

# Skill Manual

Pottery  
Grade VIII



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 फकीर ।

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

-दीप्ति सिंह





## Coins

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Credits: Collaborative work of students of Grade VIII



*In the 17<sup>th</sup> century, the French currencies - franc and livre silver coins had depreciated in value to such an extent that by the year 1640, coins of a larger denomination were needed. The French kings, therefore, had gold coins produced and named after them, i.e., **Louis** or **Louis d'or** ('gold Louis'). After the Revolution, Napoleon continued the practice but called the coins '**Napoleons**'. They had a value of 20 francs.*



Source: <https://www.metmuseum.org/art/collection/search/825981>

### Double Louis d'Or

## FRENCH

**ACTIVITY:** Making currency coins in the reign of Louis XIV (**Double Louis d'Or**)

**AIM:**

To familiarise students with:

- currency during the reign of Louis XIV
- socio-political and economic conditions of France
- cultural background of that era

**LEARNING OBJECTIVES:**

Students will be able to:

- get an insight into French politics, arts and culture in the 17th century.
- acquire the skills of moulding and carving.
- learn the intricacies of designing a coin.

**LEARNING OUTCOMES:**

It will enable the students to:

- know the history of France and the currency used during that period
- learn a new skill - Pottery
- acquire knowledge about France during the 17th century
- develop new vocabulary related to history

**MATERIALS REQUIRED:**

- Clay- 20 g (approx.)

- Bottle-cap/Cutter
- Toothpick/Pencil (sharp)- for carving a stamp/design.
- Ruler
- Acrylic colours
- Paint brush
- Rough paper/newspaper

#### **PRE-REQUISITE KNOWLEDGE:**

- Different types of clay
- Clay water ratio
- Skill of stamping and moulding
- Knowledge of colour mixture

**DURATION OF THE ACTIVITY:** 2 hours

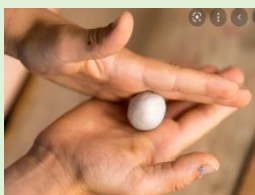
**MODE OF ACTIVITY:** Individual

#### **SKILLS DEVELOPED:**

- Motor Skills
- Aesthetic Skills
- Creative Skills

#### **PROCEDURE:**

1. Prepare a dough of clay.
2. Make a rough shape of a coin.
3. Measure the diameter ~5-6cm using a ruler.
4. Cut out the coin using a cutter/bottle cap.
5. Carve out the image shown below using a toothpick/pencil.
6. Let it dry.
7. Paint the coin with golden colour.



Picture 1 - <https://www.hellowonderful.co/post/diy-clay-alphabet-bead-craft/>

Picture 2 - <http://blog.susanevans.org/roman-coins-craft/>

Picture 3 - <https://www.pinterest.co.uk/pin/766878642769154286/>

Picture 4 - <https://www.metmuseum.org/art/collection/search/825981>

#### **CONCLUSION:**

The introduction of coins eased the process of trade and helped the economy.

**OBJECTIVE QUESTIONS:**

1. Who introduced the Louis d'Or coin?
2. In which year was the coin, Louis d'Or XIV introduced?
3. When was the Louis d'Or discontinued?



## Bowls

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Credits: Collaborative work of students of Grade VIII



The production of West German pottery began in the year 1949. The end of World War II, saw an abundance of skilled labourers as well as an increase in demand for decorative items and utensils such as vases, jugs and bowls. This gave impetus to the local industry to manufacture West German Pottery. The specialities of this form of pottery are its expressive colours and exquisite designs.

As a means of distinguishing this style of pottery from other forms, a three-digit number followed by a dash and 2 digits are printed/ embossed at the bottom of each item.

This denotes the origin, time period and design of the item.



**ACTIVITY:** Students will make a bowl out of clay and showcase their creativity using a sponge and colours.

**AIM:**

To familiarise the students with:

- the culture of Germany
- the various forms of pottery

**LEARNING OBJECTIVES:**

Students will be able to:

- showcase their unique pottery skills and speak about their experiences.
- learn the various forms of pottery used in Germany.

