

A Titanic Problem!

Below is a mostly fictitious account of what may have occurred during the fated voyage of The Titanic. I have created some facts that are unlikely to be accurate but they will allow us to explore a huge amount of maths later. I would like you to read and also enjoy the story but at the same time, with your maths heads on, think about the potential questions I am going to ask you! Ship ahoy!

I looked at my watch; it was 11.15 am on Wednesday, April 10th 1912. Voyage day. I could see the colossal yet somehow beautiful vessel as I made my way through the bustling crowds of Southampton. I could see all four funnels; they were the first feature I recognised. I had done my research and I knew that each of them was 19m in height. With great excitement, I ran the final mile or so and made my way to my cabin.

After I left my luggage in my room I went on a quick exploring mission. I stumbled across the passenger list and even though I knew I shouldn't have done, I stole a quick peep at it. In total there were 1300 passengers on board, surely I would find a friend among them. I looked a little further into the list and learned that there were 319 first class passengers and 272 second class passengers. I was about to see how many 3rd class passengers there were but I heard the engine kick into life so I made my way up the deck!

We set sail at noon and headed to Cherbourg in France to pick up some additional passengers. We arrived in France at around 6.30pm. I knew the next stop was going to be Queenstown in Ireland so, after a quick bite to eat and a chinwag with some fellow passengers, I decided to get some sleep. My cabin was impressive, far more luxurious than any place I had ever stayed in. We were in bunk beds and in my room there were 4 of us in total. I took top bunk! We had a small amount of wardrobe space and a sink that served cold water. The four of us unpacked and, being a nosey so and so, I watched them all individually. I made a mental note of all their belongings in case any of them had the idea of pinching my gear. Here is what they carried.

Name	Country	Clothes
Michael	England	3 trousers 6 pants 3 shirts 6 socks
Sammy	Scotland	4 trousers 7 pants 5 shirts 7 socks
Catherine	Wales	9 trousers 10 pants 5 shirts 4 socks
Me	England	6 trousers 2 pants 4 shirts 2 socks

I know what you are thinking; I should have packed more pants!

I had a great night of sleep and I woke up at 11.30am, just as The Titanic was reaching Ireland. I inhaled the clean sea air and decided to explore the ship with increased attention. It truly was amazing. As I strolled along the decking I noticed a girl of about 13 counting the lifeboats, I was curious by this and decided to go and speak to her.

“Hi, my name is Luke, can I ask what you are doing?” I began. The girl replied without turning her head.

“Hi Luke, my name is Nicole and I’m just doing some research. I know by the plans that there is space for 64 lifeboats but I can only count 20. I heard a rumour that they have reduced the amount of lifeboats to make the decks look less cluttered. If you want my opinion, they’re asking for trouble.”

“They say this ship is unsinkable, I’m sure we’ll be okay and even if we have an accident, don’t you think 20 life boats is enough?” I asked nervously.

“My maths isn’t my strong point but I know that the wooden cutter lifeboats can hold 40 people each and there are 2 of them. There are 14 wooden lifeboats and they can hold 65 people and, if I’m not mistaken, those 4 life boats over there are the collapsible type and they can carry 47 passengers each. With all the crew as well as the passengers, I’d say it’ll be pretty close.”

I left Nicole to her calculations and continued to walk. All of this exercise made me a little peckish so I ducked in to investigate the food provision. I was shocked at what I saw! There were stores and stores of the most glorious foods my eyes had ever seen. I stopped one of the chefs who was on a fresh air break and asked him about the stores of food on board. I could not believe my ears!

“Well me laddy, you won’t believe what I’m about to tell you but I’ve never told a lie in me life, here’s the facts plain as day for you. This ‘ere ship has over 2 tonnes of sausages, 40 tonnes of potatoes and a tonne of ice cream. That’s not everything; we’re also carrying 5,000kg of fish and 40,000 eggs. 36,000 apples and about 1,000 loaves of bread. To wash all of that down we have 14,000 gallons of water! There’s no need to go hungry aboard this ship let me tell you.”

I had to agree with the chef, there was certainly a huge feast to be had. During the next 2 days, not a great happened to be honest – we sailed through beautifully calm waters and I got in to a routine to help me pass the time. Between the times of 4.00pm on April 12th and 6.00pm on April 14th (a total of 50 hours) I spent my time enjoying the following activities;

Activity	Time (hours)	Activity	Time (hours)
Sleeping	18	Chatting	3
Playing Cards	4	Day Dreaming	1
Eating	2	Gambling	10
Walking	7	Ice Berg Watching	5

I decided to have a little walk around the ship and I overheard a conversation between two very important looking people. I didn't catch all of it but I kept hearing the word "seven" being repeated over and over again. I listened a little closer and learned that our ship had received seven warnings of ice bergs in our path. I felt a little concerned but mostly relieved that we were aware of any danger and could make all necessary plans to avoid it.

I bumped into my old chef friend who had the responsibility to prepare the dessert for the evening meal – he dropped the recipe on the way past to me and as I reached down to pick it up for him I had a quick look at what we were having. My mouth watered in anticipation, here it is...

