second Class	41%	15%	89%
Third Class	25%	15%	49%
		19%	73%

TITANIC PASSENGERS & CREW

	Total	Survived	% Survived
Women	402	296	74%
Children	109	56	51%
Men	805	146	18%
Crew	913	215	24%
Total	2229	713	32%

TITANIC BY NATIONALITY (more than 50 passengers)

	Passengers	Survived	% Survived
Britain	327	104	32%
United States	306	177	58%
Ireland	120	42	35%
Sweden	113	27	24%
Syria	81	32	40%
Finland	59	19	32%

Carpathia could hold 2,550 passengers and was only carrying 743

Carpathia normal speed – 14.5 knots

Carpathia that night – 17.5 knots

Boat #2 was the first to be rescued by the *Carpathia* at 4:10am

Boat #12 was the last at 8:30am

After picking up the survivors Monday morning, the *Carpathia* took three and a half days to reach New York. It arrived the evening of April 18.

More men survived than women. The rule was “women and children first” on the life rafts. How are both true?

Very few people who died actually drowned. The major cause of death was hypothermia. A few people were able to locate floating objects buoyant long enough to support them until they were picked up by the lifeboats that returned to the scene after Titanic disappeared.

A body temperature of less than 96 degrees can cause irregular heartbeat leading to heart failure and death. A body can cool down 25 times faster in cold water than in air.

Water temperature, Degrees Fahrenheit	Exhaustion or unconsciousness	Expected survival time
32.5	<15 min	<15 to 45 min
32.5-40	15-30 min	30-90 min
40-50	30-60 min	1-3 hrs
50-60	1-2 hrs	1-6 hrs
60-70	2-7 hrs	2-40 hrs
70-80	3-12 hrs	3 hrs +
Over 80	indefinite	indefinite

If a body temperature has not dropped below 90 degrees, chances for a total recovery are usually good. If body temperature has fallen to between 80 and 90, most people will recover, but some lasting damage is likely. If the temperature goes under 80 degrees, most victims will not survive.

There were 14 standard wooden lifeboats: 30 by 9 by 4 (deep) capacity = 65
Two emergency cutters: 25 by 7 capacity = 40
Four collapsible lifeboats: 27 by 8 by 3 capacity = 47

The International Ice Patrol was created in 1914 to locate, mark, and track iceberg movements in the shipping lanes of the northwest Atlantic.

Not a single life has been lost due to ice in the North Atlantic since the Titanic disaster.

TITANIC: DAY 6 – FOUND



1985 - TODAY

The Titanic was found on September 1, 1985 by a French/American team headed by Dr. Robert Ballard.

The water where the Titanic lies is 12,460 feet deep.

The bow and the stern are 1,970 feet apart on the ocean floor.

The bow section is buried in 60 feet of mud from when it slammed into the sea floor.

Final resting place of the Titanic

- 1000 miles due east of Boston, Massachusetts, and 375 miles southeast of St. John's, Newfoundland.

Water pressure at the surface is basically the same as the air pressure at sea level: 14.7 pounds of pressure per square inch. This pressure is measured in units called atmospheres which equal 14.7 pounds.

For every 33 feet, water pressure increases 14.7 lbs/sq in.

How much does water pressure increase per foot?

Calculate the water pressure at 20 feet below the surface.

Calculate the water pressure at 2.5 miles below the surface (at the wreck site).