**LEARNING OUTCOMES:**

It will enable the students to:

- learn pottery making as a skill and create different objects.
- recognize his/her tastes and interests.
- express themselves in a creative way.
- learn to expand his/her vocabulary (by identifying actions and materials, making associations, expressing thoughts and feelings).

**MATERIALS REQUIRED:**

- Clay
- Paints
- Paint brush
- Sponge
- Water- small bowl
- Potter's wheel
- Thread/wire- for cutting the clay from the wheelbase.

**DURATION OF THE ACTIVITY:** 2 hours

**MODE OF ACTIVITY:** Individual

**SKILLS DEVELOPED:**

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

**PROCEDURE:**

❖ 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.
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.

❖ Steps to make a circular bowl

1. Once the clay is centred, clasp both hands around the clay and push forward the wrists.
2. This will force the clay upwards.
3. Make a depression in the centre of the clay with the index finger.
4. Use the thumb of the left hand to keep the finger steady and press down into the clay until the fingertip is almost down to the wheel head.
5. Place the fingers against the inside wall of the vessel and thumbs outside to form the wall of the vessel.
6. Squeeze the sides upwards with your hands such that it comes in a circular shape. This movement will start giving the bowl a right circular shape.
7. Take a thread or a wire and push it against the base of the bowl with the thumbs or index finger. Run it all the way through, keeping it tight and straight.
8. The bowl is ready.
9. Once the bowl dries, use a sponge to create the effect. Paint the bottom of the bowl with acrylic colours of your choice.



Source- WIKIPEDIA



**OBJECTIVE QUESTIONS:**

- Q1. When did West German Art Pottery start?  
Q2. What is West German Pottery known for?  
Q3. Name two producers of West German Pottery.



# Tiles

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Credits: Collaborative work of students of Grade VIII



Tile making from mosaic, porcelain, paper mache and various other raw materials can be found in almost every culture and dates back to the Sumerian and Mesopotamian civilisation. The origin of Spanish tiles goes back thousands of years. Tile making is a manifestation of the artistic and aesthetic side of human creativity. The designs, variety, colours and uniqueness have no boundaries and can reflect the creative side of human nature across the world. During Medieval times and before the Muslim invasion in the year 711, ceramics were extensively produced in Southern and Coastal Eastern Spain, including tiles for designing and manufacturing practical pieces, mosaic art pieces, roof tiles, fountains, and so on.

The decline of the Spanish empire had the country in deep economic and political distress. The influence of the neighbouring countries of the Atlantic increased in the Mediterranean and the expulsion of the Moors had catastrophic effects on the economy and culture of Spanish tiles. Spanish ceramics' downfall continued into the 17th century. Nevertheless, it is noted that some of the highest quality and artistic tile art was made during this time.



Source: t0.gstatic.com <https://images.app.goo.gl/zMAAn1JQgWWhUCyvg8>

# SPANISH

**ACTIVITY:** Students will make tiles influenced by Spanish designs.

**AIM:** To familiarise the students with:

- the culture of Spain.
- the various forms of ceramic art & pottery.

**LEARNING OBJECTIVES:**

Students will be able to:

- showcase their unique art skills in preparing tiles and would speak about their experiences of performing the activity.
- learn the various forms of Spanish artefacts.

**LEARNING OUTCOMES:**

Any creative activity leads to a learning experience. Similarly, any learning experience leads to creativity.

- This learning experience can have a wide variety so as to depict almost every aspect of human thought and action. It can also incorporate the plant and animal world, animate and inanimate psychic creations and geometrical patterns of various shapes and sizes which lead to boundless creativity.
- An important aspect of this kind of art and creation is that it can be two or three-dimensional which can add life to the art form.

**MATERIALS REQUIRED:**

- Clay
- Paint
- Paint brush
- Water- small bowl
- Thread/wire- for cutting the clay into a perfect square.

