

Skill Manual

Pottery
Grade VII



Central Board of Secondary Education
Shiksha Kendra, 2, Community Centre , Preet Vihar,
Delhi - 110092

ACKNOWLEDGEMENTS

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FOREWORD

We all are aware that the National Education Policy 2020 has clearly stated that there should be ‘no hard separation’ between curricular, co-curricular, and extra-curricular or academic and vocational skill/physical education/art, etc. It is felt that mainstreaming all forms of learning and skills will integrate not just the hands-on skilling component but also the theoretical knowledge, attitudes and mindsets, and soft skills that are required for particular occupations, through a broad-based education that is necessary for students to be able to take on and thrive in a fast-changing world.

To keep pace with the objective of ‘no hard separation’, CBSE has decided to offer students the flexibility of making a vocational choice of a short-duration module on Pottery(12 hours), at a stage in their early academic career (either at class VI, VII or VIII). In this way, they will be able to spend relevant time pursuing this choice as per the convenience of the school. This would give them the necessary orientation early on, so that they are able to make a choice at a later stage to pursue Skill courses at Secondary and Senior Secondary levels, or choose a higher vocational degree.

This manual ensures that skill-based training is integrated with the pedagogy, resulting in the holistic development of every learner, thereby making them adept at tackling the challenges of the multifarious world. It has been designed in a way that aims to keep the young learners productively engaged, explore their fields of interest and learn regular concepts through an interdisciplinary approach. Pottery helps children to connect to their roots, culture and heritage of Indian handcraftsmanship.

The manual aims at enabling the students to amalgamate their creativity with the acquired vocational skills, thereby ensuring wholesome learning and development. We extend our hearty congratulations to the Director Principal, Delhi Public School, Gurgaon, Ms Aditi Misra and her team for working tirelessly with a holistic vision for the future. The success of this project lies in the implementation of the same, and we are optimistic that no stone will be left unturned in its execution.

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ESSENTIALS BEFORE THE JOURNEY STARTS

Finding the balance within yourself @potter's wheel

- Dedicated space/room for pottery
- Tap water with sink and proper drainage system
- Potter's wheel(manual/electric) and needle
- Stools for students to sit on while working on the potter's wheel
- Big drums to store and keep the clay airtight and moist
- Two or three buckets of clean water
- Bowls for holding slurry water while making the items
- Aprons
- Wooden trimming tools
- Wooden boards for drying
- Wooden racks for display.
- Fine moist clay
- Thread/wire for cutting the clay articles from the base of the potter's wheel
- Sponge for cleaning the wheel

Clay is fascinating and is never boring; there is always more to explore, more to try out and more to create.

Be prepared for a fine adventure as you enter the world of pottery, for clay is as deep and as broad as the earth it comes from.

माटी कहे कुम्हार से, माटी है अनमोल
माटी जब आकार ले, लोग लगावें मोल ।

माटी का आकार नहीं, इसका न कोई रूप
जब कुम्हार सिरजन करे, निखरे छवि अनूप ।

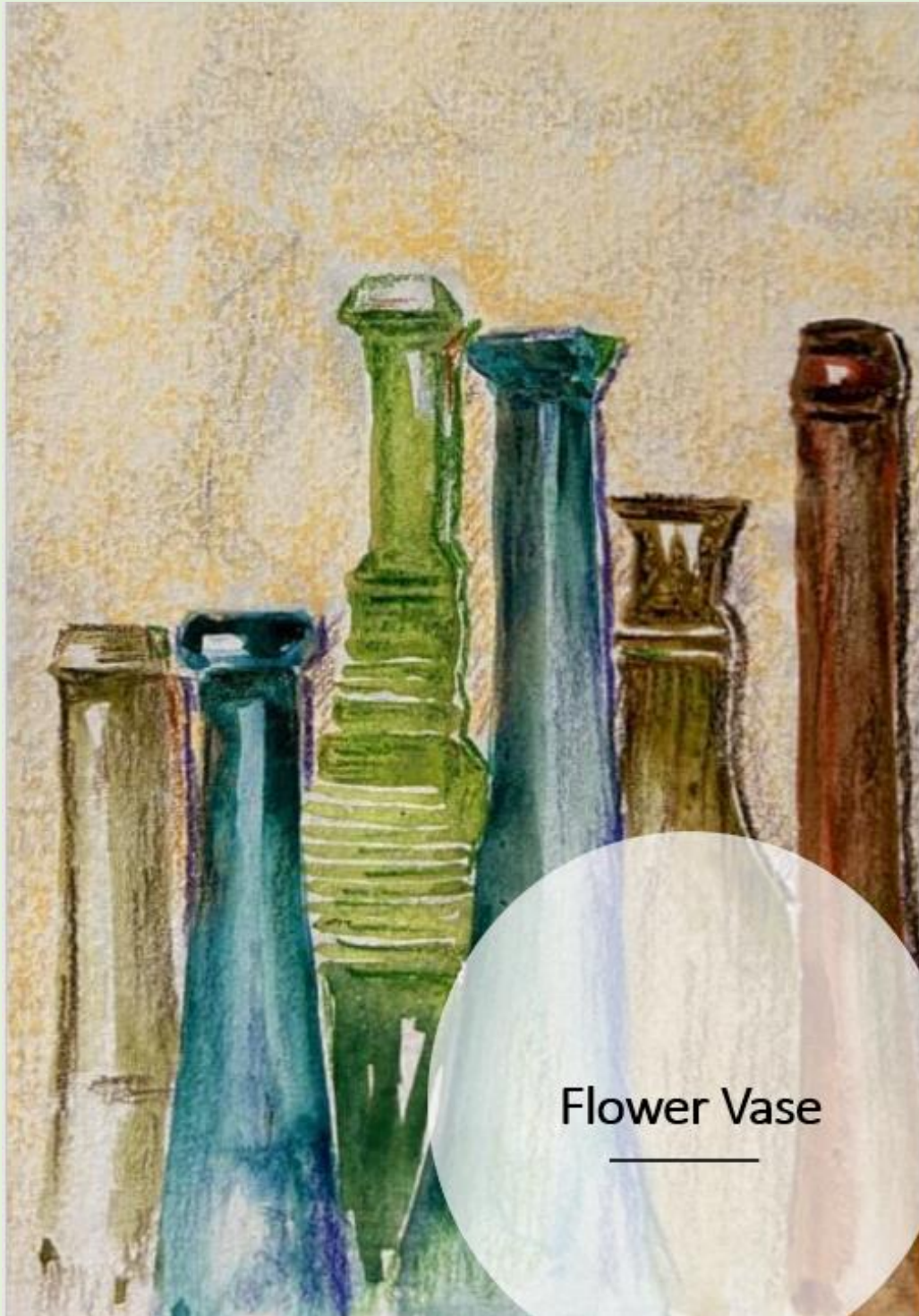
माटी और कुम्हार का कितना गहरा नाता
माटी जीव समान है और ये जीवन दाता ।

माटी तो है आत्मा, ये बस धरे शरीर
सब में है परमात्मा, राजा रंक फ़कीर ।

माटी की यह देह भी माटी-सी हो जाए
माटी, माटी में मिले सब माटी हो जाए ।

-दीप्ति सिंह



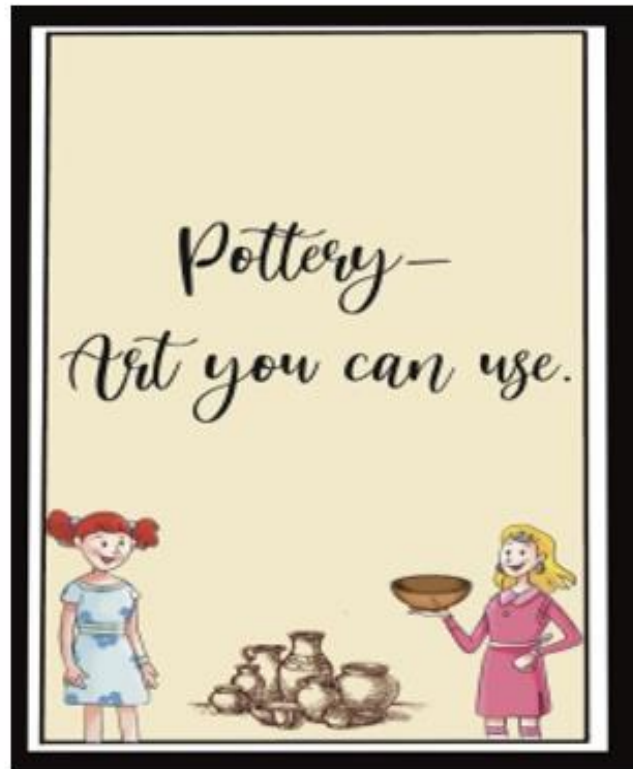


Credits: Collaborative work of students of Grade VII

Every individual is a potter, where life is like pottery.... the way you carve it, the shape it takes. Pottery making has always been an avenue for artistic expression and a reflection of cultural and personal identity.

INTRODUCTION:

Pottery has been used for **millenia** around the world. Pottery is one of those important mediums through which men have expressed their emotions. Let us understand more about pottery through this comic strip.





ENGLISH

ACTIVITY:

Students will make a flower vase on a potter's wheel using clay and decorate it with the 'Antiquarian Heritage' of Hyderabad. (like monuments, rugs, jewellery, etc.)

AIM:

To develop their skills of convergence of two skills: pottery & painting, and express their creativity using language skills, to have a better understanding of the poem, 'In the Bazaars of Hyderabad'.

LEARNING OBJECTIVES:

Students will be able to:

- understand the hard work of the local artisans of Hyderabad and learn the importance of 'Made in India' goods.
- understand the importance of skill training, showcase their unique pottery-making skills and speak about their experience of creatively depicting the 'Antiquarian Heritage' of Hyderabad.
- communicate better by sharing their experiences.
- construct their understanding of the world by amalgamating the learnings of their culture, history and concepts.

LEARNING OUTCOMES:

It will enable the students to:

- bring forth unique creations that will develop their knowledge of the legacy of both pottery and the local artisans of Hyderabad.
- enhance their knowledge of Indian heritage and culture.
- enhance their speaking skills when they narrate their experience of the activity.
- expand their vocabulary by identifying actions, materials, making associations, expressing thoughts and feelings.
- enhance their comprehension and understanding of the entire process.
- understand the cause and effect of various techniques applied in making a flower vase.
- complete an activity or project through planning and effort estimation.

KEY VOCABULARY:

- Self-expression
- Artistic tradition
- Creativity
- Experimentation

MATERIALS REQUIRED:

- Clay- 250 gms (approx.)
- Water- a small bowl
- A small piece of sponge
- Thread/wire- for cutting the clay cylinder from the wheelbase
- Acrylic colours and brushes

PRE-REQUISITE KNOWLEDGE:

A student should have previous knowledge about its heritage and artefacts. Antiquarians mean a study of history with particular attention to ancient artefacts and manuscripts, as well as historical sites. The study also includes gathering knowledge about the old and valuable rare objects connected with the trade.