Strawberry Cheesecake

250g digestive biscuits	100g butter
600g soft cheese	200g sugar
350g double cream	400g strawberries
25g icing sugar	120g magic

This recipe will make enough cheesecake to serve 5 people

I thought it would be a good idea to work up an appetite so I would enjoy my dessert more. You may not believe this but Titanic had a 1st class gym on board, I had to pay 1 shilling for my session but the quality of the equipment on board made that cost seem minimal. Here is a percentage break down of how long I spent on each machine;

Rowing Machine (30%)

Cycling Machine (15%)

Free Weights (20%)

Stretching (5%)

Electric Camel (25%)

Cool Down (5%)

I quickly got changed and started to head back to my cabin. I chatted with my roommates and looked at my watch; it was just past 11.30pm so we left our room and headed to the dining hall.

BOOOOOOOOOM!

The noise was immense and the entire ship shook. Everybody stopped dead in their tracks and several people fell over. What could that have been? Thunder? A collision? I decided the best place for me was up on deck so I battled my way through the crowds and got to the top deck. What I saw froze me to the core. A huge ice berg was behind us and there was already 14 feet of water on the ship.

“Did we hit that ice berg?” I asked a fellow passenger.

“We sure did, I was up here when it struck, this is really bad news. That ice berg was 93 feet above the water.” She replied.

“That doesn’t sound so bad,” I continued naively.

“Not too bad,” she continued, “not too bad? You know that you can only see about 1/8 of an ice berg above the surface right? It’s what’s below the ocean that worries me.”

For the first time since the collision I sensed panic. At 12.05am the orders were given to start unpacking the lifeboats and about 37 minutes after this the first lifeboat carrying women and children was loaded. I knew that particular lifeboat could carry 65 people but I only counted 28 inside. That made no sense to me at all.

The final lifeboat left the ship around 2.05am, leaving 1,500 of us on board. What would we do? At 2.17am the final radio message from the captain was announced, it was simple, ‘every man for himself!’ For 2 hours we all fought for our lives, the ship snapped almost in half and the part I was on bobbed for a short while before filling with water and finally sinking into the sea. It was perishing, like daggers stabbing every part of my body. I didn’t think I would ever make it. Just as I was losing all hope I made out a ship approaching. Through my frozen eye lids I read the name, “Carpathia.” I remember being scooped out of the ocean and wrapped in a blanket, I was saved. We left the area at 8.50am and headed towards New York where we docked 3 days later at 9.17pm. Everyone wanted to know about the disaster and how we survived, I didn’t want to talk to any of them. I just wanted to forget about this harrowing experience and start a brand new life.

The Titanic sank on April 15th, 1912 and the wreck was discovered on September 1st, 1985. They discovered that the ship had split apart and the two sections lie approximately 0.62km away from each other on the sea bed.

That’s the end of my story. Remember, some of the story is fact and some of it is fiction. Scan through the details again and make a list in the box below of all the facts that you think *might* be true.

Titanic Problems

All of the following questions use facts and details from the story.

Question 1

If all of the funnels were stacked on top of each other, how high would they be?

Question 2

How many 3rd class passengers were on board Titanic?

Question 3

How many **minutes** did it take to travel from Southampton to Cherbourg?

Question 4

a) How many of each item of clothes did all the roommates pack?

b) How many items were packed in total?

Question 5

- a) How many more life boats could Titanic have carried?
- b) If all of the lifeboats on board were full up, how many passengers would fit in to them?

Question 6

Here are the (made up) modern day costs of the food items on board.

Sausages - £18.50 per tonne Potatoes - £8 per tonne Ice Cream - £11 per tonne

Fish - £3 per KG Eggs - £6 each Apples - £2 each Bread – 50p per loaf

- a) Use these details to calculate the costs of each individual item of food.

- b) How much would it cost to buy all of the food.

- c) if $\frac{3}{4}$ of the water is drunk – how much is left?

Question 7

What percentage of the 50 hours between April 12th and April 14th was spent completing the various activities listed? Check that your answers total 100%.

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Question 8

The recipe for strawberry cheesecake will serve 5 people. Recalculate and rewrite the ingredients so you could make the cheesecake for a) 10 people and b) 13 people.

10 people	13 people

Question 9

If I spent 120 minutes at the gym, how long (in minutes) would I have spent on the various machines?

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Question 10

If the passenger was correct about the size of the ice berg and the fraction you can see above the water, how big was the ice berg in height?

Question 11

What time was the first lifeboat launched?

Question 12

How many minutes did it take the Carpathia to travel to New York from the sinking area?

Question 13

How far away, in metres, were the two sections of Titanic?

Question 14 – final challenge

Start with the number of wooden lifeboats, multiply by the date of departure, divide by the amount of people (include me) in my cabin, multiply by the number of pants Sammy had, subtract the age of the girl counting the boats, add the amount of lifeboats there should have been, multiply by the number of tonnes of sausages, divided by the time spent playing cards, multiply by the amount of icing sugar, divide by the percentage spent cooling down, subtract the amount of empty seats on the 1st lifeboat and finally add the amount of years it took to find Titanic.