**DURATION OF THE ACTIVITY:** 2 hours

**MODE OF ACTIVITY:** Individual

**SKILLS DEVELOPED:**

- Motor Skills
- Aesthetic Skills
- Creative Skills
- Critical Thinking
- Communication Skills
- Approximation Skills

**PROCEDURE:**

❖ Steps for preparing the clay

Clay preparation, either by dry grinding or by wet milling and atomisation.

❖ Steps to make a tile

1. Forming or moulding of the tile by either dry pressing or extrusion.
2. Glaze preparation.
3. Drying, glazing and decoration of the tile.

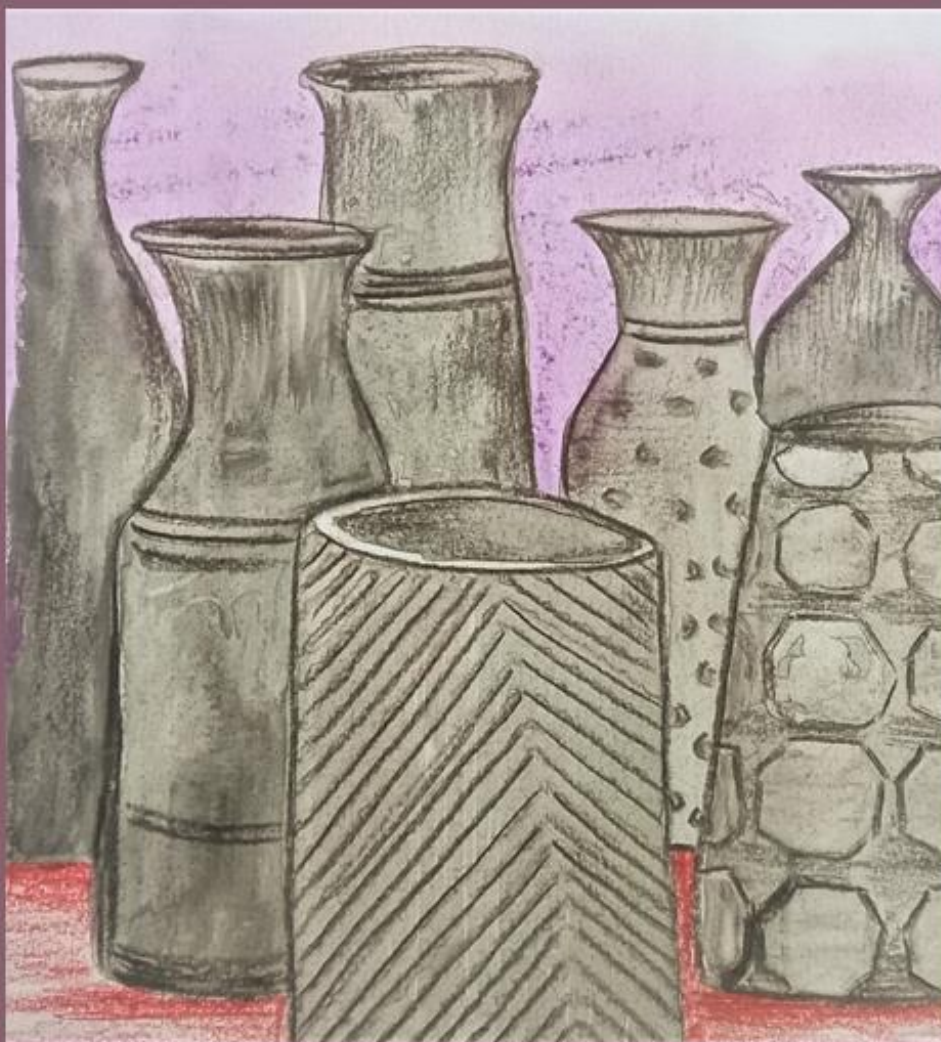


Source: <https://images.app.goo.gl/gJX6xFZcmmzhswxX6>

**OBJECTIVE QUESTIONS:**

- Q1. When was ceramic used extensively in Spain?
- Q2. Which civilizations influenced the designs of Spanish tiles?
- Q3. Trace historical reasons for the downfall of Spanish ceramics.