DURATION OF THE ACTIVITY: 1.5 hours

MODE OF ACTIVITY: INDIVIDUAL

SKILLS DEVELOPED:

- Motor Skills
- Kinesthetic Skills
- Aesthetic Skills
- Centring (an important skill used in pottery)
- Creative Skills
- Critical Thinking
- Communication Skills
- Approximation Skills

PROCEDURE:

CENTRING THE CLAY

- Arrange the material near the potter's wheel
- Dampen the wheel head (Should not be wet)
- Moisten your hands to keep the clay damp
- Place a ball of clay firmly on the centre of the wheel head
- Set the wheel in an anticlockwise direction with low speed
- Apply equal pressure with the palms (the left hand cupped around the clay and the right hand along the top)
- Keep the arms and hands as steady as possible

STEPS TO MAKE A VASE:

1. Once the centring is done, tap the clay with the thumb and sides with the palm several times.



2. Move your hands upwards from the sides of the clay with both hands to shape it into a cone.



3. Repeat this as many times as needed to mould the clay into the desired width and height.



4. Press the thumb down to form an incision, while the rest of the fingers support the outside clay and help to maintain the desired shape.



5. The rim of the bowl will be wide at this point.



6. Insert the hand into the bowl and position it near the base of the vase. (Speed – medium)



7. This will help to create the curve on the inside of the vase.
8. Press the hands together gently and slide them up towards the rim of the vase forming a beautiful round vase.



9. The vase is ready. Take a thread or a wire and push it against the base with the thumbs and index fingers. Run it all the way through, keeping it tight and straight.
10. After the vase dries completely, paint and decorate it with different motifs and designs to make it colourful and attractive.



QUESTIONS:

1. Match the sellers with their wares, as described in the poem.

Sellers	Wares
merchants	saffron, lentil, rice
vendors	crowns, chaplets
peddlers	citrons, pomegranates, plums
goldsmiths	turbans, tunics, mirrors, daggers
fruit-men	wristlets, anklets, rings, bells, girdles
flower-girls	chessmen, ivory dice

2. In this poem, the poet makes use of several kinds of images. Give one example of each of these kinds. The first one has been done for you as an example.

Sight	turbans of crimson and silver
Taste	
Touch	
Sound	
Smell	

3. You attended a pottery class for the first time and made a beautiful vase. Write a diary entry in around 80 words, expressing your emotions about this experience.

4. Which type of pottery was chiefly found in Hyderabad?

5. Create a doodle depicting a bazaar in an Indian village using cues from the poem, 'In the Bazaars of Hyderabad'. Write a brief description of your doodle (in about 50 words) making use of imagery, as used in the poem.

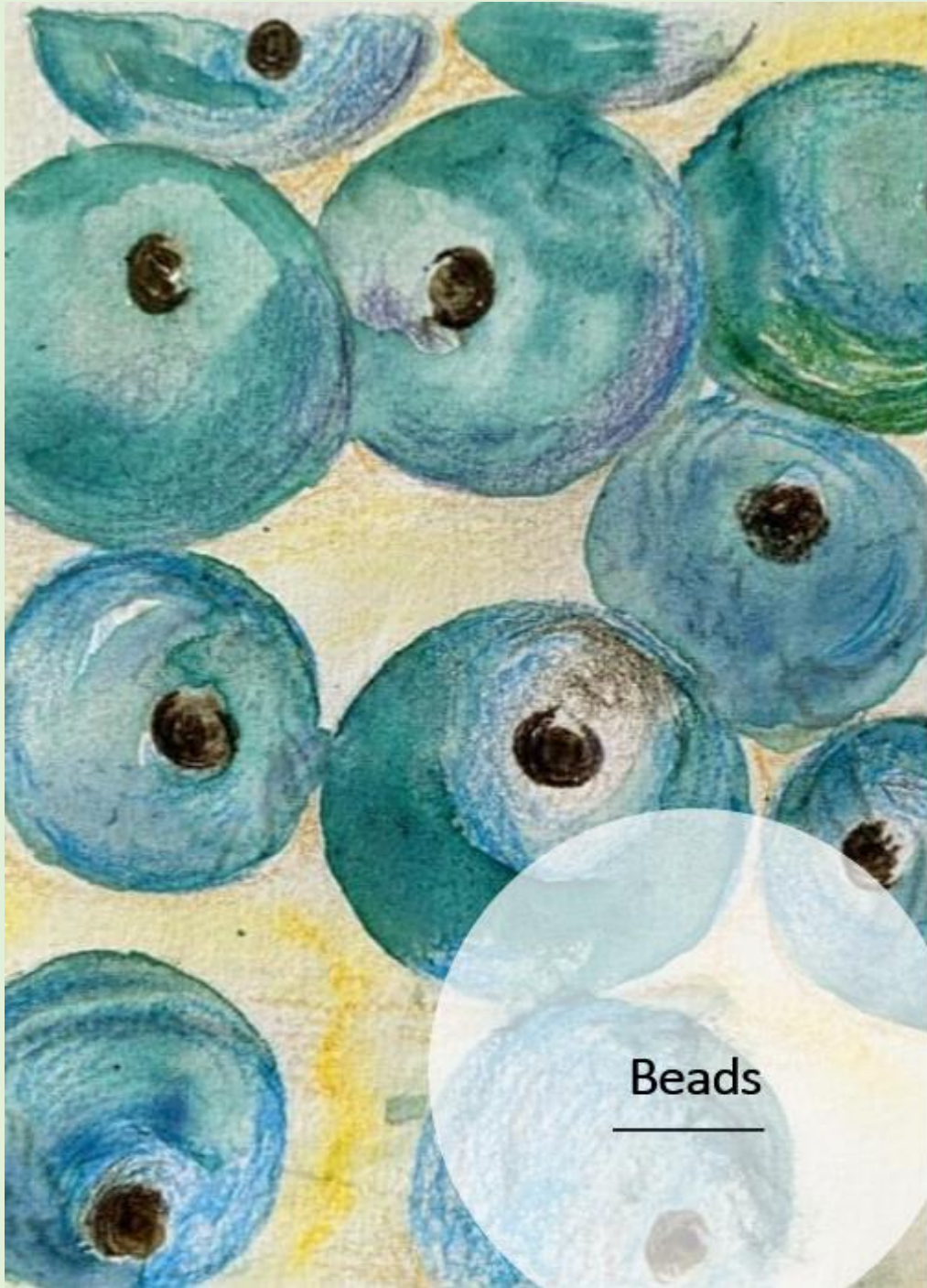
6. Let us learn more about pottery by finding out words related to it in the given word search puzzle.

MAKE POTTERY

WORD SEARCH PUZZLE

CRAFT
UNIQUE
JAR
THROW
CUP
EARTH
KILN
WHEEL
DECORATE
GLASS
KNEAD
DESIGN
GLAZING
PITCHER
DISH

T	N	C	X	S	U	N	I	Q	U	E	H	L	G
H	V	G	L	A	S	S	Y	H	M	Q	T	N	X
R	K	N	E	A	D	V	P	K	D	C	U	P	C
O	P	W	N	Y	T	D	X	W	I	Y	D	E	B
W	U	F	O	V	P	A	E	F	A	L	H	Z	H
G	D	Z	L	J	J	G	E	C	Y	B	N	N	W
A	L	E	O	P	A	Z	X	R	O	Z	Y	F	J
G	K	A	S	C	I	R	M	A	B	R	K	T	X
H	Z	U	Z	I	W	T	D	F	D	R	A	L	L
U	U	E	Q	I	G	W	C	T	Z	I	L	T	V
E	A	R	T	H	N	N	K	H	Z	T	S	I	E
C	O	X	P	L	A	G	C	V	E	T	H	H	W
W	H	E	E	L	Y	V	D	B	Z	R	L	Y	N
N	J	Q	H	S	Q	V	D	X	Z	S	O	K	Q



Credits: Collaborative work of students of Grade VI

बच्चो, मिट्टी अर्थात माता, जिसके साथ बच्चों का गहरा संबंध होता है और उसी संबंध को ध्यान में रखते हुए माँ खुद को बच्चों के अनुसार बदल लेती है। किसान के लिए सोने की तरह मूल्यवान, सैनिक के लिए उसका सब कुछ और कुम्हार के लिए उसकी अन्नदाता। मिट्टी हमें जीवन जीना सिखाती है कि किस तरह इंसान को हर परिस्थिति में ढल जाना चाहिए। कभी मिट्टी खिलौने बन जाती है, कभी घर, कभी बर्तन तो कभी सजावटी सामान। इसकी भूमिका बहुआयामी है और हमें गर्व है कि हम इसे माता कहते हैं।

आओ, आज एक गतिविधि के माध्यम से मिट्टी को और जानते हैं।

HINDI

मूर्तिकला ललित कला के सबसे महान रूपों में से एक है। यह अभिव्यक्ति का एक प्रभावशाली और शक्तिशाली रूप है। इसके लिए एकाग्रता, ध्यान, समर्पण और सबसे बढ़कर कलात्मक दृष्टि की आवश्यकता होती है।

गतिविधि (ACTIVITY):

छात्र मिट्टी के मोती बनाएँगे और उन्हें अपने मनपसंद रंग से रंगकर व आकृति उकेरकर उन्हें ब्रेसलेट का आकर्षक रूप देंगे ।

उद्देश्य (AIM): पाठ कंचा के आधार पर मिट्टी के मोती बनाकर, पेशीय कौशल की बारीकियों एवं ललित कला के प्रति जागरूक करना ।

अधिगम उद्देश्य (LEARNING OBJECTIVES):

- छात्रों को मिट्टी से वस्तुएँ बनाने की कला से परिचित करवाना ।
- इस प्रक्रिया में प्रयोग होने वाली वस्तुओं से अवगत कराना ।
- ध्यान केंद्रित करने में सहायक होगा ।
- कल्पनाशक्ति का विकास करना ।

अधिगम प्रतिफल (LEARNING OUTCOMES):

- छात्रों में इस कला के विकास के प्रति जागरूकता उत्पन्न होगी ।
- बच्चे अपनी कला व संस्कृति से परिचित होंगे और इस कला को आगे बढ़ाने हेतु प्रयासरत होंगे ।
- बच्चों में इस कला के प्रति सम्मान उत्पन्न होगा व उनकी जानकारी में वृद्धि होगी ।
- प्रयोगात्मक ज्ञान में वृद्धि होगी ।

आवश्यक सामग्री (MATERIAL REQUIRED):

- मिट्टी 250 ग्राम (लगभग)
- पानी का एक छोटा कटोरा
- मोटी सुई / प्लंजर उपकरण
- लकड़ी का बोर्ड
- टूथपिक
- चाकू
- अलग-अलग रंग व ब्रश

- मोटा धागा

शब्दकोश (KEY VOCABULARY):

गोलाकार, वृत्ताकार, बेलनाकार, मनका

पूर्वापेक्षित ज्ञान (PRE-REQUISITE KNOWLEDGE):

- प्राचीन भारतीय हस्तकला व संस्कृति से छात्र परिचित हैं ।
- छात्रों को मनके या मोती से बने हाथ व गले के पारंपरिक आभूषण का ज्ञान है ।

कौशल विकास (SKILLS DEVELOPED):

- रचनात्मक कला का विकास
- प्रयोगात्मक व क्रियात्मक कौशल
- पेशीय कौशल

अवधि (DURATION): 1.5 घंटे

गतिविधि का तरीका (MODE OF ACTIVITY): एकल

कार्य पद्धति (PROCEDURE):

आवश्यक सामग्री को लकड़ी के बोर्ड के पास रखें।

मिट्टी को नम रखने के लिए अपने हाथ गीले करें ।

मिट्टी के मनके/मोती बनाने की प्रक्रिया (STEPS TO MAKE BEADS):

