Cover Page

Student Name	Klara Burmaz	Year Level	Year 1
School	Goodwood Primary School		
Project Name	Crystal Beauty Magic		
Contents			
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Logbook - (Driginal		

Crystal Beauty Magic

Logbook

Student Name	Klara Burmaz	Year Level	Year 1
School	Goodwood Primary School	I	
Project Name	Crystal Beauty Magic		
Hypothesis - Constant	temperature helps make larger crystals	'Klara's Lab'	Kinra's Labe
- Food colo	uring helps make beautiful crystals	Hinra's Lave	

Findings

Student Name Klara B	urmaz						Year Le	evel			Year 1		
	Н	ypothes	sis 1: Co	onstant t	empera	ature he	lps mal	ke large	r crysta	als			
Crystal / Criterion	Score		Size		R	egularit	:y		Faces		Clarity		
(ticks: 1 - ok, 2 - good, 3 - excellent)	30016		Large?)	Diamond shaped?		Smooth?		Clear?				
Constant temperature	10	Image: A start of the start	\checkmark		\checkmark	\checkmark	<	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	
Room temperature	7				\checkmark	\checkmark	\checkmark	\checkmark	\checkmark		\checkmark		
		Hypoth	asis 2.	Food col	ouring	holns m	ake he	autiful	rvstals				
Crvstal / Criterion		How F		l is the	Journa			aathar	si ystais				
(ticks: 1 - ok, 2 - good, 3 - excellent)	Score		Crystal	?									
Constant Temp.	3	I	\checkmark	\checkmark		Hypoth	esis 2 c	onfirme	ed?	Yes			
Pink Constant Temp.	2		\checkmark										
Comment: The pin	k crysta	ıl has bu	umpy sid	des, but	it is bea	autiful							



D	Tomp		Description of activity	Regularity - Symmetrical like a diamond?
		Volume	Crystal changes	Faces - Reflecting light? Smooth, lines?
Time	(°C)	(mi)	Problems and solutions	Clarity - Transparent, can see through?
1/5/2024 8:10-8:25pm	61.6	Water 750ml Alum 113g	Make seed crystalsHow much water/alum for 3 beakers? Mark level, heat up water. $309 = 750 \text{ mL}}{750 \text{ mL}} = 757 \text{ ml}}{750 \text{ mL}}$ $\chi = \frac{757 \text{ ml}}{200 \text{ mL}} = 112.59$ $\chi = \frac{757 \text{ ml}}{200 \text{ mL}} = 112.59$ $\chi = \frac{757 \text{ ml}}{200 \text{ mL}} = 112.59$ $\chi = \frac{757 \text{ ml}}{200 \text{ mL}} = 112.59$ $\chi = \frac{759 \text{ ml}}{200 \text{ mL}} = 112.59$ $\chi = \frac{759 \text{ ml}}{200 \text{ mL}} = 112.59$ $\chi = \frac{759 \text{ ml}}{200 \text{ mL}} = 112.59$ $\chi = \frac{759 \text{ ml}}{200 \text{ mL}} = 112.59$ $\chi = \frac{759 \text{ ml}}{200 \text{ mL}} = 112.59$ $\chi = \frac{112.59 \text{ ml}}{200 \text{ mL}} = 112.59$ $\chi = \frac{112.59 \text{ ml}}{200 \text{ mL}} = 112.59$ $\chi = \frac{112.59 \text{ ml}}{200 \text{ mL}} = 112.59$ $\chi = \frac{112.59 \text{ ml}}{200 \text{ mL}} = 112.59$ $\chi = \frac{112.59 \text{ ml}}{200 \text{ mL}} = 112.59$ $\chi = \frac{112.59 \text{ ml}}{200 \text{ mL}} = 112.59$ $\chi = \frac{112.59 \text{ ml}}{200 \text{ mL}} = 112.59$ $\chi = \frac{112.59 \text{ ml}}{200 \text{ mL}} = 112.59$ $\chi = \frac{112.59 \text{ ml}}{200 \text{ mL}} = 112.59$ $\chi = \frac{112.59 \text{ ml}}{200 \text{ mL}} = 112.59$ $\chi = \frac{112.59 \text{ ml}}{200 \text{ mL}} = 112.59$ $\chi = \frac{112.59 \text{ ml}}{200 \text{ mL}} = 112.59$ $\chi = \frac{112.59 \text{ ml}}{200 \text{ mL}} = 112.59$ $\chi = \frac{112.59 \text{ ml}}{200 \text{ mL}} = 112.59$ $\chi = \frac{112.59 \text{ ml}}{200 \text{ mL}} = 112.59$ $\chi = \frac{112.59 \text{ ml}}{200 \text{ mL}} = 112.59$ $\chi = \frac{112.59 \text{ ml}}{200 \text{ mL}} = 112.59$ $\chi = \frac{112.59 \text{ ml}}{200 \text{ ml}} = 112.59$ $\chi = \frac{112.59 \text{ ml}}{200 \text{ ml}} = 112.59$ $\chi = \frac{112.59 \text{ ml}}{200 \text{ ml}} = 112.59$ $\chi = \frac{112.59 \text{ ml}}{200 \text{ ml}} = 112.59$ $\chi = \frac{112.59 \text{ ml}}{20$	<image/>
			<image/>	<image/>

