



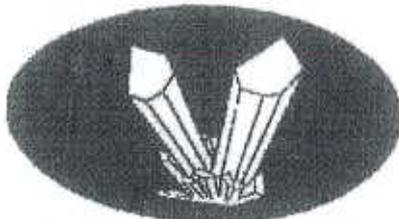
Highly Commended

Crystal Investigation

Year 3-4

Shravenn Moghanthas

Coromandel Valley Primary
School



Crystal Growing Competition
Watch your crystal grow

OLIPHANT SCIENCE AWARDS

CATEGORY: CRYSTAL GROWING

Supported by the SA Branch of the Royal Australian Chemical Institute
and
The RACI Chemical Education Group (S.A.)



raci

Royal Australian Chemical Institute



LOG BOOK

STUDENT NAME(S): Shravyah Mohghanthas

YEAR LEVEL: 3BM

SCHOOL: Coromandel Valley Primary School

Please note: the use of this version of a log book is not mandatory.
There will be no penalty for not using it.

However the student(s) who are preparing a crystal will need to provide evidence of their ongoing efforts by comments related to the criteria suggested in this log book model.

The competition instructions suggest that the crystal growers formulate an hypothesis that they can test while growing the crystal(s)

Examples of questions that could be expressed as a prediction or hypothesis are:

- Can my crystal grow to the required 9 mm in 3 weeks?
- Does leaving my crystal in a dark place help it to grow better?
- Does more or less attention help my crystal to be more clear and well-formed?
- Does an incubator help grow bigger crystals in a given time period?

MY HYPOTHESIS Does a 30ml or 60ml Alum produce a better quality crystal
using the same amount of water 200 ml?

Highly Commended

The log book in this form is only advisory but students should try to document the following:

- Date and time for each handling of the crystal procedure
- Describe exactly what they did on each occasion (should include measurements of volume and temperature made at any time)
- What has happened to the selected crystal on each viewing (changes)
- Description of the crystal characteristics – clarity, regularity (smooth faces, sharp edges), and size (can be assisted by sketches or digital photos)
- What problems were encountered and how they were solved – may include summaries of discussions with teachers/mentors
- Acknowledgment of manual assistance by others e.g. for competitors from the R-2, 3-5 age groups, what teachers or parents did.
- Acknowledgement of any crystal growing advice from books or websites

Date/Time	Descriptions of what the student(s) did, problems encountered and solved	Crystal characteristics	signed
2020 15 th June 7pm	<ul style="list-style-type: none"> • Bought Alum from Ebay • took measurements of Alum with a teaspoon, mixed boiling water - 70c • Labelled glass containers - A/B 	it is still in solution/liquid stage	Jay
18 th June 6:30 pm	<ul style="list-style-type: none"> • I observed Both glass A and B • there were no crystals formed glass A - 30gm of Alum glass B - 60gm of Alum 	white powdery Alum at the bottom of the glass	Jay
"	<p>This Alum experiment was unsuccessful. It is because the Alum was low quality. we requested some Alum from Mrs. taylor. she gave me 110gm of Alum.</p>	-	Jay
5 th July 6pm	<p>materials - Alum, 2 glass Bowls, measuring Jug, weighing Scale, Boiling water and thermometer. labelled Bowls 30gm (A) of Alum and 60gm (B) I used a tea spoon to scoop out Alum powder onto</p>		Jay
"	<p>the weighing Scale. keep adding until the scale shows 30gm. Next, Dad helped me measured 200ml of Hot water at 90c. the temperature was checked with a thermometer. Mix the Alum and Hot water until</p>		Jay

the Alum dissolved into the the solution.