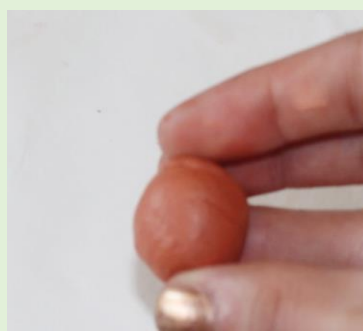
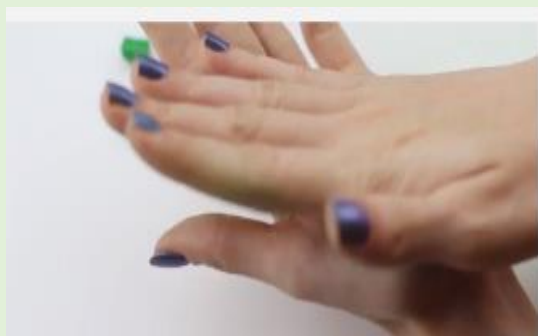
- 1 मिट्टी के गोले को नरम व पतला करने के लिए मेज पर कई बार पटकें। यह मिट्टी में बुलबुले को बाहर निकालने में मदद करेगा। मिट्टी पटकते समय अपने हाथों को गीला कर लें।



- 2 एक समान मोती बनाने के लिए मिट्टी का एक टुकड़ा काट लें और इसे लकड़ी के बोर्ड पर एक बेलनाकार कुंडल में रोल करें। मिट्टी के छोटे-छोटे टुकड़ों को समान आकार में काटने के लिए एक शिल्प चाकू का उपयोग करें। फिर मोतियों को समान आकार दें।



- 3 अपने हाथों में मिट्टी का एक टुकड़ा लें। मिट्टी की गोली को नरम करने के लिए उसे अपनी हथेलियों के बीच रगड़ें ताकि गोलियों में दरार न आए। प्रत्येक टुकड़े को हथेलियों की सहायता से मोतियों का रूप दें।



- 4 एक टूथपिक लें, प्रत्येक मोती के बीच में एक छेद बनाएँ। टूथपिक को उँगलियों के बीच घुमाकर धीरे से मोती के मध्य में छेद करें। एक बार जब टूथपिक पूरी तरह से मोती के अंदर चला जाए, तो उसे बाहर निकालें और छेद को साफ करने के लिए दूसरी तरफ से दोबारा डालें। सुई या प्लंजर उपकरण से मनवांछित आकृति उकेरें।



- 5 मोतियों को आकर्षक रंगों में रंगें। प्रत्येक मनके पर वार्निश की एक पतली परत लगाने के लिए एक साफ ब्रश का उपयोग करें। ब्रेसलेट बनाने से पहले उन्हें सूखने दें।



- 6 मोतियों के सूख जाने के बाद इन्हें धागे में पिरोकर एक सुंदर ब्रेसलेट/मैत्री बैंड बनाएँ।



इस प्रक्रिया को बेहतर रूप से समझने के लिए लिंक दिया जा रहा है।

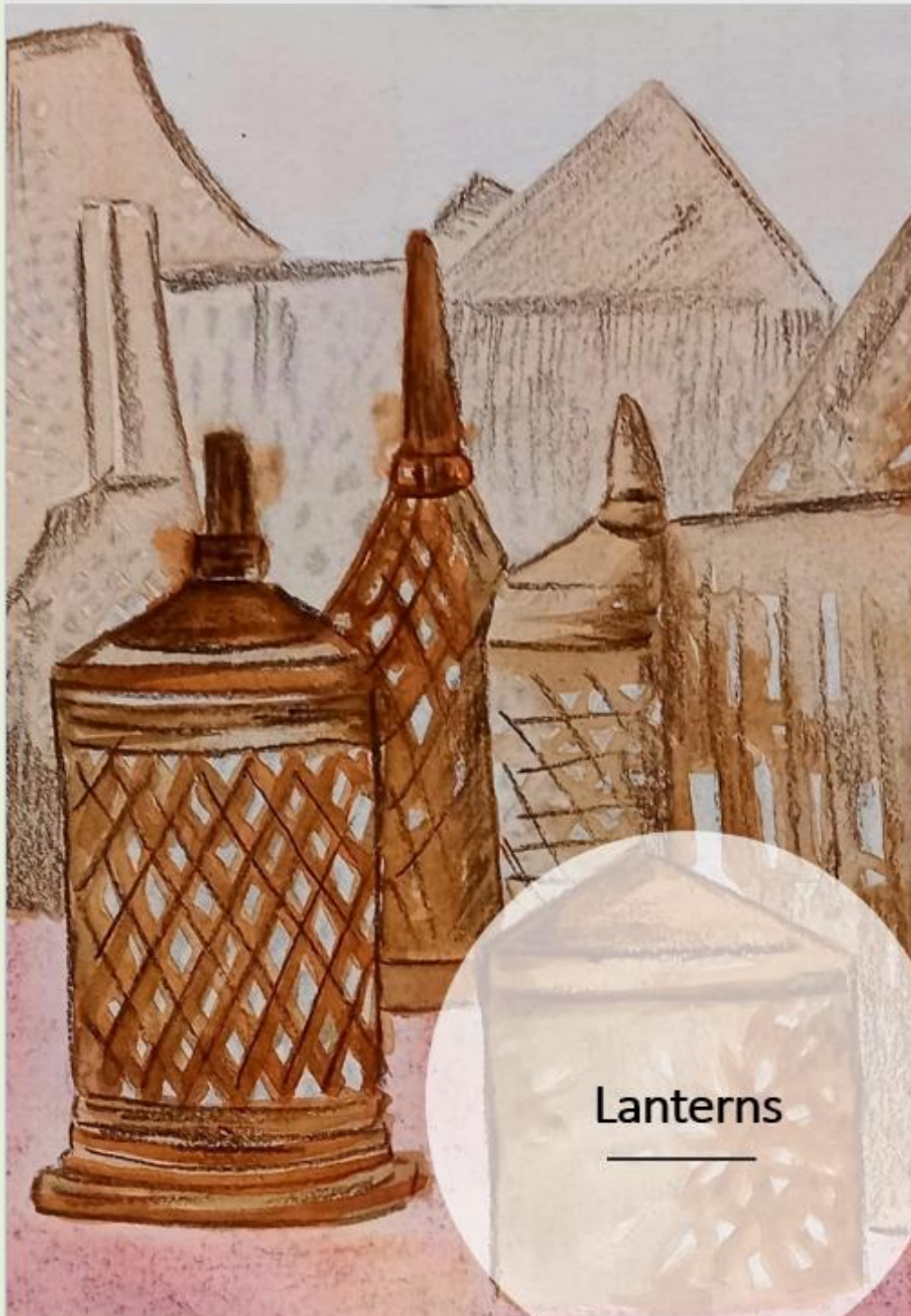
<https://youtu.be/8QTVw4292FY>

निष्कर्ष (CONCLUSION):

विद्यार्थियों में मिट्टी से जुड़ाव का भाव उत्पन्न हुआ, वे उत्साह व आनंद का अनुभव करते हुए भारतीय संस्कृति से जुड़े हस्तकला में पारंगत हुए तथा पेशीय कौशल की बारीकियों का विकास हुआ ।

वस्तुनिष्ठ प्रश्न (OBJECTIVE QUESTIONS):

1. बर्तनों खिलौनों और मूर्तियों को बनाने के लिए कौन सी मिट्टी का उपयोग किया जाता है?
2. मिट्टी के कंचे बनाने की कला भारत के किस राज्य में ज़्यादा प्रसिद्ध है ?
3. पक्की मिट्टी से बनी हस्तशिल्प कला किस नाम से जानी जाती है?



Credits: Art Department

Rohan and Reema visited a village during their summer vacation. They were amazed to see the expertise of the tribal people in pottery, and how well they organised fairs to sell their products. Inspired by the fair, they both decided to plan and organise a pottery fair in their school.

Let's plan a fair and understand the application of the concepts of profit/loss and discounts in real-life situations.

MATHEMATICS

ACTIVITY #1

ACTIVITY: Set up a trade fair of pottery items prepared by the students.

AIM: To apply the concepts of profit/loss and discounts in real-life situations.

LEARNING OBJECTIVES:

Students will be able to:

- differentiate between profit, loss and discount.
- apply the concept of percentage and unitary method in day-to-day life.
- understand the factors involved in deciding the cost price and selling price of articles.
- develop problem-solving skills.
- understand the role of mathematics in the trading of goods and services.

LEARNING OUTCOMES:

It will enable the students to:

- make the students enthusiastic about this traditional art and craftsmanship.
- develop their thinking and reasoning power.
- help in improving the concentration span of the students.
- make them confident in applying the concepts of commercial mathematics in their day-to-day lives.

KEY VOCABULARY:

- Selling price and Cost price
- Profit and loss
- Unitary method
- Percentage
- Discount

MATERIALS REQUIRED:

- Pottery items
- Table
- Table cloth
- Chart paper to make price tags

PRE-REQUISITE KNOWLEDGE:

Students should have previous knowledge about:

- Cost Price (CP) and Selling Price (SP).
- profit and loss.
- percentage and unitary method.

DURATION OF THE ACTIVITY: 1 hour

MODE OF ACTIVITY: GROUP

SKILLS DEVELOPED:

- Motor Skills
- Kinesthetic Skills
- Aesthetic Skills
- Critical Thinking
- Logical Thinking
- Communication Skills

PROCEDURE:



1. Students will be divided into three groups. Each group will be allocated a counter number. From each group, a few students will act as buyers, and a few will act as sellers.
2. On each counter, there will be specific trading rules. Buying and selling of items will take place according to these rules.

Counter 1: Items to be sold per piece as per the selling price listed on it.

Counter 2: Same items to be sold in bulk quantity with special offers.

Example: The offer can be - One lantern free on the purchase of five lanterns.

Counter 3: Items to be sold at a discounted price.

3. Students will decide the selling price of the items considering various factors like cost of raw material and labour, transportation charges, trading rules, profit margin, etc.
4. After deciding the selling price of the pottery items, each group will make and put the price tag on them.
5. The students will now start buying and selling the items. They should keep in mind that all the items must be sold by the end of the fair. They are free to change the selling price of their items, if needed, to meet this requirement.
6. They will also record the details of the transactions as per the format given below.
(Note: One transaction detail is recorded in every table for students' reference)

OBSERVATIONS AND CALCULATIONS:

Transaction details for Counter 1

S. No.	Name of the item	No. of items sold	CP of one item (₹)	SP of one item (₹)	Total CP (₹)	Total SP (₹)	Overall Profit / Loss (₹)	Overall Profit/Loss (in %)
1.	Lantern	6	10	12	60	72	12	20%
2.								
3.								
4.								
5.								

Transaction details for Counter 2

S. No.	Name of the item	No. of items sold	CP of one item (₹)	CP of items (₹)	SP of items (₹)	SP of one item (₹)	Profit/Loss per item (₹)	Profit / Loss (in %)
1.	Lantern	5 + 1 (Free)	10	60	70	70/6	10/6	16.6%
2.								
3.								
4.								
5.								