## Cylindrical vessel

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Credits: Collaborative work of students of Grade VIII

It was the pottery class in Rohan and Reema's school. They were quite amazed to see their mentor making the right circular cylindrical vessels with great finesse. Also, they had just learnt about the right circular cylinders and the formulas to calculate their volume and surface area in their Math class, so they decided to make one of their own, and find its volume and surface area.

Let's join them and find out more about it.



# MATHEMATICS

## ACTIVITY #1

**ACTIVITY:** Making right circular cylindrical vessel on a potter's wheel.

**AIM:** To calculate the volume and surface area (curved surface area) of different cylindrical vessels.

### **LEARNING OBJECTIVES:**

Students will be able to:

- differentiate between the lateral/curved and total surface area of a particular object.
- understand how changes in dimensions (radius and height) affect the surface area and volume.
- find the volume and surface area of a cylindrical vessel.
- use the approximation technique to find out and compare the volume of the cylindrical vessels.
- develop problem-solving skills.
- communicate mathematical ideas with others.

### **LEARNING OUTCOMES:**

It will enable the students to:

- improve their concentration span.
- apply the approximation technique to find out the volume of a cylindrical object.
- be confident in applying the concepts of volume and surface area in their day-to-day lives.

### **KEY VOCABULARY:**

- Right Circular Cylinder
- Surface area: Total Surface Area and Curved Surface Area
- Volume

### **MATERIALS REQUIRED:**

- Clay- 250gms (approx.)
- Water- small bowl
- A small piece of sponge
- Thread/wire- for cutting the clay cylinder from the wheelbase.
- Potter's wheel
- Measuring tape
- Ruler
- Measuring cylinder
- Acrylic colours
- Paint brush

**PRE-REQUISITE KNOWLEDGE:** Students should have previous knowledge about the:

- characteristic features of 2D and 3D shapes
- area of a rectangle and a circle
- circumference of a circle
- right circular cylinder
- total surface area and lateral surface area
- conversion of units

**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
- Communication Skills
- Approximation Skills

**PREPARATION FOR THE ACTIVITY:**

❖ **Steps for centring the clay**

1. Arrange the materials 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.
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 Right Circular Cylindrical Vessel**

1. Once the clay is centred, clasp both hands around the clay and push forward with the wrists. This will force the clay upward.



2. Make a depression in the centre of the clay with the index finger. (Wheel speed - fast)



3. Use the thumb of the left hand to keep the finger steady and press down into the clay until the fingertip is almost down to the wheel head.



4. Place the fingers against the inside wall of the vessel and thumbs outside to form the wall of the vessel.



5. Squeeze the sides of the vessel upwards with your hands such that the radius of the cylinder remains constant throughout. This movement will start giving the vessel a right cylindrical shape. (Wheel speed - medium)



6. Move hands upwards slowly and steadily with clay, applying even pressure all the time.



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



8. The cylindrical vessel is ready.
9. Once the vessel dries, paint the bottom of the vessel with acrylic colours of your choice.
10. Using a measuring tape, students will find out the height of the cylindrical vessel.
11. They will find out the diameter and thus the radius of the cylindrical vessel by tracing its boundary on a sheet of paper as indicated in the given video link.  
LINK: [https://youtu.be/j9fZ5H1BH\\_0](https://youtu.be/j9fZ5H1BH_0)
12. Take a rectangular sheet of length 'l' cm and breadth 'b' cm and wrap it around the curved surface of the vessel.
13. Fill the cylindrical vessel with water up to its brim and measure the volume of water contained in the vessel using a measuring cylinder.