Date	Temp.	Volume	Description of activity	Regularity - Symmetrical like a diamond?
Time	(°C)	(ml)	Crystal changes Problems and solutions	Faces - Reflecting light? Smooth, lines? Clarity - Transparent, can see through?
2/5/2024 7:20pm	-	-	Seed crystals forming	
3/5/2024 8am	-	-	Seed crystals ready, wash and store them, save solution	Some crystals are like a diamond, smooth and transparent

Date Time	Temp. (°C)	Volume (ml)	Description of activity Crystal changes Problems and solutions	Regularity - Symmetrical like a diamond? Faces - Reflecting light? Smooth, lines? Clarity - Transparent, can see through?
4/5/2024 8pm			<image/>	
5/5/24 5:30-8:30pm	59.4	730	<image/>	<image/>

Date	Temp.	Volume	Description of activity Crystal changes	Regularity - Symmetrical like a diamond? Faces - Reflecting light? Smooth. lines?
Time	(°C)	(ml)	Problems and solutions	Clarity - Transparent, can see through?
5/5/24 5:30-8:30pm	59.4	730		<image/>
	21.8		<image/>	

Room Temperature

Date Time	Temp. (°C)	Volume (ml)	Description of activity Crystal changes Problems and solutions	Regularity - Symmetrical like a diamond? Faces - Reflecting light? Smooth, lines? Clarity - Transparent. can see through?
5/5/24 8:30pm	21.8	240		
8/5/24 8am	18.9	235	There are many crystals at the bottom	
8/5/24 8pm	19	235		

Constant Temperature

Date Time	Temp. (°C)	Volume (ml)	Description of activity Crystal changes Problems and solutions	Regularity - Symmetrical like a diamond? Faces - Reflecting light? Smooth, lines? Clarity - Transparent, can see through?
5/5/24 8:30pm	21.8	240		
8/5/24 8am	21.4	235	It has got some crystals growing on the (beaker) sides	
8/5/24 8pm	21.5	235		

Constant Temperature - Pink Crystal

Date Time	Temp. (°C)	Volume (ml)	Description of activity Crystal changes Problems and solutions	Regularity - Symmetrical like a diamond? Faces - Reflecting light? Smooth, lines? Clarity - Transparent, can see through?
5/5/24 8:30pm	21.8	250		
8/5/24 8am	21.4	245		
8/5/24 8pm	21.5	235		The crystals are beautiful

Data	Tomn	Volumo	Description of activity	Regularity - Symmetrical like a diamond?	
Date			Crystal changes	Faces - Reflecting light? Smooth, lines?	
Time	()	(1111)	Problems and solutions	Clarity - Transparent, can see through?	
			Room Tempe	rature Crystal	
	17.9	225	<image/>	Clear	
		220	Constant Temperature Crystal		
22/5/24 08:20am			Crystal has grown Crystal is almost touching the beaker side	Clear	
			Constant Temperature Pink Crystal		
	21.3	225	Crystal has grown	Clear	

Date Time	Temp. (°C)	Volume (ml)	Description of activity Crystal changes	Regularity - Symmetrical like a diamond? Faces - Reflecting light? Smooth, lines?
	()	()	Problems and solutions	Clarity - Transparent, can see through?
			Room Tempe	erature Crystal
			No growth. Many crystals (on the beaker). <i>Add more alum</i> * : <i>Weigh</i>	Clear
			the crystals, add the same weight of alum. Warm up and let it cool.	
	18.9	210	(Weight of main + spare crystals): 4g) (Alum added: 4g)	
		190	Constant Tem	perature Crystal
10/06/24 10:30am			Lots of small crystals on the glass. Add more alum* (weight: 5g, alum added: 5g).	Crystal is of the same size.
			Constant Temper	rature <u>Pink</u> Crystal
	21.4	200	No growth. Add more alum (weight: 5g, alum added: 5g). Clear on the	e outside. The crystal is not clear on the inside.