Transaction details for Counter 3

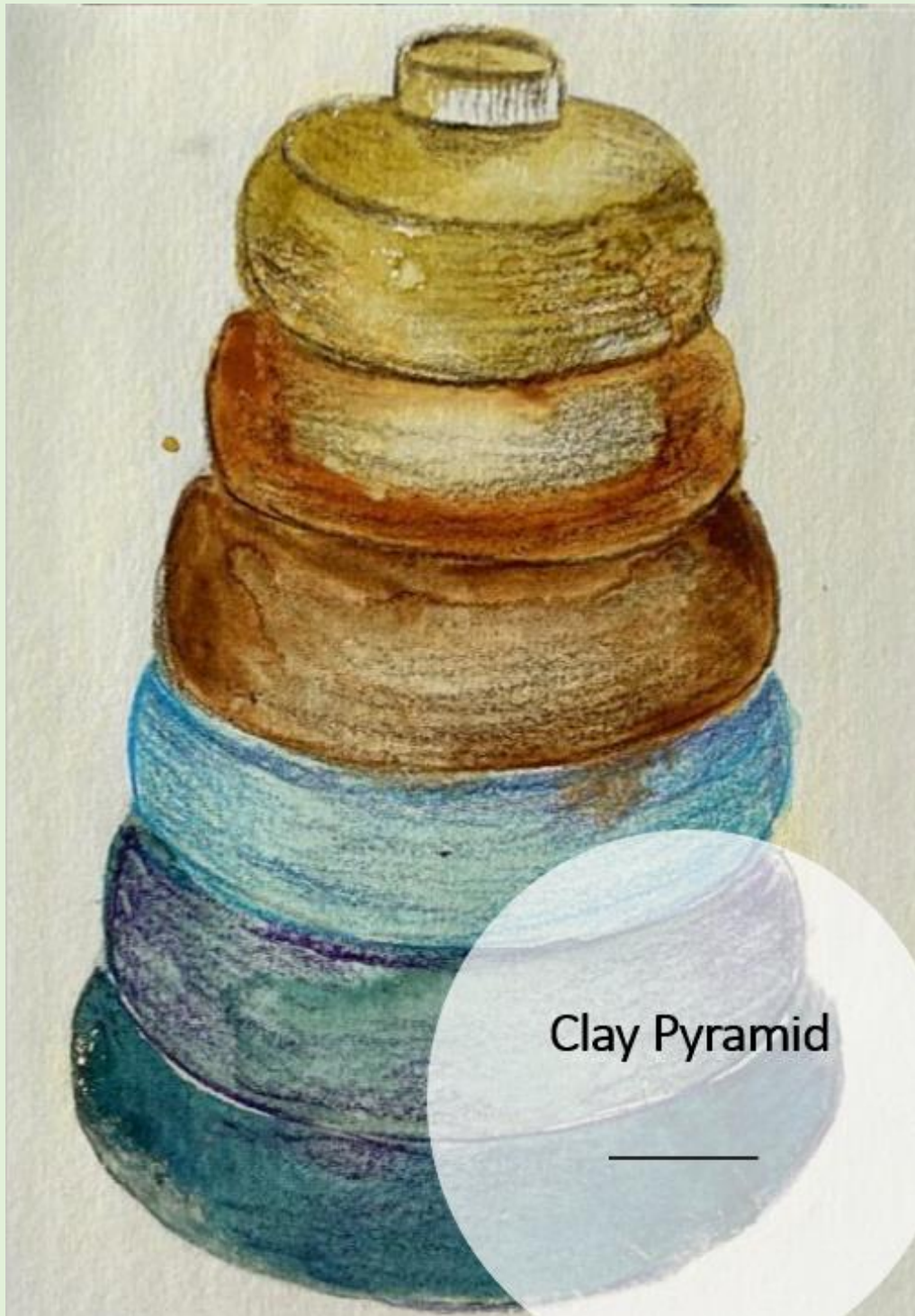
S. No.	Name of the item	No. of items sold	CP of one item (₹)	Total CP (₹)	Discount per item (%)	Original SP of one item (₹)	Final SP of one item (₹)	Final SP of items (₹)	Overall Profit/Loss	Profit/Loss (in %)
1.	Lantern	6	10	60	10%	12	12 - 10% of 12 = 10.8	64.8	4.8	8%
2.										
3.										
4.										
5.										

CONCLUSION:

Students will understand the effect of offers and discounts on the overall profit and loss.

OBJECTIVE QUESTIONS:

1. What is 10% of ₹ 360?
2. If the cost price of an article is ₹ 50 and its selling price is ₹60, then what is the profit percentage?
3. If the selling price of an article is double of its cost price, then what will be the profit percentage?
4. An article worth ₹500 is sold at a 5% discount. What will be its selling price?
5. After a 20% discount, an article is sold at ₹80. What was its cost price?



Credits: Collaborative work of students of Grade VII

Pottery is an artistic way to give a special touch to our home decor. A classy and beautiful art form, which portrays the rich tradition of India; pottery and ceramic items can boost the style quotient of any home.

Rohan and Reema decided to make hanging clay discs, disc garlands, sun discs and coasters to decorate their homes. They made discs of different sizes, to be used to make different decorative items. Let's make circular discs of varied diameters and understand the relationship between their circumference and diameter.

ACTIVITY #2

ACTIVITY: Making circular discs of varied diameters on a potter's wheel.

AIM: To find the area of the circular discs by using the value of pi (π).

LEARNING OBJECTIVES:

Students will be able to:

- find the circumference of a disc using a measuring tape.
- find the diameter of a disc.
- understand how a change in diameter affects the circumference.
- derive the estimated value of pi.
- understand that the value of pi remains constant irrespective of the change in diameter.
- find the area of a circular disc.
- develop problem-solving skills.

LEARNING OUTCOMES:

It will enable the students to:

- deduce the value of pi through a practical setup.
- apply the value of pi to find the area of circular discs.
- be confident in differentiating between the concept of circumference and the area of a circle.
- inculcate the spirit of collaboration among students.
- enhance creative thinking of students.

KEY VOCABULARY:

- Circle
- Diameter
- Circumference of a circle
- Pi (π)
- Area of a circle

MATERIALS REQUIRED:

- Clay- 250gms (approx.)
- Water- small bowl
- A small piece of sponge
- Potter's wheel
- Measuring tape
- Ruler and pencil
- A sheet of paper
- Acrylic colours
- Paint brush
- Needle tool

PRE-REQUISITE KNOWLEDGE:

Students should have previous knowledge about:

- the parts of a circle
- circumference of a circle
- area of a circle

DURATION OF THE ACTIVITY: 1.5 hours

MODE OF ACTIVITY: GROUP

SKILLS DEVELOPED:

- Motor Skills
- Kinesthetic Skills
- Aesthetic Skills
- Centring (an important skill used in pottery)
- Creative Skills
- Critical Thinking
- Approximation Skills

PREPARATION FOR THE ACTIVITY:

Students will be divided into three groups. Each group will make a circular disc of different diameter.

❖ **Steps for centring the clay**

1. Arrange the materials near the potter's wheel
2. Dampen the wheel head (should not be wet)
3. Moisten your hands to keep the clay damp
4. Place a ball of clay firmly on the centre of the wheel head
5. Set the wheel in an anticlockwise direction
6. Apply equal pressure with the palms (the left hand cupped around the clay and the right hand along the top)
7. Keep the arms and hands as steady as possible

PROCEDURE:

❖ **Steps to make a circular shaped disc**

1. Throw a piece of clay on the table to thin it out. Lift and throw the clay several times. This will help in getting out the bubbles from the clay. Dampen your hands while throwing the clay.



2. Place wooden scales on the table to help create an even layer of clay. Place the scales in front as shown in the figure.



3. Roll the clay with a rolling pin. Press down into the clay as you roll the pin away. Keep going back and forth until you get the desired thickness.



4. Place a plate on top of the clay. Trace around it with a needle tool.



5. Remove the extra clay with your hands. Cut the borders with the needle tool.



6. The disc is ready.



7. Make 2-3 discs of varying diameters in a similar manner.
8. Once the discs dry, paint them with acrylic colours of your choice.
9. Using a measuring tape, students will find out the circumference of the circular disc.
10. They will find out the diameter and thus the radius of the circular disc by tracing its boundary on a sheet of paper as indicated in the given video link.
LINK: https://www.youtube.com/watch?v=j9fZ5H1BH_0 (Youtube Link)
11. Students will record their observations in the table given below. They will also find the area of the circular discs using the estimated value of pi.

OBSERVATIONS AND CALCULATIONS:

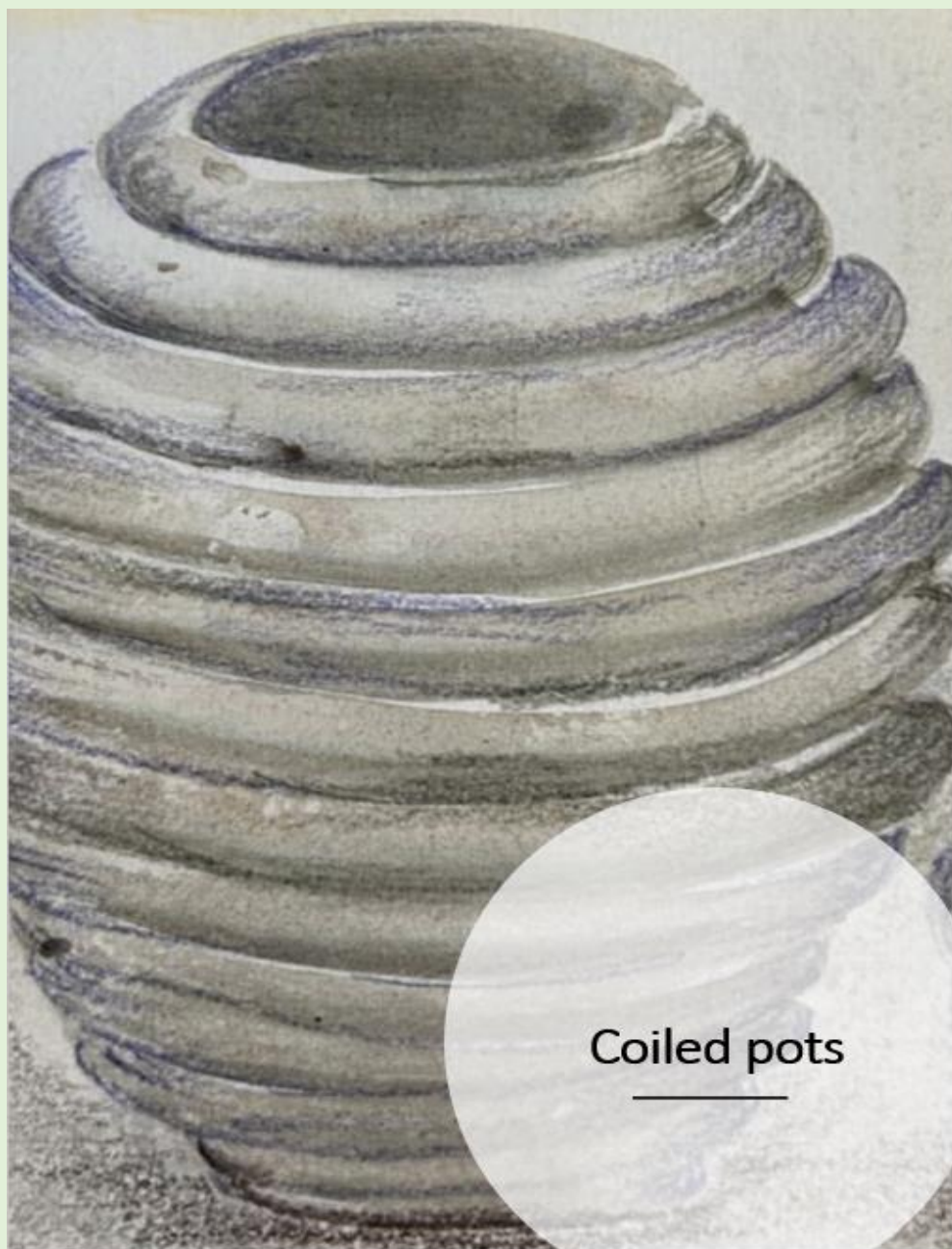
	Diameter(d) (cm)	Radius ($r = \frac{d}{2}$) (cm)	Circumference(C) (cm)	$\frac{C}{d} = \pi$ (cm)	Area = πr^2 (cm^2)
Disc 1					
Disc 2					
Disc 3					

CONCLUSION:

1. The circumference and area of a circular disc change with the change in diameter.
2. The value of π remains constant.

OBJECTIVE QUESTIONS:

1. If the radius of a circle is doubled, then what will be the percentage change in its circumference?
2. If the radius of a circle is tripled, then how many times will its area increase?
3. The ratio of the radii of the two circles is 3:4. What will be the ratio of their circumferences?
4. How many times must a wheel of radius 28 cm rotate to cover a distance of 352 m?
5. If the circumference of a circle exceeds its diameter by 30 cm, then what is the radius of the circle?