### **OBSERVATIONS AND CALCULATIONS:**

For a cylindrical vessel, **Height (h)** = \_\_\_\_\_ cm. **Radius (r)** = \_\_\_\_\_ cm

i) **Curved surface area** =  $2\pi rh$

= \_\_\_\_\_ sq cm.

ii) **Area of rectangular sheet** (used to wrap) = length  $\times$  breadth

= \_\_\_\_\_ sq cm

iii) **Area to be painted** = **Area of the bottom face** =  $\pi r^2$

= \_\_\_\_\_ sq cm

iv) **Volume of the vessel** =  $\pi r^2 h$

= \_\_\_\_\_ cubic cm

v) **Volume of the water as per the measuring cylinder** = \_\_\_\_\_ ml/ litres

= \_\_\_\_\_ cubic cm

1 cubic cm = 0.001 litres.

1 cubic cm = 1 ml

### **CONCLUSION:**

1. The curved surface area and volume of the cylindrical vessel is \_\_\_\_\_ sq cm and \_\_\_\_\_ litres, respectively.
2. The area of the rectangular sheet used is equal to the curved surface area of the vessel.



3. The quantity of water filled in the vessel is equal to the volume of the vessel.

**OBJECTIVE QUESTIONS:**

1. If the surface area and the volume of a cylinder are numerically equal, then what is the height of the cylinder?
2. If in a cylinder, the radius is doubled and height is halved, then what will be its curved surface area?
3. If the radii of two cylinders of the same height are in the ratio 4:5, then what will be the ratio of their volumes?
4. The curved surface area of a cylinder is  $176 \text{ cm}^2$  and the area of its base is  $38.5 \text{ cm}^2$ . Find the volume of the cylinder. (Take  $\pi = 22/7$ )
5. A cylindrical vessel of diameter 84 cm and height 18 cm contains milk. This milk is to be filled in cylindrical tumblers of radius 7 cm and height 6 cm. Find the number of tumblers that can be filled with milk.



## Pinch Pot

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Credits: Collaborative work of students of Grade VIII

Rohan and Reema run a small business of spices and pulses in their small town. They got to know that a trade fair was about to start in Gurgaon. They both wanted to expand their business so they decided to put up a stall at the trade fair. They came to know that the use of plastic was banned. So, to avoid plastic and make their stall more attractive, they both decided to make beautiful pinch pots from clay, to keep their spices. They started researching about the process of making pinch pots and during their research they came to know about the composition of clayey soil which in turn is used to make clay and thus the pinch pots.

What do you think? What is the composition of clayey soil? How is clay obtained from clayey soil?

Let's perform an activity to find the answers to the above questions.

## ACTIVITY #2

**ACTIVITY:** Making a classic pinch pot with soft natural clay.

**AIM:** To draw a pie chart depicting the composition of clayey soil.

**LEARNING OBJECTIVES:**

Students will be able to:

- learn about the major components of the clayey soil which in turn is used to make the pinch pots.
- draw a pie chart depicting the main components of clayey soil.
- develop problem-solving skills.
- use and communicate through mathematical ideas.

**LEARNING OUTCOMES:**

It will enable the students to:

- improve the concentration span.
- develop cognitive skills of the students.
- learn to draw a pie chart.
- interpret the data presented on a pie chart.

**KEY VOCABULARY:**

- Data
- Circle
- Central angle
- Ratio/percentage
- Sector of a circle

**MATERIALS REQUIRED:**

- Clay- 250gms (approx.)
- Water- small bowl
- A small piece of sponge
- Geometry Box
- Acrylic colours
- Paint brush
- Sandpaper
- Flat Board

**PRE-REQUISITE KNOWLEDGE:** Students should have previous knowledge about:

- circle and its parts
- how to find the central angle
- how to draw angles using a protractor

**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
- Communication Skills

**CONCEPTUAL BACKGROUND:**

❖ **Steps for making clay**

Collect some soil from beneath the topsoil.