	Toma		Description of activity	Regularity - Symmetrical like a diamond?		
Date Time	remp.	volume	Crystal changes	Faces - Reflecting light? Smooth, lines?		
Time	(°C)	(mi)	Problems and solutions	Clarity - Transparent, can see through?		
			Room Tempe	erature Crystal		
			Check crystals	Smooth Lines		
	17.2	200				
	17.5	200				
		180	Constant Temp	perature Crystal		
				Clear		
23/06/24						
5pm						
			Constant Temperature Pink Crystal			
			Crystals on the beaker			
	21.4					
		180				

Acknowledgement of any crystal growing advice from books or websites								
Advice	<u>Resource</u>							
Use distilled water, make spare crystals, move crystals as little as possible	University at Buffalo - How to Grow a Large, Single Crystal - videos							
How much alum to add when growing crystals	2016 IUCr Crystal growing competition for schoolchildren - video							
Acknowledgment of manual assistance by others								
 Safe handling of very hot and heavy items 								
- Lab set-up								
- Electronic log book								
- Calculating material proportions								
- Tie/suspend crystals								
- Picture taking								
Resources								
 Potash alum, demineralised water, food colouring 								
 Kettle, seedling heat mat, scale, digital food thermometer 								
Glass and plastic containers, 250ml beakers								
 Plastic tweezers, fishing line, marker pen, stirrers, filter paper, tissues 								
- Safety glasses								

Crystal Investigation

Oliphant Science Awards 2024



Crystal Beauty Magic

Findings

Student Name Klara Bu	Year Level Year 1								
	H	pothesis 1: Constant t	emperature h	elps mal	ke large	r crysta	ls		
Crystal / Criterion (ticks: 1 - ok, 2 - good, 3 - excellent)	Score	Size Large?	Regulari Diamond sh	ty aped?	S	Faces mooth	?	Clarity Clear?	
Constant temperature Room temperature	10					⊻ V			
Hypothesis 1 confirmed? YES Comment: CONSTENT TEMPFICH NEIPS MAKE TAJAN AND DETA CHISTAGE MAKE									
	a an earlier an ann an Annae Annae Annae Annae A	Hypothesis 2: Food co	louring helps	make be	autiful	crystals	5		
Crystal / Criterion How Beautifyl is the Crystal? (ticks: 1 - ok, 2 - good, 3 - excellent) Score Crystal? Constant Temp. 3 4 4 Pink Constant Temp. 2 4 4 Comment: The Pink Chystal Mark States Hypothesis 2 confirmed? Yes Comment: The Pink Chystal Mark States Mark States Mark States Version States Pink Constant Temp. 2 4 4 Comment: The Pink Chystal Mark States Mark States Mark States Version States Pink Chystal Mark States Mark States Mark States Comment: The Pink Chystal Mark States Mark States Mark States									

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Crystal Beauty Magic

Stage 1 - Making Seed Crystals

	T			Regularity - Symmetrical like a diamond?	
Date	Temp.	Volume	Crystal shanges	Faces - Reflecting light? Smooth, lines?	Signed
Time	(°C)	(ml)	Problems and solutions	Clarity - Transparent, can see through?	
V 5124 8:10- 82.7M	616	X104 (139	Markienter		
24B	443		Mater Stinder Water Stinder tempricher Seedcrystals Fomin Defaction states	Coho cho chaica h	
8524 632 M			SAV SALOS SALA Page	ALL TRADE	SM00 SM00

Oliphant Science Awards 2024

Crystal Beauty Magic

Stage 1 - Making Seed Crystals

Date Time	Temp. (°C)	Volume (ml)	Description of activity Crystal changes Problems and solutions	Regularity - Symmetrical like a diamond? Faces - Reflecting light? Smooth, lines? Clarity - Transparent, can see through?	Signed
Time H/51218 24 8Ph \$5/24 5°30-63	(°C)	(ml)	Crystal changes Problems and solutions (at PAP & For Covers, the crystis, KEEP SPER (rystis) Petern Veman Phy Gryfis Into Soloshuff, add 790F (IEMC Weytoff femoval (rystis) amount of femoval (rystis) amount of femoval Let it cool pl/tevandally	Faces - Reflecting light? Smooth, lines? Clarity - Transparent, can see through?	K/and
			Chystis.		