Credits: Collaborative work of students of Grade VII

Pottery is an ancient therapeutic art and spinning the wheel provides ultimate relief to the brain as well as to the body.

Once, a children's fair was organised in Boojho and Paheli's society. There were many captivating activities. There were magicians, potters and comedians. Paheli and Boojho were amazed to see how the potter was making beautiful vases and pots with clay. Boojho observed that the potter was reshaping the moist clay to make different objects, but once baked the vases could not be reshaped.

So, let's try out and make our own pots and help Boojho and Paheli understand and learn about the physical and chemical changes associated with pottery!

SCIENCE

ACTIVITY #1

ACTIVITY: Creating coiled pots by gradually stacking and joining coils of clay one on top of the other.

AIM: To have a better understanding of the physical and chemical changes happening around them.

LEARNING OBJECTIVES:

Students will be able to:

- acquire the knowledge of the various types of changes taking place around them.
- discuss the differences between physical and chemical changes.
- appreciate the importance of physical and chemical changes in their surroundings.
- give examples of physical and chemical changes.

LEARNING OUTCOMES:

It will enable the students to:

- improve their concentration span.
- differentiate between physical and chemical changes.
- understand the reversible and irreversible process.

KEY VOCABULARY:

- Physical change
- Chemical change
- Chemical reaction
- Mixture
- Evaporation

MATERIALS REQUIRED:

- Clay- 250gms (approx.)
- Water- small bowl
- Flat surface for coiling

PRE-REQUISITE KNOWLEDGE:

Students should have previous knowledge of:

- some common changes taking place around them.
- reversible changes
- irreversible changes

DURATION OF THE ACTIVITY: 1 hour

MODE OF ACTIVITY: INDIVIDUAL

SKILLS DEVELOPED:

- Motor Skills
- Kinesthetic Skills
- Aesthetic Skills
- Centring (an important skill used in pottery)
- Creative Skills
- Critical Thinking Skills
- Logical Thinking Skills
- Communication Skills
- Comprehension Skills

PREPARATION OF THE ACTIVITY:

- Arrange the material on a flat surface
- Moisten your hands to keep the clay damp
- Place a ball of clay firmly on the centre of the flat surface
- Apply equal pressure with the palms (the left hand cupped around the clay and the right hand along the top)

PROCEDURE:

❖ **Steps to make a Coiled Pot**

1. Move your hands upward from the sides of the clay with both hands to shape it.



2. Tap the clay using both the thumbs to flatten it.



3. A circular shaped base is ready to start the pot.



4. Roll the clay to make the coil as shown in the picture.



5. Start placing the rolled coils one on top of the other to form a pot.



6. The coiled pot is ready.



OBSERVATIONS:

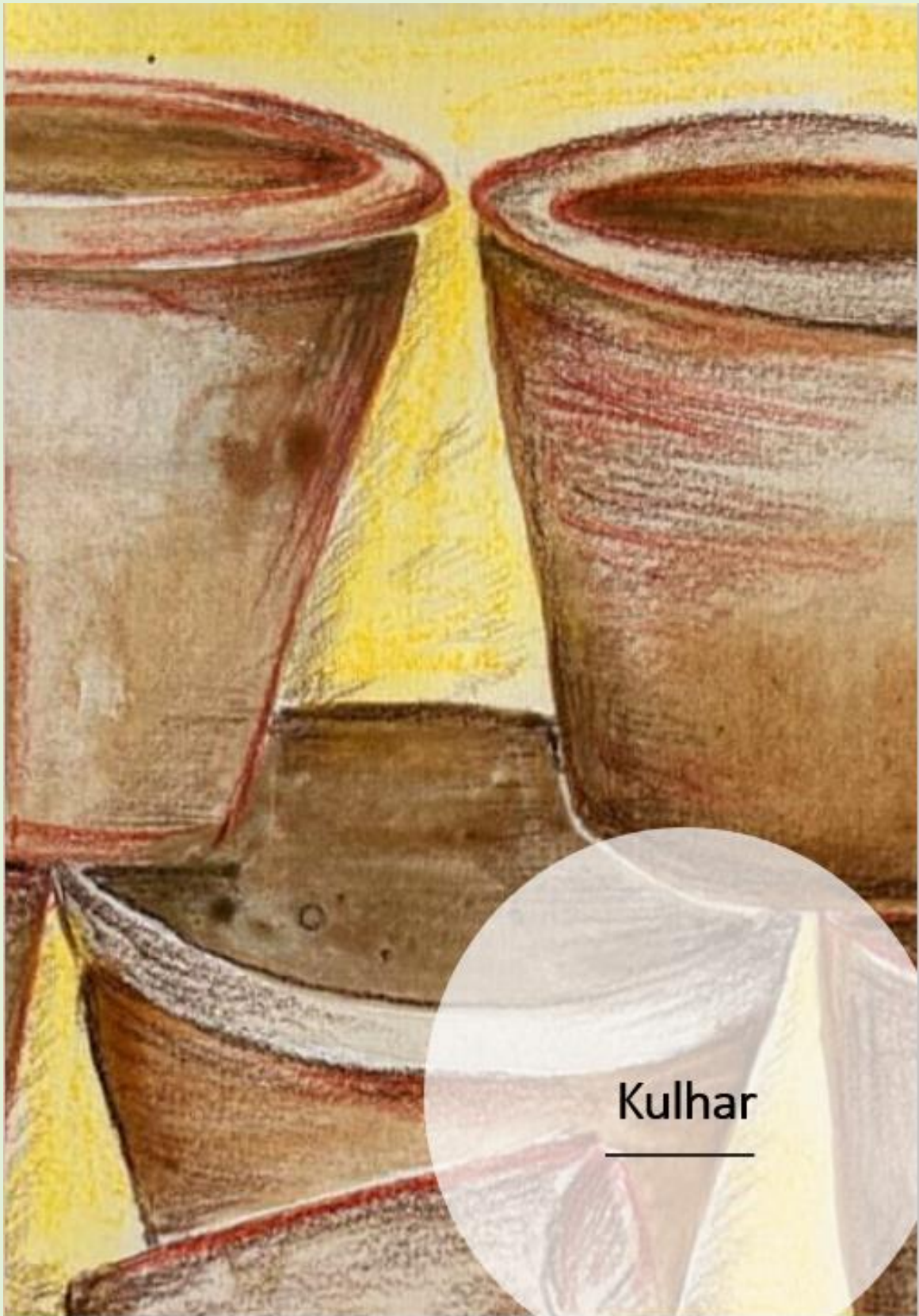
1. The shape of the clay changes but its properties remain the same.
2. Clay can be remoulded.
3. After drying, that is, evaporation of water from the clay, it can be moistened again.
4. After baking the pot, the original clay cannot be obtained and it cannot be reshaped.

CONCLUSIONS:

1. A physical change affects a substance's physical properties.
2. A chemical change affects a substance's chemical properties.
3. Physical changes are generally reversible.
4. Chemical changes are generally irreversible.

OBJECTIVE QUESTIONS:

1. What is a physical change? Give two examples.
2. Cite any two examples that define a chemical change.
3. Why is the burning of a candle considered both a physical and a chemical change?
4. Burning wood and cutting it into pieces are considered two different types of changes. Why?
5. Is inflating a balloon a physical change or a chemical change? Justify your answer.



Credits: Collaborative work of students of Grade VIII

Good morning children!- Today, I am going to introduce you to a very precious natural resource. Can anyone guess which one?

Students : Air, water, forest.....

Teacher: Yes! Air, water, forests, fossil fuels -- all are important. But what about soil?

Student: Yes, soil too! I was about to say that ma'am.

Teacher: Have you heard of Soil science?

Student: No ma'am.

Teacher: Soil science is the study of soil as a natural resource on the surface of the Earth including soil formation, classification and mapping; physical, chemical, biological, and fertility properties of soils; and these properties in relation to the use and management of soils.

So, do you think soil is of different types? Can this knowledge of differences in their individual nature be useful to us?

Students: Yes, definitely, ma'am.

Teacher: This knowledge of soil can help us in various fields like farming, pottery, clothing, culture, culinary arts, construction, food habits etc. In fact, the nature of soil in a region impacts various aspects of life.

So today, we are going to perform an activity and observe how different types of soil have different properties.

ACTIVITY #2

ACTIVITY: Comparison of percolation rates of different soil types.

AIM: To fill clay pots with different soil samples and calculate the percolation rate of each soil type.

LEARNING OBJECTIVES:

Students will be able to:

- draw a comparison between different soil types, soil textures and their nature to allow materials to percolate through.
- observe the differences in various soil types and their ability to be moulded.
- observe that some changes like moulding the clay into different shapes are reversible changes.
- appreciate the importance of this natural and eco-friendly material.
- conduct research on the health benefits of using clay pots for cooking.
- observe and analyse how the evolution of pottery helped people to steam and boil food which allowed the consumption of new types of food.

LEARNING OUTCOMES:

It will enable the students to:

- develop an insight into the properties of different soil types.
- develop an appreciation and insight into the advantages of using clay pots for cooking purposes.
- develop creative skills and self-expression.
- build imagination and boost self-esteem.
- develop problem-solving skills.
- develop an understanding of the importance of clay as an eco-friendly and natural material and its vast usage.

KEY VOCABULARY:

- Soil types- clay, sand, loam and gravel
- Percolation
- Percolation rate
- Volume

MATERIALS REQUIRED:

- Clay- 250gms (approx.)
- Water- small bowl
- A small piece of sponge
- Thread/ wire- for cutting the clay lantern from the wheelbase.

PRE-REQUISITE KNOWLEDGE:

Students should have previous knowledge of:

- different types of soil
- properties of different types of soil
- units for measuring volume

DURATION OF THE ACTIVITY: 1.5 hours

MODE OF ACTIVITY: INDIVIDUAL

SKILLS DEVELOPED:

- Motor Skills
- Kinesthetic Skills
- Aesthetic Skills
- Centring (an important skill used in pottery)
- Creative Skills
- Critical Thinking and Problem-solving Skills
- Communication Skills

PREPARATION FOR THE ACTIVITY:

❖ Centring the clay

1. Arrange the material near a potter's wheel
2. Dampen the wheel head (should not be wet)
3. Moisten your hands to keep the clay damp
4. Place a ball of clay firmly on the centre of the wheel head
5. Set the wheel in an anticlockwise direction with low speed
6. Apply equal pressure with the palms (the left hand cupped around the clay and the right hand along the top)
7. Keep the arms and hands as steady as possible

PROCEDURE:

❖ Steps to make Kulhar

1. Once the centring is done, tap the clay with the thumb and sides with the palm several times.



2. Move your hands upwards from the sides of the clay with both hands to shape it into a cone.



3. Using both the palms form the shape of the kulhar as shown in the picture.



4. Insert the thumb into the bowl and position it near the base of the bowl (Speed – medium). This will help in creating the curve on the inside of the kulhar.



