

Science Fair Logbook

Name: Ranveer Singh

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Share it with your Science Fair teachers: mmolfert@educbe.ca
amduncan@educbe.ca kknanji@educbe.ca



Topic:

Write about the topic you chose. Why did you choose this topic? What do you hope to find out?

My project topic is to study the effect of salt on water density using egg.

I choose this topic to see how density and buoyancy work together.

I hope to find out how adding salt to water increase its density and buoyancy.



Testable Question

How does _____ affect _____?

What is the effect of _____ on _____?

Which _____ is/does/makes/etc _____?

How salt affect density of water?

An egg, which sinks in fresh water, will float in water containing salt.



Background Information

What questions/information do you need to find out about your topic? What is some important vocabulary?

If we take a jar filled with water and put an egg in it, egg will sink to the bottom. But, if we add salt to water, the egg will float back up to the surface.

Why does it happen ?

The answer is density which plays a vital role in for an object to sink or float.

The key words/vocabulary in this project are density, mass, volume, concentration and buoyancy which explains the whole phenomena of this experiment.



Background Information

Research your topic and write about what you find out IN YOUR OWN WORDS. Add slides as necessary. Make sure to note your sources of information on the Sources page.

When an egg is placed in a jar filled with water, it sinks to bottom because weight of water displaced by egg is less than weight of egg itself. So the buoyancy provided by displacing water to the egg is not enough to keep the egg floating in jar.

When salt is added to water in jar, it increases its density. It helps increase buoyancy which water applies to egg. So we have to add enough salt to water to increase density and buoyancy of water to support weight of egg to make it float.

Density = Mass of an object / Volume of that object

Buoyancy = Upward force applied by water on egg



Sources of Information

Note all sources used - websites, books, experts, etc. (*Google is not a website, follow links to find the page information.) Add slides as needed.

Title	Author	Information (web link, publisher, etc)	Year
Science buddies		www.sciencebuddies.org	
Floating egg science experiment		https://coolscienceexperimentshq.com/floating-egg/	

See D2L - Content - Referencing Your Sources



Variables

Manipulated / Independent Variable

ONE thing that you will test/change:

**The amount of salt in water.
The temperature of water**

Responding / Dependent Variable

The thing I think will change or be affected:

**Density of water
Buoyancy of water**

How will you measure it? :

Whether an egg will float or sink.

See D2L - Content - Hypothesis - Variables and Hypothesis



Variables

Controlled Variables

Things we have to be very careful to keep the same every time we test so that they do not affect the results/outcome of the experiment:

Container: use the same type and size of container.

Water volume: Using the same amount of water.

Size of egg: Using the same size of egg for all trials, as egg density can vary.

Temperature: Keeping the water at same temperature, as it can influence the density.

Mixing method: Ensuring that the salt is fully dissolved in each trial.

See D2L - Content - Hypothesis - Variables and Hypothesis



Hypothesis

Your prediction, or what you think will happen:

If _____ then _____ because _____.
(I do/change this...) (I think this will happen) (Why?)

*use info from your research or background knowledge to help explain)

When an egg is placed in a jar filled with water, it sinks to bottom because weight of water displaced by egg is less than weight of egg itself. So the buoyancy provided by displacing water to the egg is not enough to keep the egg floating in jar.

When salt is added to water in jar, it increases its density. It helps increase buoyancy which water applies to egg. So we have to add enough salt to water to increase density and buoyancy of water to support weight of egg to make it float.

See D2L - Content - Hypothesis



Materials

What materials will you use for your experiment? Be specific about amounts whenever possible.

- A tall transparent container
- Tap water
- 1 uncooked egg
- Edible salt
- Tall spoon to stir

See D2L - Content - Designing Your Experiment



Procedure

List the step-by-step procedure you will follow to conduct your experiment. Be as specific as possible and include exact measurements, quantities, times, etc.

1. Fill transparent container with tap water
2. Place egg into container carefully
3. Observe the egg in container
4. The egg sinks to bottom of container filled with water
5. Remove egg from container
6. Add salt to water in container and stir it well
7. Put egg into container again
8. Observe if egg sinks or float
9. If egg sinks then carefully take out egg from container, add more salt into container and stir it well
10. Repeat step # 7,8,9 till egg starts floating in container saltwater.

See D2L - Content - Designing Your Experiment



Experiment: Trial 1

Date: 01/03/2026

Data: (measurements)

<u>Amount of salt</u>	<u>Results</u>
No salt	Egg sink to the bottom
3 tbsp of salt	Egg floating slightly
6 tbsp of salt	Egg floating fully

Observations/Notes

As seen in following pictures, the egg is at the bottom of the container filled with 6 cups of water and there is no salt added. No change in egg density.

When 3 table spoon of salt added and stirred well, the density of egg changed and the egg started floating slightly in the container.