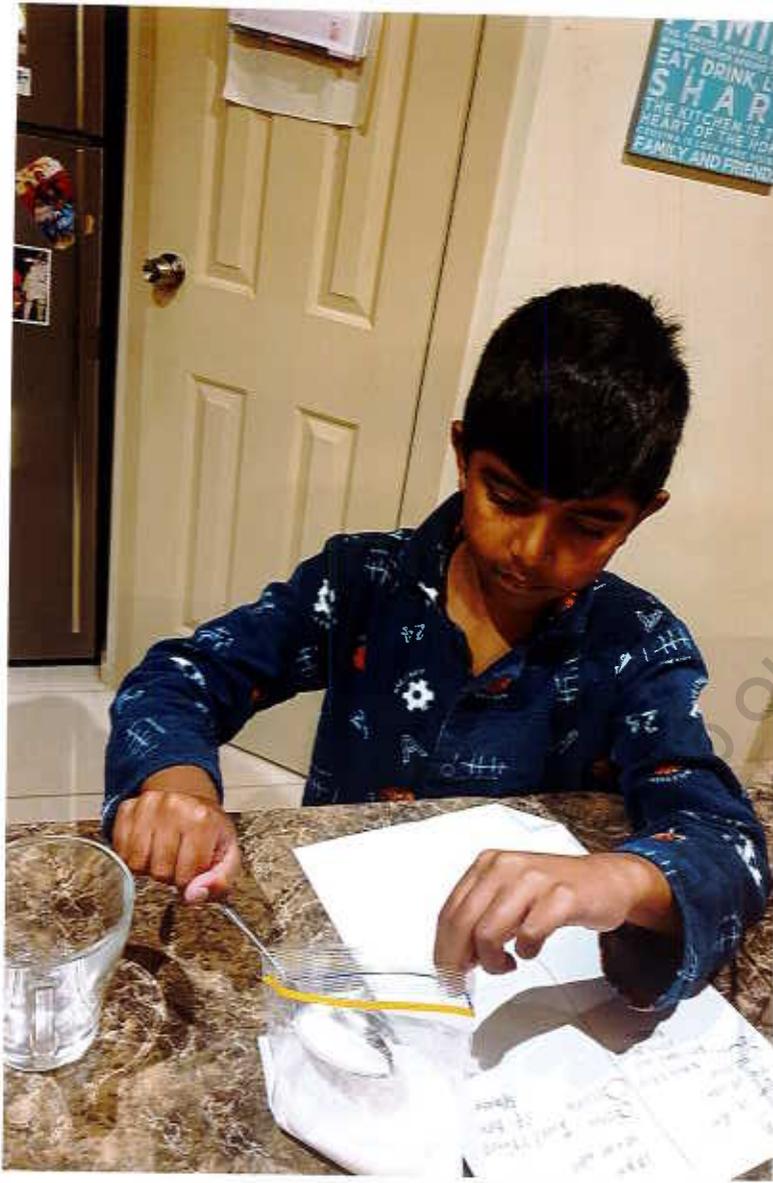
Date/Time	Descriptions of what the student(s) did, problems encountered and solved	Crystal characteristics	signed
"	I did a similar process for Bowl B with 60gm of Alum. I left both the Bowls on the Bench top for observation	It is still in liquid solution	Yes
6 th July 7pm	The Next evening I went to check if the crystals have formed. Crystals have formed in both the bowls.	many tiny and Big crystals Some clear and some cloudy.	Yes
"	I have observed Bowl A (30gm) of Alum, more Bigger crystals have formed. Bowl B (60gm) of Alum has more smaller But many crystals. I chose the Best crystal from Bowl A.		Yes
"	crystal quality - triangular shape (Diamond) - clear, beautiful appearance, - bigger in size - clearest crystal	"	Yes
"	Next, I poured the decanted solution into 2 glasses, labelled (30gm) and (60gm). My Dad helped tied the chosen crystal and hang in a suspension	"	Yes
"	Place it in a open space and observe in the Next few weeks.	"	Yes
11 th July 11am	I was excited to see the has grown in size more clearer and bigger.	Smother, clearer crystals sharp lines.	Yes

Date/Time	Descriptions of what the student(s) did, problems encountered and solved	Crystal characteristics	signed
18 th July	the crystal had grown bigger than 1cm for Bowl A and B the water level for both bowls has become lower. the crystal in the Bowl B (60g) was	the crystal was white in the middle faces are mostly light-reflective and fairly smooth	Vaj
	sharper and defined. the crystal in the Bowl A had rounded edges. Both the crystals did not have clarity.		Vaj
26 th July 11am	I observed that the level of solution has decreased more for Bowl B than Bowl A. the crystal in Bowl B had sharper edges and clarity than the crystal in Bowl A in Bowl B	the crystal lines are sharp. It is getting much clearer.	Vaj
	there was another crystal starting to form at the bottom		Vaj
2 nd Aug 12 pm	Glass A (30g) Alum is looking a lot larger than glass B (50g) Alum. I can still see the growth lines.		Vaj
9 th Aug 4 pm	I have closely observed now that the crystals are looking more like a diamond shape		Vaj