5. Take a thread or a wire, push it against the base of the jar with thumbs or index finger. Run it all the way through keeping it tight and straight.



6. Let it dry in the shade. The kulhar needs to be baked in the baking kiln before it is suitable for use.



7. The kulhar is ready.



8. Four different pots of about 5 inches in height will be filled with clay, sand, loam and gravel or small pebbles.
9. An equal amount of water will be poured gently into each of these.
10. Measure the time taken for all the water to percolate through the soil samples. (Wait till all the water has drained out).
11. Calculate Percolation Rate of different soil samples.

OBSERVATIONS AND CALCULATIONS:

- Calculate the rate of percolation for different soil types by using the formula:

$$\text{Percolation rate (mL/min)} = \frac{\text{Amount of water (mL)}}{\text{Percolation time (min)}}$$

- Tabulate the percolation rates for different soil samples. Also mention particle size for different soil types.
- Compare and arrange the soil samples in an increasing order of the rate of percolation.

CONCLUSION:

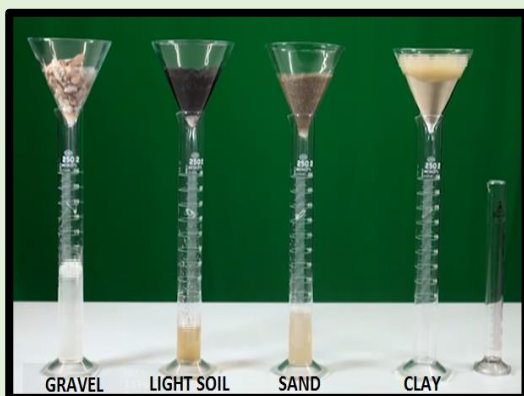
- Percolation rate is highest for sandy soil and lowest for clayey soil.
- Percolation rate is directly proportional to the size of particles in a given soil sample.
- Clayey soil has the highest water retention capacity while sandy soil has the least water retention capacity.

OBJECTIVE QUESTIONS:

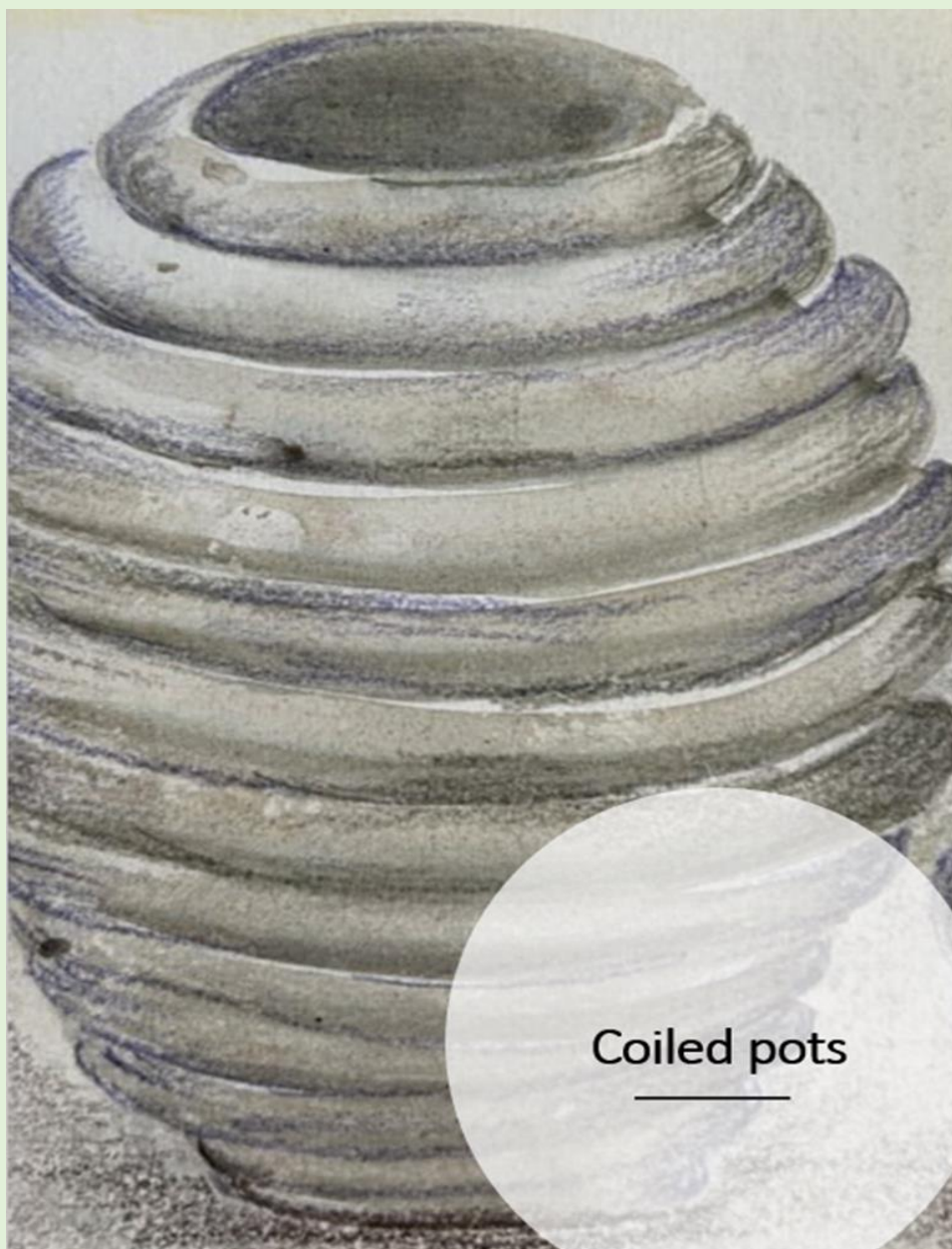
1. Was the result same for all the samples?
2. Which soil would have the highest percolation rate?
3. Which soil would have the lowest percolation rate?
4. Why was the percolation rate different for different samples?
5. How can we increase the percolation rate for clayey soil?
6. If a gardener observes that the soil in the flower beds has a high content of sand, what problems will he face when watering the plants?
7. Will adding humus to the soil alter its percolation rate?
8. How does baking the clay pots affect the chemical nature of clay?
9. Do you think that the invention of pottery evolved the food habits over generations? If yes, then how?
10. Why is pottery an important type of artefact for archaeologists to study (especially in cultures where the script was either absent or remains un-deciphered)?
11. Do you agree that pottery tells us how ancient people interacted with their environment and with each other? Justify.



Credits: https://useruploads.socratic.org/DaG0yHhQQlqgkGQTouWf_types-of-soil.jpg



Credits: <https://geoinvestigate.co.uk/2022/05/15/soakaway-testing-southampton/>



Credits: Collaborative work of students of Grade VII

The art of pottery is the oldest and most widespread decorative art, consisting of objects made of clay and hardened with heat, so that it is not attacked by any of the agents that corrode metal or organic materials.

In this class, we will discuss about how the clay pots change from a soft, totally fragile substance to one which is rock hard and impervious to water and wind.

Temperature plays an important role in baking the clay pots, but how the pots should be heated can be understood by taking simple examples of making chapatti and bati in a chulha.

To bake a chapatti, you require chulha at a certain temperature but to make a bati you need very low heat so that it can be completely cooked.

Similarly, gradual heating and cooling is required for baking clay pots too.

ACTIVITY #3

ACTIVITY: Students will create coiled pots by gradually stacking and joining coils of clay one on top of the other. It is important that the coils join well during construction to avoid cracking or separation during the drying process.

AIM: To understand the importance of appropriate temperature in making different clay items like pots, tiles, bricks, etc.

LEARNING OBJECTIVES:

Students will be able to:

- learn to measure temperature.
- convert the given temperature into different scales.
- know the temperature at which the pots need to be baked.
- list the various precautions that need to be taken while baking.

LEARNING OUTCOMES:

It will enable the students to:

- gain knowledge about the process of physical and chemical changes.
- understand the process of converting the temperature into different scales.
- understand the process of baking the earthen vessels in kiln and be aware of temperature /sudden temperature changes that can lead to breaking of earthen pots while baking.

KEY VOCABULARY:

- Different scales of temperature- $^{\circ}\text{C}$, $^{\circ}\text{F}$ and K
- Physical and Chemical change
- Kiln/ Furnace/ bonfire
- Mode of transfer of heat

MATERIAL REQUIRED:

- Clay- 250gms (approx.)
- Water- small bowl
- Flat surface for coiling

PRE-REQUISITE KNOWLEDGE:

Students should have previous knowledge about:

- the role of heat in baking of different varieties of vessels
- the earthen vessels, stoneware and porcelain
- the appropriate temperature to bake earthen vessels
- the different scales to measure the temperature

DURATION OF EACH ACTIVITY: 1 hour

MODE OF ACTIVITY: INDIVIDUAL

SKILLS DEVELOPED:

- Motor skills
- Kinesthetic Skills
- Aesthetic Skills
- Centring (an important skill used in pottery)
- Creative Skills
- Critical Thinking
- Communication Skills
- Approximation Skills

PREPARATION FOR THE ACTIVITY:

- Arrange the material on a flat surface
- Moisten your hands to keep the clay damp
- Place a ball of clay firmly on the centre of the flat surface.
- Apply equal pressure with the palms (the left hand cupped around the clay and the right hand along the top)

PROCEDURE:

❖ Steps to make a Coiled Pot

1. Move your hands upwards from the sides of the clay with both hands to shape it



2. Tap the clay using both the thumbs to flatten it.



3. A circular shaped base is ready to start the pot.



4. Roll the clay to make the coil as shown in the picture.



5. Start placing the rolled coils one above the other to form a pot.



6. The coiled pot is ready.



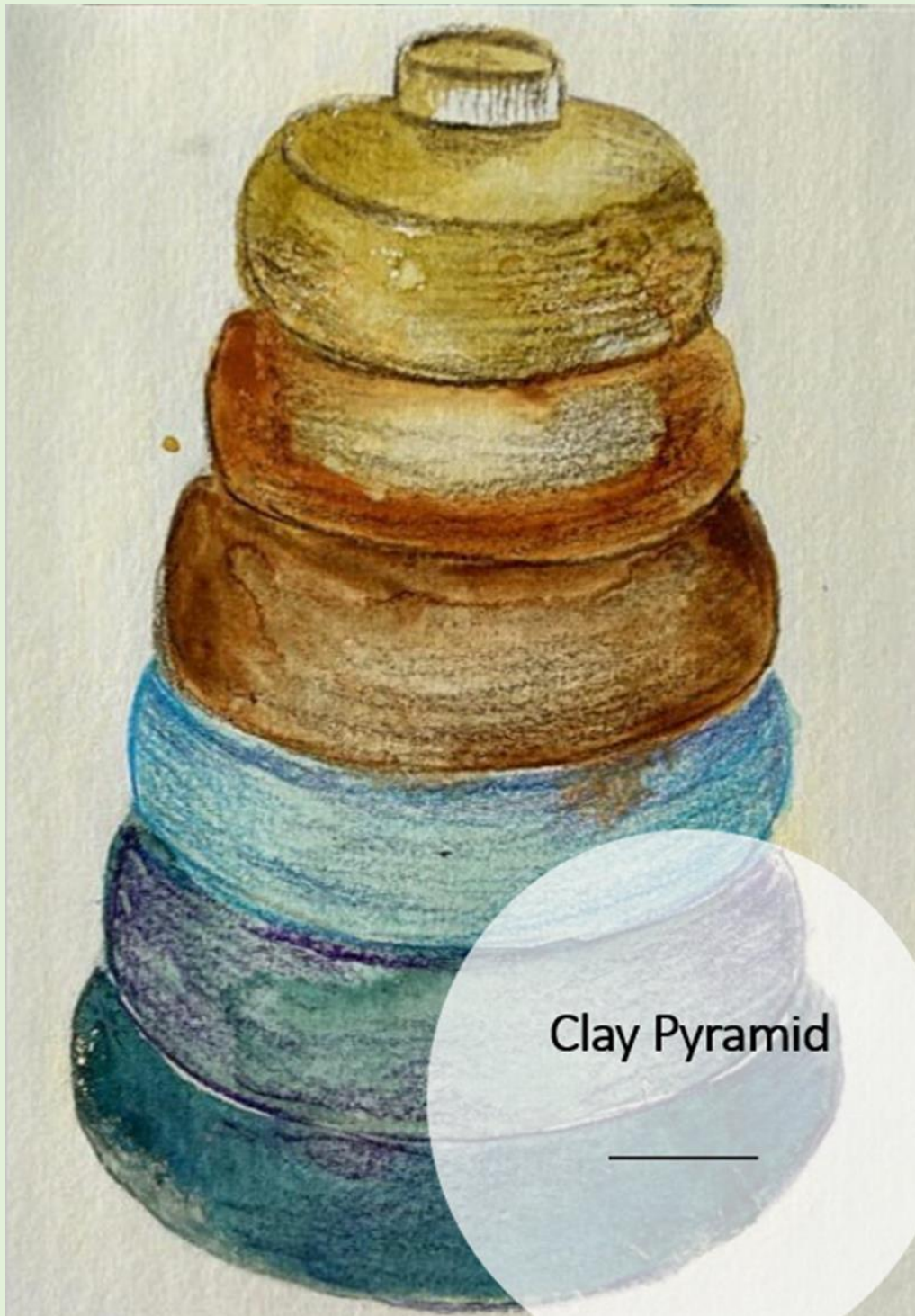
7. Children will keep pots in the sun for sun drying.
8. After sun drying a few pots will be baked in a kiln at different temperatures.

OBSERVATION:

1. They will observe that pots kept in the sun did dry up but will dissolve when immersed in water indicating that it was only a reversible form of physical change.
2. The pots baked in the kiln will retain their shape when even immersed in water indicating that an irreversible, chemical change has occurred.
3. The pots kept in the kiln/bonfire will turn reddish brown due to the oxidation of iron content in earthen clay.

PRECAUTIONS:

1. The temperature of the kiln should be increased gradually so that the water in the clay should evaporate, otherwise the steam inside the pot will expand and break the pots.
2. The kiln should be slowly cooled otherwise the pots will develop cracks.



Credits: Collaborative work of students of Grade VII

Sculpting is one of the greatest forms of fine arts. It is a representational and powerful form. It requires concentration, attention, dedication, and above all, vision.

Take a look around and try to make a list of things you can see. They may be of different shapes, sizes and colours. They may be of the same or different materials. Can you group things together according to certain properties?

Let's perform an activity to understand the concept of classification.

ACTIVITY #4

ACTIVITY: Making a clay pyramid and colouring it.

AIM: To classify the different types of material on the basis of their properties.

LEARNING OBJECTIVES:

Students will be able to:

- acquire a sense of creating representative models.
- improve fine motor skills and dexterity by using the tools and clay.
- observe the molecular arrangement in solids.
- understand the need of classification.
- develop the knowledge of different properties of materials.
- develop problem-solving, artistic skills and competency.

LEARNING OUTCOMES:

It will enable the students to:

- help the students in improving their concentration span.
- develop an understanding of the basic molecular structure in solids.
- develop observation skills.
- enhance the power of imagination and self-expression.

KEY VOCABULARY:

- Clay pyramid
- Classification
- Molecular arrangement

MATERIAL REQUIRED:

- Clay- 250gms (approx.)
- Water- small bowl
- Sand grains and fine gravel

PRE-REQUISITE KNOWLEDGE:

Students should have previous knowledge about:

- objects around them
- classification and its need
- properties of different materials

DURATION OF THE ACTIVITY: 1 hour

MODE OF ACTIVITY: INDIVIDUAL

SKILLS DEVELOPED:

- Motor Skills
- Kinesthetic Skills
- Aesthetic Skills
- Centring (an important skill used in pottery)
- Creative Skills
- Critical Thinking
- Communication Skills
- Approximation Skills

PREPARATION FOR THE ACTIVITY:

❖ Centring the clay

1. Arrange the material near a potter's wheel
2. Dampen the wheel head (should not be wet)
3. Moisten your hands to keep the clay damp
4. Place a ball of clay firmly on the centre of the wheel head
5. Set the wheel in an anticlockwise direction with low speed
6. Apply equal pressure with the palms (the left hand cupped around the clay and the right hand along the top)
7. Keep the arms and hands as steady as possible

PROCEDURE:

❖ Steps to make a Pyramid

1. Take a small piece of clay. Knead it until it is soft and smooth.



2. Divide the clay into two halves. Keep aside one portion of the clay.



3. Make a ball of the clay with the help of the palms of both the hands.



4. Using the right-hand thumb, make a depression in the centre of the ball.



5. Smoothen the sides using the pinch technique so as to give it a look of a small bowl.



6. Using both the thumbs make a big hole to form a doughnut-like structure.



7. Similarly, create another circular form with the other half of the clay. Create 7 different pieces of circular forms of different sizes in ascending order.



8. Take a round-shaped stand with a wooden base. Once the circular forms have dried, colour them in different bright colours. Slide them into the wooden stand, inserting the biggest form first. The Pyramid is ready.



9. Some of the shapes made can be textured by coating them with sand grains and fine gravel.

OBSERVATIONS:

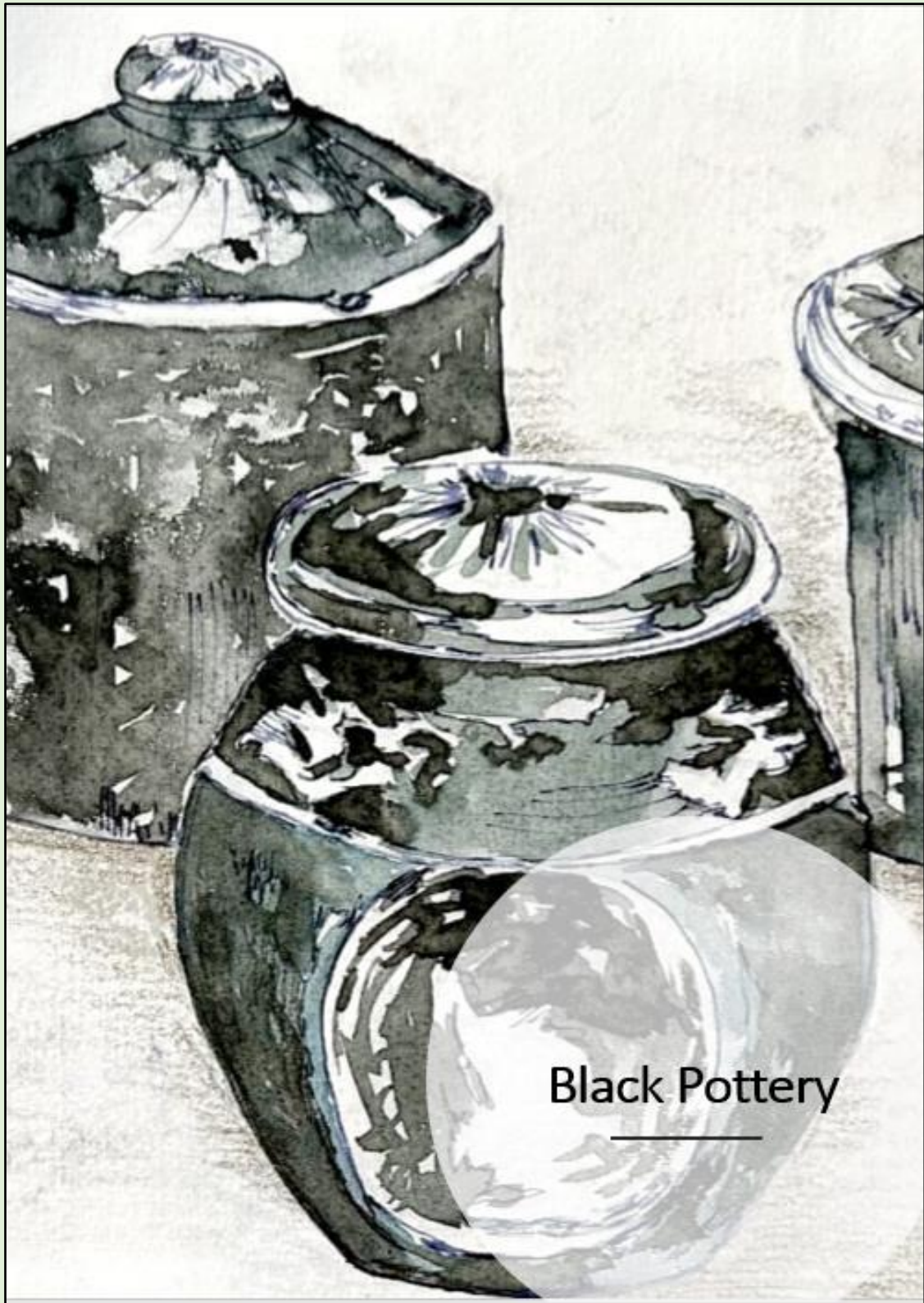
We will observe that the pyramids formed by the clay doughnuts are of different sizes, shapes, colours and textures.

CONCLUSION:

A clay pyramid is ready and its classification can be done on the basis of different properties such as diameter, texture and colour.

OBJECTIVE QUESTIONS:

1. Define classification.
2. What is the importance of classification in everyday life?
3. How do you think the arrangement of molecules is different in the three states of matter?
4. Why do solids, liquids and gases have different properties related to shape and volume?
5. Which two properties are common to all forms of matter?



Credits: Art Department



Source: NCERT TEXTBOOK- OUR PASTS II PAGE NO. 46

Surahi: Deepak, do you know that the above picture is a miniature painting (dated 1702-1712) of Timur, his descendants and the Mughal emperors?

Deepak: Timur, Mughals! Who were they, Surahi?

Surahi: Don't you remember in class ma'am had told us that the Mughals were the descendants of two great lineages of rulers? From their mother's side they were descendants of Genghis Khan, the Mongol ruler who ruled over parts of China and Central Asia. From their father's side they were the successors of Timur, the ruler of Iran, Iraq and modern-day Turkey. Mughal dynasty ruled India during the Medieval Period of Indian history.

Do you remember Aurangzeb?

Deepak: No, Surahi. Can you please tell me about him?