1. Mix water into the soil and thoroughly stir the mixture. You should eliminate all clumps and have an even mixture of water and soil.
2. Let the mixture sit till the sediments settle down. Add water, stir the mixture, let it set, and pour the clay water into another container. Each time you do this, the clay will be purer. Ideally, you will continue the process until you see no sediments at the bottom.
3. Pour the clay onto a cloth. Lay the cloth over a bowl to help guide the runny clay through the cloth. The cloth must be large enough to encompass all of the clay in your container. The cloth will act as a bag for the clay. Tie the cloth with a piece of string, as though you are creating a ball of clay inside the cloth.
4. Thus, clay is obtained from clayey soil which consists mainly of minerals. The three main minerals in clayey soil are alumina, iron oxide and silica.

The composition of clayey soil is represented in the table given below.

Components of clayey soil	Composition (approximate %)
Organic Matter	5
Iron oxide	7
Others	12
Alumina	20
Silica	56



## **PROCEDURE:**

### ❖ Steps to make a pinch pot

1. Take a small piece of clay. Gently pat and roll the clay in your hands to make a nice, neat ball.



2. Then supporting the clay ball in one hand, press the thumb of your other hand into the clay. The thumb needs to be pressed into the centre of the clay.



3. Once the thumb is far enough into the clay, stop pushing and start pinching! Keep the fingers straight and pinch the whole ball of clay. This will help compress the clay into a bowl shape.



4. Continue to pinch and rotate the clay. The clay ball will begin to open out into a bowl shape.



5. Dampen the hands and blend the dry cracked areas with the tip of the finger.



6. Once the bowl is ready, smoothen the outer surface with sandpaper.



7. A smooth, shiny pinch pot is ready.





Students will draw a pie chart depicting the composition of clayey soil using the data provided in the given table on page 28.

### Steps to construct a pie chart

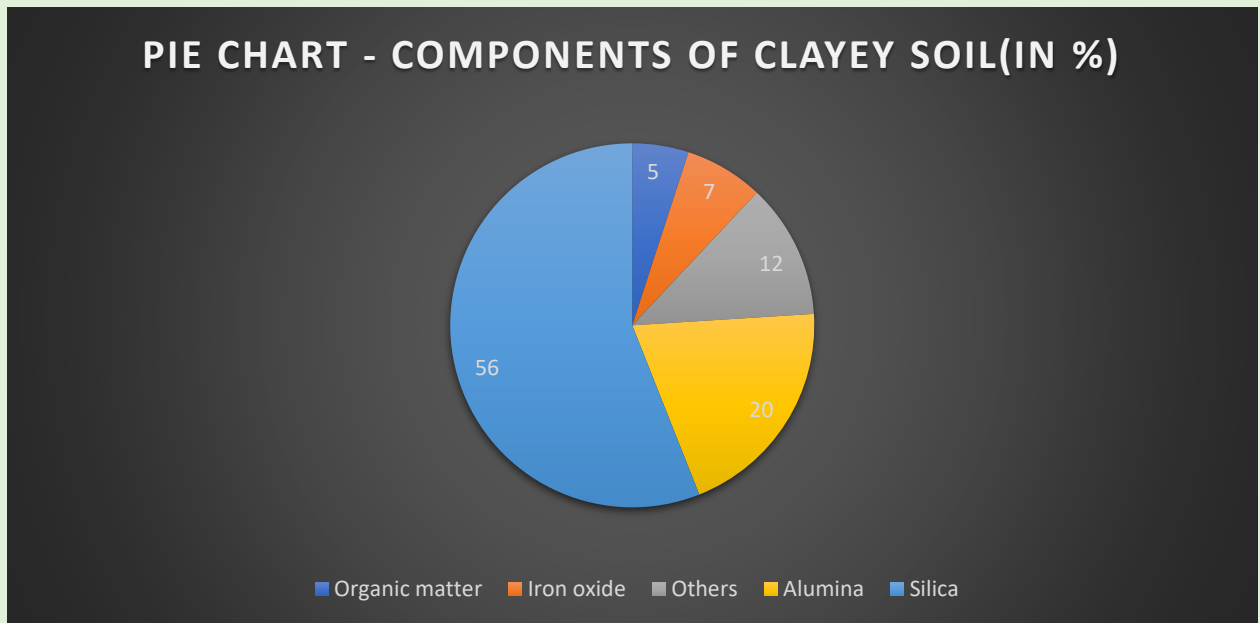
1. Calculate the central angle for each component of the clayey soil using the formula  