Date/Time	Descriptions of what the student(s) did, problems encountered and solved	Crystal characteristics	signed
	I also noticed the crystal is getting closer to the surface of water. So my dad helped lowered the string towards the middle.		Vaj
15 Aug 5pm	there are many tiny crystals settled at the bottom of the glasses. I am wondering if any other impurities present in the solution has caused the tiny crystals	the crystal shows flat faces with more sharper angles. It is more clearer than last week.	Vaj
	I think the crystals are growing larger and faster because of the winter season and cold temperature. I feel that the crystal with 30gm		Vaj
	Alum has more defined look.		Vaj
16th Aug 11am	This is my last week observation of my crystal investigation. As part of my hypothesis - I think the (30gm) Alum has more clarity (highly light reflective) and smooth. But (60gm) Alum is still		Vaj
	cloudy and a few imperfections. In terms of Mass, the crystal with 30gm of Alum has a mass <u>33g</u> . the crystal with 60gm of Alum has a mass <u>64g</u> . finally, I have discovered		Vaj
	that growing a perfect crystal will require a lot of samples.		Vaj

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An unsuccessful attempt using McCormick Ahm bought online





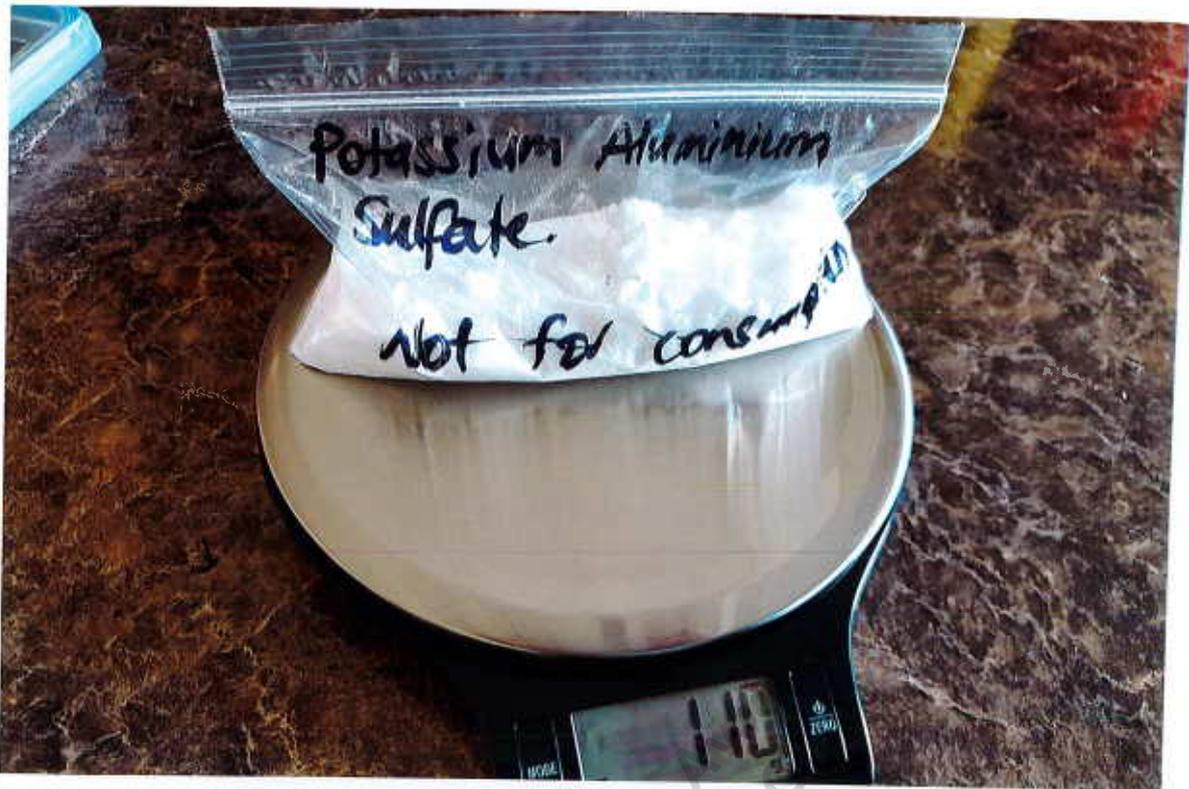
Shant Science Award
Work - DO NOT COPY





After 2 days, the solution did not produce any seedlings.