Furthermore, when 3 more table spoon of salt were added, in total 6 tbsp of salt and after stirring it well. The density of egg more changed and egg fully floated in the container

See D2L - Content - Designing Your Experiment



Experiment: Trial 1

Photos:



See D2L - Content - Designing Your Experiment



Experiment: Trial 2

Date: 02/03/2026

Data: (measurements)

<u>Amount of salt</u>	<u>Results</u>
No salt	Egg sink to the bottom
3 tbsp of salt	Egg floating slightly
6 tbsp of salt	Egg floating fully

Observations/Notes:

As seen in following pictures, the egg is at the bottom of the container filled with 6 cups of water and there is no salt added. No change in egg density.

When 3 table spoon of salt added and stirred well, the density of egg changed and the egg started floating slightly in the container.

Furthermore, when 3 more table spoon of salt were added, in total 6 tbsp of salt and after stirring it well. The density of egg more changed and egg fully floated in the container

See D2L - Content - Designing Your Experiment



Experiment: Trial 2

Photos:



See D2L - Content - Designing Your Experiment



Experiment: Trial 3

Date: 03/03/2026

Data: (measurements)

<u>Amount of salt</u>	<u>Results</u>
No salt	Egg sink to the bottom
3 tbsp of salt	Egg floating slightly
6 tbsp of salt	Egg floating fully

Observations/Notes:

As seen in following pictures, the egg is at the bottom of the container filled with 6 cups of water and there is no salt added. No change in egg density.

When 3 table spoon of salt added and stirred well, the density of egg changed and the egg started floating slightly in the container. Furthermore, when 3 more table spoon of salt were added, in total 6 tbsp of salt and after stirring it well. The density of egg more changed and egg fully floated in the container

See D2L - Content - Designing Your Experiment



Experiment: Trial 3

Photos:



See D2L - Content - Designing Your Experiment



Results: Chart

Put your data together into a chart.

Example: (you can change the chart)

	Amount of water	Amount of salt	Result
Trial 1	6 cups of water	No salt	Egg sink to bottom
Trial 2	6 cups of water	3tbsp of salt	Egg slightly floating
Trial 3	6 cups of water	6 tbsp of salt	Egg fully floating

See D2L - Content - Designing Your Experiment

See D2L - Content - Conclusion, Application, and Extensions



Results: Analyze

**Look at your data and observations. Look for patterns and trends.
Explain what happened in your experiment and what you found out:**

According to data, in 1st trial , egg sink in regular tap water because the density of the egg was greater than the density of water.

In 2nd and 3rd trial, adding 3tbsp to 6tbsp of salt to the water, increased the density of the water by adding more mass in the given volume. By adding enough salt, density of the water increased, so that it is higher than the density of the egg and the egg finally floated in water.

See D2L - Content - Designing Your Experiment

See D2L - Content - Conclusion, Application, and Extensions



Results: Graph

Graph your data for a visual display of your results.

Use Google Sheets or another website and copy the graph onto this slide, or draw by hand and upload a photo.

Ask your Science Fair teachers for help if you need it!

See D2L - Content - Designing Your Experiment

See D2L - Content - Conclusion, Application, and Extensions



Conclusion

My question was:
Does salt affect density of egg?

The answer to my question is:
Yes, salt does affect density of an egg.

My hypothesis was correct because:
When more salt is added in water, it increases the density of water which makes egg to float.

See D2L - Content - Conclusion, Application, and Extensions



Applications

**In what ways are your findings useful?
Who could benefit from your results and how?**

The experiment findings are useful for educational purposes to understand the principles of density and buoyancy.

The experiment is benefitted in understanding when designing ships as heavy ships can float in water as their weight displace weight of water greater than their own weight.

Another benefit is to check egg freshness.

See D2L - Content - Conclusion, Application, and Extensions



Sources of Error

Do you think your results were reliable? Were there any other factors or conditions that could have affected the results of your experiment in unexpected ways?

What could have affected your results, that would need to be controlled differently if you were to repeat the experiment?

My experiment results were reliable.

Factors that could have affected my experiment are :

- Egg quality and age of egg because as egg ages, they build up air pocket which make them less dense and more likely to float in room temperature water.
- Temperature of water could have affected my experiment as it affects the density and solubility of water
- Lack of dissolving of salt or salt partially dissolved in water could have affected the experiment

See D2L - Content - Conclusion, Application, and Extensions



Extensions

If you were to conduct this experiment again, what would you do differently?

If I have to repeat experiment, I will make sure :

- Use of fresh egg and that I will check by putting egg in fresh water and if it sinks that means it is fresh
- Salt is fully dissolved in water
- Making sure temperature of water is same at all trials

See D2L - Content - Conclusion, Application, and Extensions



Extensions

Because of the results of this experiment, I wonder...

Describe further experiments that could be conducted to further investigate and understand your topic:

See D2L - Content - Conclusion, Application, and Extensions



CONGRATULATIONS!!

You have completed your experiment!

Make sure that you enter information from this logbook into the CYSF Digital platform.

You are now ready to create your trifold display and practice your presentation.