$$\text{Central angle} = \frac{\text{Percentage of the component in clayey soil}}{100} \times 360^\circ$$
2. Draw a circle of convenient radius.
3. Within this circle, draw a horizontal radius.
4. Starting with the horizontal radius, draw radii making central angles corresponding to the values of the respective components, till all the components are exhausted. These radii divide the whole circle into various sectors.
5. Label each sector.

### OBSERVATIONS AND CONCLUSION:

Components of clayey soil	Composition (approximate %)	Central angle of each component
Organic Matter	5	
Iron oxide	7	
Others	12	
Alumina	20	
Silica	56	

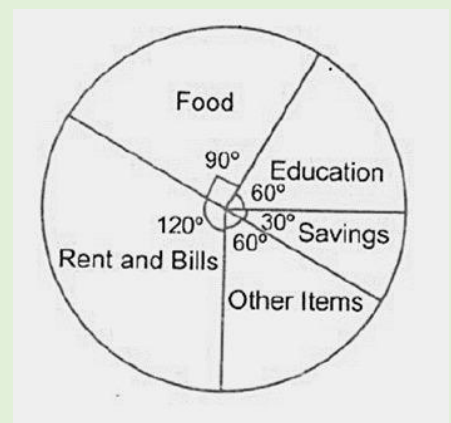
Students will be able to represent the given data through a pie chart which looks like the one given below:



### **OBJECTIVE QUESTIONS:**

The monthly income of a family is Rs. 1,20,000. The adjoining pie chart shows how the family uses the money. Study the pie chart and answer the following questions:

- (i) How much amount was spent on food?
- (ii) How much amount was spent on education?
- (iii) What were the total savings of the family?
- (iv) How much was spent on rent and bills?
- (v) Find the ratio of the amount spent on other items to that spent on food.





Credits: Collaborative work of students of Grade VIII

**‘A vessel is formed from a lump of clay with care, however, it is the empty space within the vessel that makes it useful.’**

One day Neha and Yash went to a musical event. They were amazed to see the artists performing using instruments like Ghatam, Jaltarang, Mridangam etc.

**Yash :** Amazing! How is this earthen pot producing such lovely music?(looking at the Ghatam)

**Neha:** Look at these bowls, they are producing music. (Pointing at jal-tarang)

**Yash:** Can we also create something like this?

**Neha:** Let’s find out the science behind this, by making our own musical instruments.

# SCIENCE

## ACTIVITY #1

**ACTIVITY:** Making shallow bowls of different sizes on a potter's wheel.

**AIM:** To understand the propagation of sound through different media.

### **LEARNING OBJECTIVES:**

Students will be able to:

- understand the basic scientific principles involved in the production of sound.
- discuss the propagation of sound in various media.
- acquire a sense of creating representative models (clay figures).
- understand the dissociation of the hands, thumbs and fingers from the forearm.
- differentiate between music and noise.

### **LEARNING OUTCOMES:**

It will enable the students to:

- understand the production and propagation of sound.
- learn that sound needs a medium for propagation.
- know about various types of musical instruments.
- develop their creative skills and self-expression.
- build their imagination and boost self-esteem.
- develop problem-solving skills.
- develop an understanding about the importance of clay as an eco-friendly and natural material and its vast usage.