Successfull attempt using



Hypothesis: Does a 30g or 60g Al₂(SO₄)₃ produce a better quality crystal using the same amount of water?
200ml





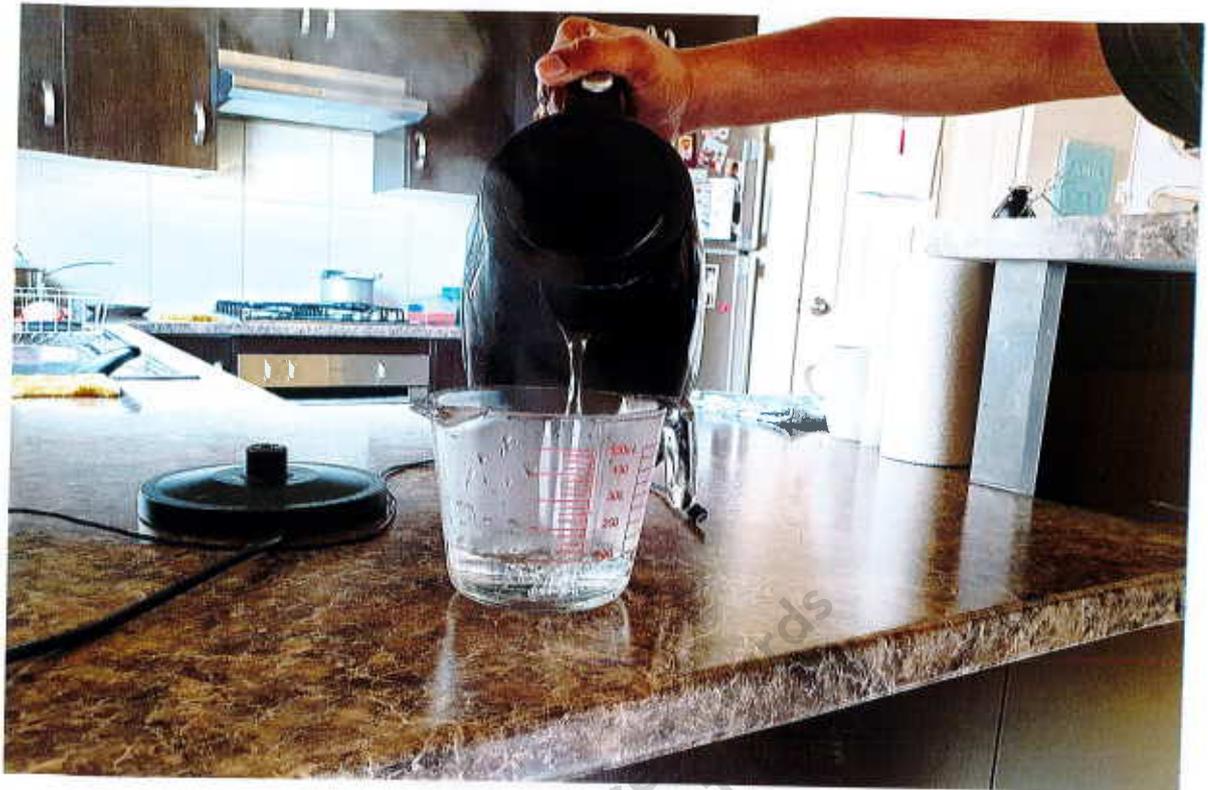
Measuring 50g of Alum



Measuring 60g of Alum



Boiling water was used



200 ml of water used for 30g and 60g of Alum in separate bowls.