Oliphant Sci	ence Awa	rds 2024	Crystal Beauty Ma	gic	Stage 2 - Growing Crystal Room Temperature
Date Time	Temp. (°C)	Volume (ml)	Description of activity Crystal changes	Regularity - Symmetrical like a diamond? Faces - Reflecting light? Smooth, lines? Clarity - Transparent, can see through?	Signed
515 124 8° 30Pm	21:8	240	Problems and solutions	Clarky Hensperery	Klands
85724 8 R. M	2	z 35	TREPARE MENY CRYSTIS		K Mpao B
8 5 Pm	0.0	23)			Klaha

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Oliphant Sci	ence Awa	rds 2024	Crystal Beauty M	Crystal Beauty Magic St		tage 2 - Growing Crystals Constant Temperature	
Date Time	Temp. (°C)	Volume (ml)	Description of activity Crystal changes	Regularity - Symmetrical like a diamond? Faces - Reflecting light? Smooth, lines? Clarity - Transparent, can see through?	S	igned	
5/15/24 830 pm	2108	240	Problems and solutions		K	ATX.B	
2份2-4 当户M	230		it has a got some Crystis growing on The sides.			KIANAB	
5PM	21.5	235					

Oliphant Science Awards 2024			Cry	stal Beauty Magic	Constant Temper	Constant Temperature - Pink Crystal		
Date Time	Temp. (°C)	Volume (ml)	Description of activity Crystal changes Problems and solutions	Re Fa Cl	egularity - Symmetrical like a diamond? aces - Reflecting light? Smooth, lines? arity - Transparent, can see through?	Signed		
875/24 830 pm	2118	2650				K (astab		
81010 81m	2104 D 235	S				Kladek		
5 PM	2101	235			th crystis are bu	TYA		

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Cructals

Oliphant Science Awards 2024			Crystal Beauty Magic	Stage 2 - Growing Crystals
Date Time	Temp. (°C)	Volume (ml)	Description of activity Crystal changes Problems and solutions	Regularity - Symmetrical like a diamond? Faces - Reflecting light? Smooth, lines? Clarity - Transparent, can see through?
224575 8200	7.9	225	Chysti Gase grond	
	263	22	Constant Temp	perature Crystal
		22	Cryst hase grops	alp

Oliphant Science Awards 2024

Crystal Beauty Magic

Date	Temp.	Volume	Description of activity	Regularity - Symmetrical like a diamond? Faces - Reflecting light? Smooth, lines?
Time	(°C)	(ml)	Problems and solutions	Clarity - Transparent, can see through?
INCLAR L	10 0		Room Tempo	erature Crystal
VO:20N	180]	210	nogroto pit Irn marky	Talita
	2		atmot alamo	
			WAY COLOTIS BETHAL	
			I PAMA NIN MANYAMA	TUDIN
			Constant Tem	perature Crystal
	24	Å1 98	on the glad th	Crystill al The Sam
			annor ala Ma	
		non	Constant Tempo	erature <u>Pink</u> Crystal
		200	Chiront ate sher	10

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Parton of the second se	Personalities	1		Regularity - Symmetrical like a diamond?
Date	Temp.	Volume	Description of activity	Faces - Reflecting light? Smooth, lines?
Time	(°C)	(ml)	Crystal changes	Clarity - Transparent, can see through?
		(,	Problems and solutions	Room Temperature Crysta
23/6/20	1214			I Cha MH I/DC a
S- NO C			Chok (VULTOS	S(n)(u)(n)(1))e
FPM	HAG			
· · · · · · ·	1(10)	700	10. 90	
		4.00		
			C	Constant Temperature Crystal
			0,1,4,10	
			/ VT/	
		1 OKK		
		COR		
			Col	nstant Temperature <u>Pink</u> Crystal
	241		CINICALAS ANA -	
	2001			l
		OPOL		
		TIPE	~ 0.010	
		190A	$b \rho f (1)$	
		10-11		

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