Surahi: Aurangzeb was the last of the great Mughal emperors. Under him the Mughal empire reached its greatest extent, although his policies led to its decline as well. The Mughal rulers who came to power after the death of Aurangzeb were known as the later Mughals. Later Mughals were weak and couldn't hold the vast Mughal empire together.

During Aurangzeb's reign, some clay potters from Kutch (Gujarat) had migrated to Azamgarh and settled at Nizamabad to earn a living. They created black clay pottery, which is unique and one of its kind in the world.

Deepak: Let us ask our teacher to help us create a black clay jar.

SOCIAL SCIENCE

Pottery is the art of handling clay and moulding it to create vessels and containers of myriad shapes. It gives us the freedom to express creativity and the ability to change something with our own hands.

ACTIVITY: Making a black jar.

Black Pottery of Nizamabad – A Magic with Clay!

AIM: To understand the origin and history of black pottery in medieval India and the various processes involved in the creation of this earthenware.

LEARNING OBJECTIVES:

Students will be able to:

- recognize the importance of local crafts such as pottery, and explain the evolution and development of black pottery as a craft.
- know the process and techniques used in black pottery.
- develop hand-eye coordination, perfect the dissociation of the hand, thumb, and fingers from the forearm and improve fine motor skills and dexterity through the usage of tools and clay.

LEARNING OUTCOMES:

It will enable the students to:

- understand the history, process and tools used in black pottery during the reign of Mughal emperor Aurangzeb and appreciate the floral and geometric designs used to create the earthenware.
- differentiate between black pottery and Bidri art form.
- inculcate the value of dignity of labour.

KEY VOCABULARY:

- Mughal
- Dynasty
- Mansab
- Engraved silver patterns- Nakkashi
- Nizamabad- Potter's village

MATERIALS REQUIRED:

- Clay- 250gms (approx.)
- Water- small bowl
- A small piece of sponge
- Black acrylic colour
- Thread/wire- for cutting the clay jar from the wheelbase

PRE-REQUISITE KNOWLEDGE:

Students should have previous knowledge about:

- the great Mughal rulers
- the evolution of clay articles in India
- the pottery and earthenware (which are distinctly utilitarian and often decorative)
- potters from different parts of India who have developed their own styles

DURATION OF THE ACTIVITY: 2 hours

MODE OF ACTIVITY: INDIVIDUAL

SKILLS DEVELOPED:

- Motor Skills
- Kinesthetic Skills
- Aesthetic Skills
- Centring (an important skill used in pottery)
- Creative Skills
- Critical Thinking

PREPARATION: 10 minutes

❖ Steps for centring the clay

1. Arrange the material near a potter's wheel.
2. Dampen the wheel head (should not be wet)
3. Moisten your hands to keep the clay damp.
4. Place a ball of clay firmly on the centre of the wheel head.
5. Set the wheel in an anticlockwise direction with low speed.
6. Apply equal pressure with the palms (the left hand cupped around the clay and the right hand along the top).
7. Keep the arms and hands as steady as possible.

PROCEDURE:

❖ Steps to make a Black Jar

1. Once the centring is done, tap the clay with the thumb and sides with the palm several times.



2. Move your hands upwards from the sides of the clay with both hands to shape it into a cone.



3. Repeat this as many times as needed to mould the clay into the desired width and height.



4. Press down with the thumb to form an incision, while the rest of the fingers stay outside the clay to help maintain the desired shape.



5. The rim of the jar will be wide at this point.



6. Insert the hand into the jar and position it near the base of the jar (the speed of the wheel should be medium). This will help to form the curve on the inside of the jar.



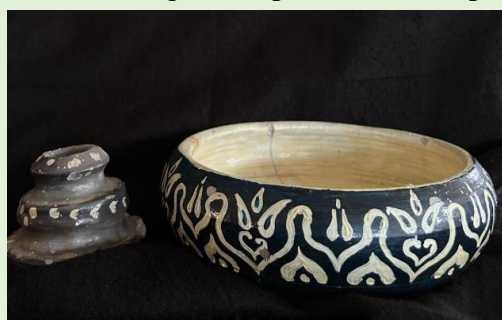
7. Take a thread or a wire, push it against the base of the jar with the thumbs or index finger. Run it all the way through, keeping it tight and straight.



8. The jar is ready. Colour it with black paint.



9. Take a fine needle tool to cautiously engrave delicate designs and patterns on the pots.



OBSERVATION AND CONCLUSION:

1. Black pottery is a unique style of pottery from Nizamabad in Uttar Pradesh.

2. The silver patterns used in black pottery are inspired by Bidriware in Hyderabad.
3. Pottery developed as a response to the needs of mankind.
4. This art is a gift from our ancestors and needs to be preserved.

OBJECTIVE QUESTIONS:

1. Who was the first Mughal emperor in India?
2. Name the battle fought between the first Mughal emperor and Ibrahim Lodi.
3. What was the residence of Mughal emperors in Delhi called?
4. Which city in Uttar Pradesh is famous for black pottery?
5. During which Mughal emperor's reign did the art of black pottery develop?

LINKS AND REFERENCES:

- **Settlement of clay potters at Nizamabad**

Link: <http://www.blog.authindia.com/silver-lining-in-the-muddy-lanes-nizamabad-pottery/>

- **Processes involved in black pottery of Nizamabad**

Link: <https://www.youtube.com/watch?v=nkPO7KMSRGU>

- **Difference between Bidriware and black pottery of Nizamabad:** Bidriware is one of the exquisite metal crafts of India. Silver wires or silver sheets are used for inlaying on a black background of metal. The black pottery is made with locally available fine textured clay and silver paint or powder is used to make designs on black background. The silver colour is produced by mixing lead, zinc and mercury.

- **Artisans of black clay pottery:** The Prajapati community specialises in this art.

Link: <https://www.hintoftradition.com/post/black-pottery-nizamabad#:~:text=Black%20Pottery%20of%20Nizamabad%20is,silver%20motifs%20on%20its%20surface.&text=Around%20500%20registered%20pottery%20artists,and%20his%20wife%2C%20Pushpa%20Prajapati.>

- **Condition of Potters in India:** There used to be times when potters were an integral part of our society. With the modern equipment catching up among the people, potters are vanishing fast from the social scene. Their number is declining every year as the modern utensils and items made of rubber, steel, plastic and other materials are replacing traditional apparatus made of clay.

Link: <https://www.thestatesman.com/lifestyle/the-dying-culture-of-pottery-in-india-1502765323.html>

- **Government initiatives and policies:** The Indian government is taking steps to promote the traditional pottery community by providing marketing support through haats, fairs, promoting clay cups in railways etc.

Link 1: https://www.youtube.com/watch?v=XJKET_N4QBk

Link 2: <https://indianexpress.com/article/india/hunar-haat-playing-key-role-in-making-vocal-for-local-campaign-a-mass-movement-naqvi-7207282/>

Glossary

Amalgamating: combine or unite to form one organization or structure.

Anticipating: regard as probable; expect or predict.

Antiquarian Heritage: means a study of history with particular attention to ancient artefacts and manuscripts, as well as historical sites. A study of old and valuable rare objects connected with the trade.

Area: The region enclosed by a closed figure is called its area.

Artefacts: Artefact is a combination of two Latin words 'arte' meaning 'by skill' and factum which means 'to make'. It refers to an object, such as a tool, that was made or crafted in the past that has some kind of cultural significance.

Artisans: a worker in a skilled trade, especially one that involves making things by hand

Baked: Cooked by dry heat in an oven

Bidriware: Bidriware is a renowned metal handicraft that derives its name from Bidar a city, presently in Karnataka.

Chemical Change: Change in which chemical properties of a substance change. In a chemical change a new substance is formed.

Circle: A circle is a plane figure made up of collection of all the points which are equidistant from a given point.

Circumference of a circle: The distance around a circular region is known as its circumference.

Classification: method of grouping things with similar properties together

Clay Soil: is a heavy soil type that benefits from high nutrients

Coil: a piece of clay rolled like a rope, used in making pottery.

Convergence: the process of two or more things come together to form a new whole.

Corrode: weaken gradually

Cost price: The amount paid for a product or commodity to purchase it is called its cost price.

Density: mass per unit volume of a substance.

Descendants: It refers to someone (a person) who descends from a particular ancestor.

Diameter: A line segment which passes through the centre of the circle and whose end points lie on the circle is known as a diameter.

Discount: The difference in the marked price and the selling price of an article is known as discount.

Dynasty: A line of hereditary rulers of a region.

Evaporation: The process of changing of water into water vapours.

Furnace: An enclosed structure used for heating house or for reducing ore

Heat: The form of energy that is transferred between objects with different temperatures

Inlay: A design, pattern, or piece of material inlaid in enamelwork, furniture decoration, lacquerwork, and metalwork.

Irreversible Change: A change which cannot be reversed.

Kiln: A heated enclosure used for firing pottery

Lineage: Lineage is defined as the descendants of a common ancestor. An example of lineage are people who all have the same common relative.

Loam: a fertile soil of clay and sand containing humus.

Loss: If a product is sold at a price less than its cost price then the seller makes a loss.

Mansab: A position or rank under Mughal administration.

Manuscripts: a book or a document written by hand rather than typed or printed.

Matter: anything that occupies space and has mass.

Millenia: an anniversary of a thousand years.

Miniature painting Miniatures are small, highly detailed paintings. This art form reached its zenith during the Mughal rule.

Mixture: A substance formed by mixing two or more components in any ratio.

Mughals: The Mughals were descendants of two great lineages of rulers. From their mother's side they were descendants of Genghis Khan, the Mongol ruler who ruled over parts of China and Central Asia. From their father's side they were the successors of Timur, the ruler of Iran, Iraq and modern:day Turkey.

Nakkashi: It means carving i.e carving on an object or design that has been cut out of stone or wood.

Percentage: Percentages are numerators of fractions with denominator 100. Per cent means per hundred.

Percolation rate: means the rate of water movement through a soil sample.

Percolation: the movement and filtering of fluids through porous materials.

Perseverance: doing something despite difficulty or delay in achieving success

Physical Change: Change in which only the physical properties of a substance change such as shape, colour, texture, density and mass. In a physical change no new substance is formed.

Profit: If a product is sold at a price more than its cost price then the seller makes a profit.

Reversible Change: A change which can be reversed.

Selling price: The amount for which the product is sold is called its selling price.

Silt: fine sand, clay, or other material carried by running water and deposited as a sediment, especially in a channel or harbour.

Temperature: Degree of hotness or coldness measured on a definite scale.

Unitary method: It is the method of finding the value of a single unit, and then finding the necessary value by multiplying the single unit value.

पेशीय कौशल— पेशीय कौशल से मतलब है हाथ, कलाई, उँगलियों और पैरों से जुड़ी छोटी-छोटी मॉसपेशियों का इस्तेमाल व इनके बीच तालमेल ।

ललित कला— ललित कला वह कला है जो कलाकार एवं दर्शक के अन्तर्मन को स्पर्श कर मन को मुग्ध करती है ।

वृत्ताकार — चक्र के आकार का ।

मनका — लकड़ी, धातु , पत्थर आदि का गोल टुकड़ा जिसके बीचों-बीच छेद होता है तथा जिसे माला के रूप में पिरोया जाता है ।

हस्तकला— ऐसा कलात्मक कार्य जो उपयोगी होने के साथ-साथ सजाने के काम आता है तथा जिसे मुख्यतः हाथ से या सरल औज़ारों की सहायता से ही बनाया जाता है ।

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