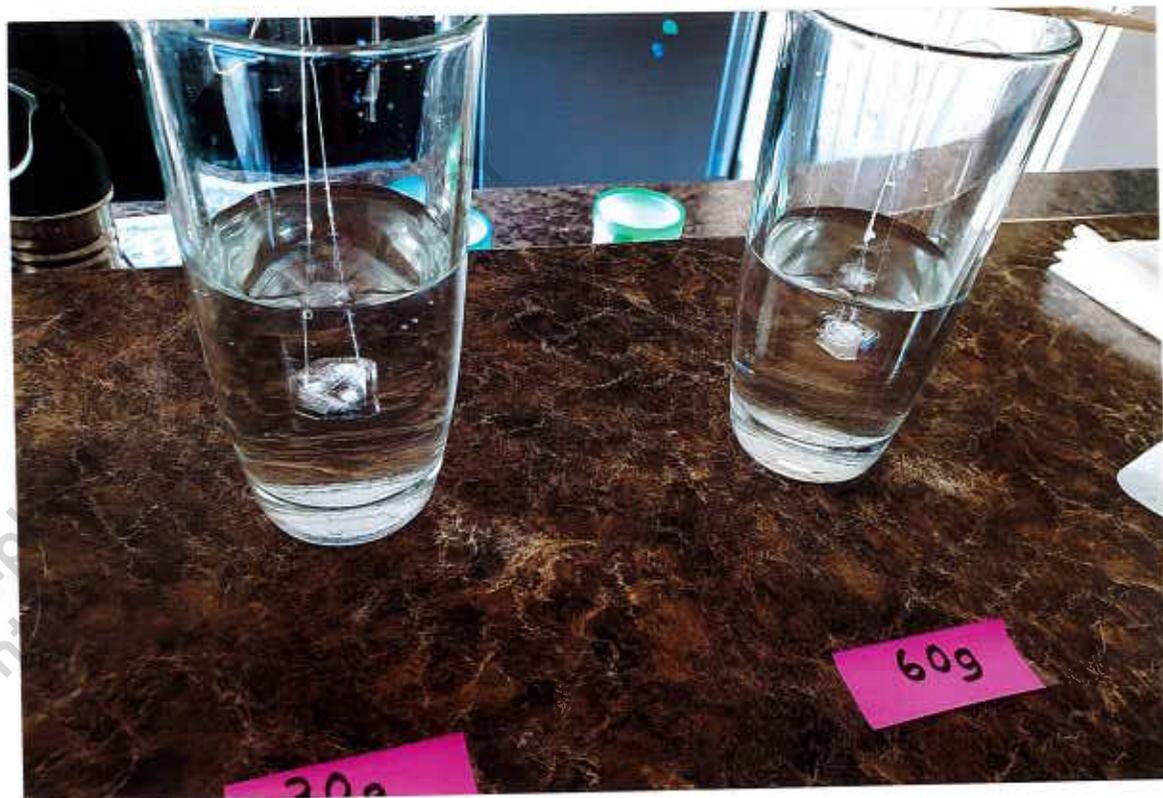
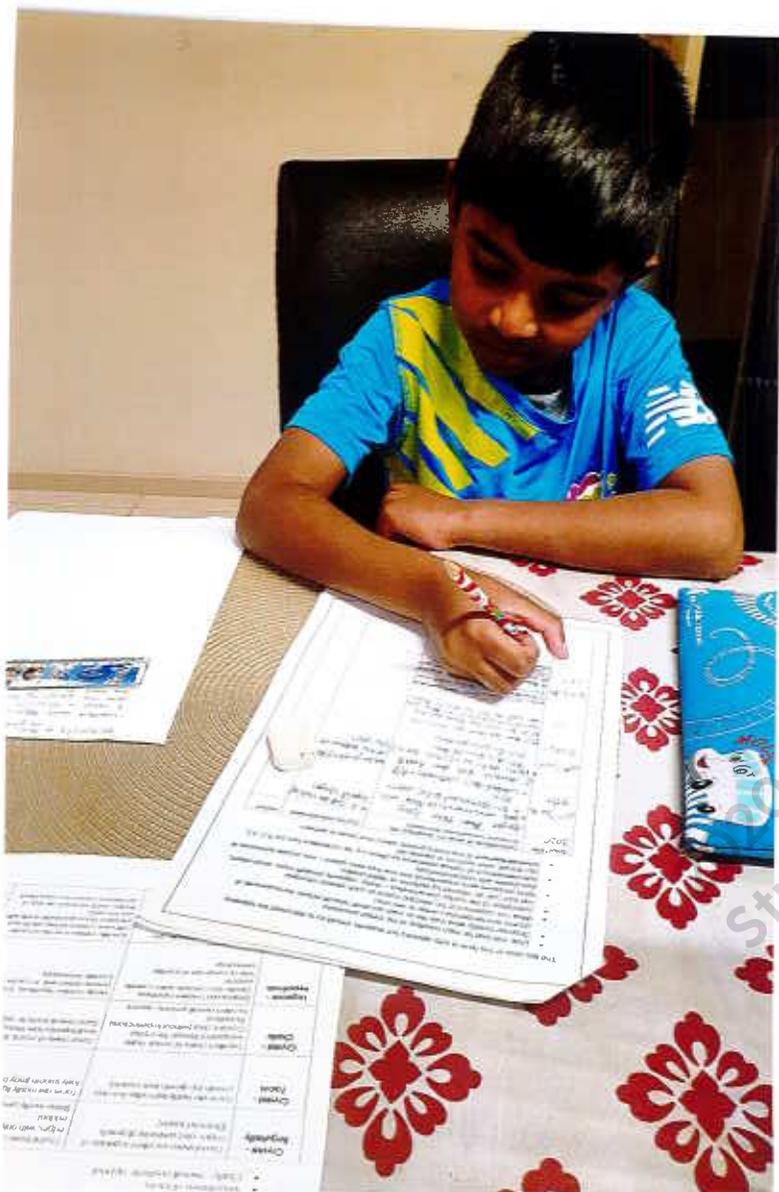
Crystal
seeds
formed
second
well
on
day





