



This resource is part of a suite of materials and activities created to inspire entrants, and support teachers, and parents to enter *maths inside*: a photo competition open to everyone in Scotland.
maths inside: see different, make connections, celebrate!

In this series of example submission journeys, you can find details of searching, questioning, and discovery of *maths inside* the things and spaces around us! Follow these stories and learn how to catch the beauty of a discovery in a photo, title and commentary ([linked activities and resource pack](#)).

Visit mathsinside.com for entry details, further information, and follow us for updates!

Below, this example documents the submission journey for an **Senior Phase (S4–S6)** entry ([credits](#)).

Storm in a Teacup | Senior Phase example submission journey

I noticed today that when I pour milk into my tea shapes just like the clouds in the sky are formed. Why does the milk form clouds in the tea like this? What similarities are there between milk in tea and clouds in the sky? Where and when else do clouds form like this? How do these shapes form? I am going to go and explore the maths inside a cup of tea and possibly find something out about the world around us as well! I took this photograph of my tea cup with a cloudy sky in the background. I thought the clouds in the sky on this day look similar to the ones I see when I add milk to my tea.



Since this is a submission to the maths inside photo competition, I need to add 3 things: I've already added the maths inside sticker, but it also needs a title and commentary. What can the title of my photo be? What can I include in the commentary?

I wanted a really catchy title for my photo, so I thought about weather and tea and remembered the phrase “storm in a teacup” — this is a great title for my photo! I added the commentary:

“The milk being added forms clouds in the tea before mixing completely. The pattern formed by the milk looks like the clouds in the sky or a hurricane when viewed from space.”

This is an interesting example, but I wanted to go deeper and find out more about the tea and milk mixing as well as clouds in the sky. What do you know about the maths inside a cup of tea or in the

clouds? How can you start investigating? Let us continue finding out with some more questions!

What is the same with tea and air? Why does the tea mixing look like a storm cloud? Why don't all clouds in the sky look the same? Why do satellite pictures of Earth have the same circular patterns of clouds as the milk in the teacup? How do these patterns in our cup and on Earth form? Can you see these cloud patterns on other planets? It's important to keep asking yourself questions when finding out more about a topic – this can lead to fantastic ideas! I can include these new ideas in our commentary.

I changed the photo to one that I think shows off the subject better. In the photo I'm still adding the milk and you can see the clouds forming in a circular pattern just like a hurricane!



I kept the same title as before

“Storm in a teacup”

But changed the commentary to:

“Here is a photo of me adding milk to my tea. The milk and the tea don’t mix instantly but form clouds like that in a hurricane viewed from above. This is because like milk and water, the air all around us is also a fluid. However, in a hurricane it is cold and warm air from different parts of the world that are mixing instead. How quickly the air is mixed is influenced by the densities of the cold and warm air, as well as the speed they are travelling at. Treating air as a fluid is an important idea in physics and engineering, and shows the maths inside our teacup is fundamentally the same as that in our climate.”

This new commentary adds our new ideas and thoughts to what I’ve already covered in the old one, telling us why there are similarities between clouds and the milk in our tea. You can use mathematics to show that these things are almost the same even though they appear in completely different places and are of completely different sizes!

However, since the maths inside competition is a photo competition, it’s also important to think more about our photo. Is the photo that I’ve chosen pleasing to look at? Is it clear what is being shown? Can you adjust our use of light and colour to make it any more appealing? How can the framing and composition of the photo change how it looks?

Although I think my entry is pretty good, I still think that it could be improved, especially the photo. In the new photo below, I’ve zoomed in a little bit to show off more of the clouds in the tea and to centre the attention onto the clouds instead of the white background. However, it’s still important to think about the background and in it I’ve included a contrast in light with the shadows on the white surface to show off the emotion I feel during a storm.



further things to think about

I think this new photo together with the title and commentary makes for a pretty good entry. What do you think? Can you find deep connections between everyday items and events that happen across the whole world? What and where is the maths inside our household items? Can you photograph a household item and explore why it is made the way it is and maybe you'll find out something deeper about our world?

Open to all ages with prizes in each level. You only need a mobile, the internet & curiosity! Enter maths inside on your own or as a team, mind to add the maths inside sticker, and submit in one, or in as many categories as you like. The photo should be your own, without changes, and for a chance to win, cannot be shared anywhere else. View the [T&C](#) for more information, and please do get in touch if you have any questions.

linked activities and resource pack

Complementing each journey is an example interdisciplinary learning (IDL) activity matched to Curriculum for Excellence experiences and outcomes (Es&Os). Also available are image banks containing images and questions to inspire interdisciplinary investigation and learning. These resources and activities are all available in a downloadable pack.

credits

This [suite of resources](#) are the fruit of a collaborative project between undergraduate and postgraduate students from the [University of Glasgow — School of Mathematics & Statistics](#), [Education Scotland](#), and [Dr Andrew Wilson](#) (*maths inside* Founder and Director).

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The photos above are credited to Christian Lao.