Oliphant Science
Student Work - DO NOT

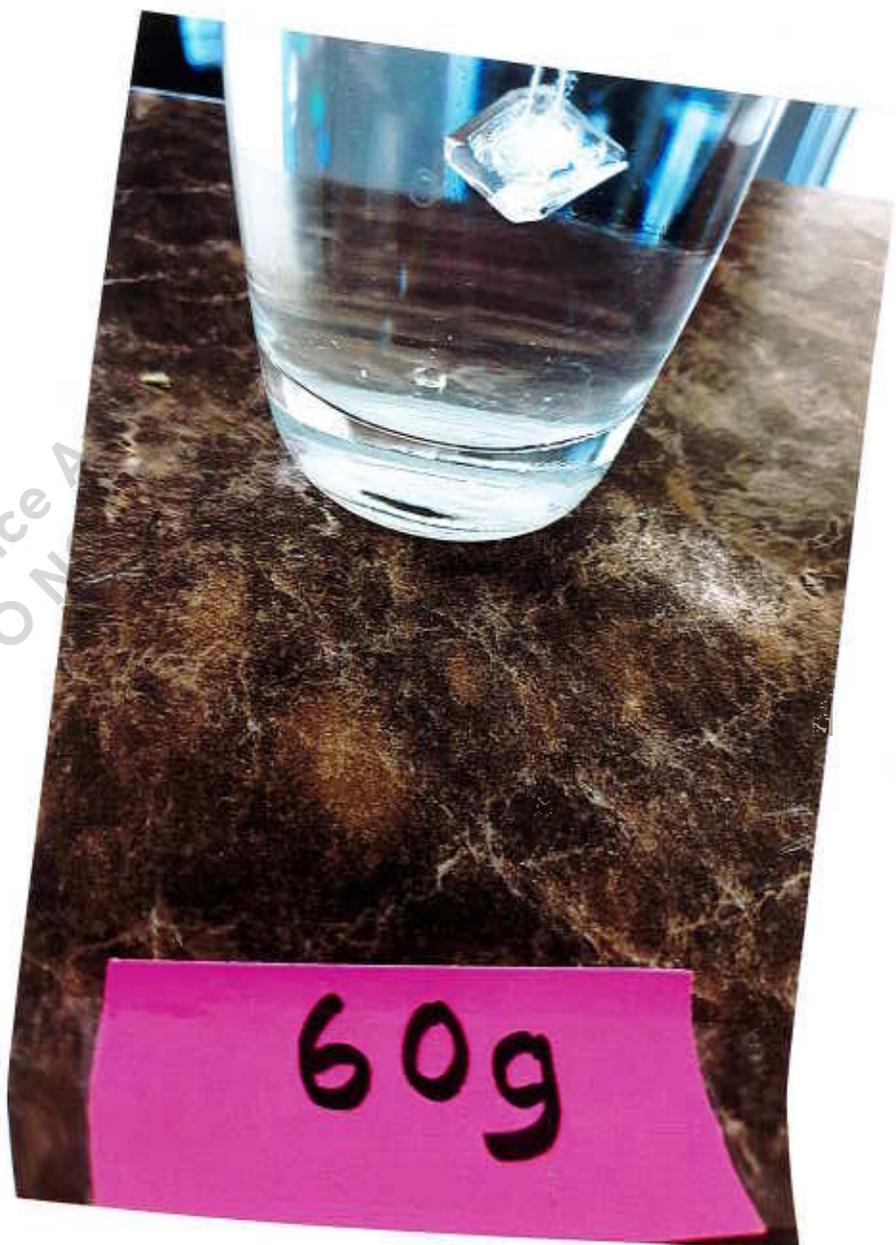


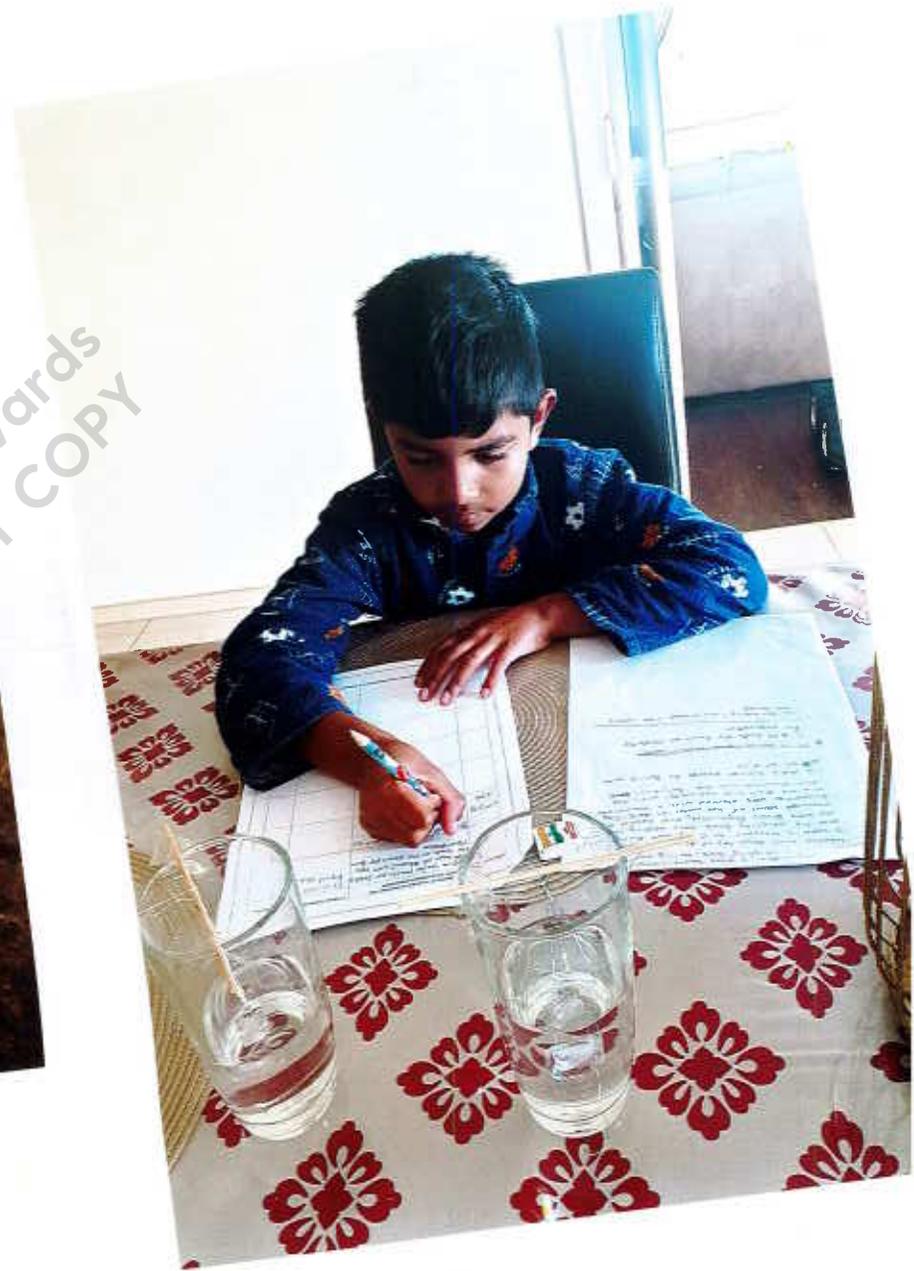


Crystal seeds ~~chosen~~ ^{produced} from 30g and 60g of Alum selected.



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Best Awards
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Elephant Science Awards
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Final Conclusion