### **KEY VOCABULARY:**

- Production of sound
- Medium for propagation
- Sources of sound

### **MATERIALS REQUIRED:**

- Clay- 250gms (approx.)
- Water- small bowl
- A small piece of sponge
- Thread/wire- for cutting the clay cylinder from the wheelbase
- Potter's wheel
- Measuring tape
- Ruler
- Measuring cylinder
- Acrylic colours
- Paint brush



- Water to fill in the bowl
- A pencil
- Seven ceramic bowls
- Seven metal bowls

### **PRE-REQUISITE KNOWLEDGE:**

Students should have previous knowledge about:

- Different kinds of sounds in nature
- Amplitude
- Frequency
- Pitch of sound

**DURATION OF THE ACTIVITY:** 90 minutes

**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

### **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 in 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 bowls (different sizes)

1. Once the clay is centred, clasp both hands around the clay and push the wrists forward. This will force the clay upwards.



2. Make a depression in the centre of the clay with the index finger. (Wheel speed fast)



3. Use the thumb of the left hand to keep the finger steady and press down into the clay until the fingertip is almost down to the wheel head. Remove the extra clay.



4. Note that the thumb helps in squeezing the clay. The bowl is ready.



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



6. Once completely dry, colour it with organic colours.



7. Make seven clay bowls of different sizes to create the musical instrument.
8. Take the bowls and fill them with water up to different levels.
9. Now take a pencil and strike the bowls gently one by one.
10. Strike all the bowls in succession.
11. Now repeat steps 8, 9 and 10 using ceramic and metal bowls.

### **OBSERVATIONS:**

- Waves are produced on the surface of water.
- Pleasant sounds of different notes are heard.
- Bowls of different materials produce different sounds.

### **CONCLUSION:**

- When we hit a cup with a pencil, water waves are produced due to vibrations in it.
- These vibrations travel through the water in the bowl and after striking the surface of the bowl, produces vibrations and different sound.

- When the water in the bowl is increased, the frequency or the pitch of the sound increases too.
- The cup containing minimum water produces the sound of lowest frequency.
- Thus, in this way by changing the water level in the different bowls of Jal- tarang, sounds of different frequencies can be produced.
- The pitch of sound varies with clay and ceramic bowls due to mass per volume.

**OBJECTIVE QUESTIONS:**

1. How is sound produced?
2. What is the range of audible frequency of human ear?
3. Identify the parts which vibrate to produce sound in the following instruments.

<b>Name of the instrument</b>	<b>Part that vibrates</b>
<b>Sitar</b>	
<b>Flute</b>	
<b>Tabla</b>	

4. Why do we fill the bowls with different water levels?



## Clay Matka

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Credits: Collaborative work of students of Grade VIII

**The art of pottery enables us to express our creativity, helps with self-identification, self-expression and self-esteem. While spinning the wheel, we connect with ourselves and the environment.**

You may have seen beautiful pots of different shapes and sizes. Today in our pottery class, we will learn various steps of making pots and also transforming those pots into an amazing water filtration system.

Let's begin this amazing journey of transformation.

## ACTIVITY #2

**ACTIVITY:** To make a clay water filter jug.

**AIM:** To understand the process of purification of water using pots made in different states of India.

**LEARNING OBJECTIVES:**

Students will be able to:

- acquaint themselves with the history and journey of the water filtration system.
- understand the process of purification of water.
- list the methods involved in the filtration process.
- understand the scientific process of pottery making.
- identify the chemical changes taking place in the process of pottery making.
- design a creative clay water filter jug using their imagination and innovation.
- improve their fine motor skills and dexterity through the usage of tools and clay.

**LEARNING OUTCOMES:**

It will enable the students to:

- develop an understanding of the natural ways of purification of water.
- develop their aesthetic and creative sensibilities.
- be more aware about pottery and ceramics as a potential career.
- gain knowledge about new tools and techniques used in a water filtration system.

**KEY VOCABULARY:**

- Water filtering system
- Water pollution
- Contamination

**MATERIALS REQUIRED:**

- Clay- 250gms (approx.)
- Water- small bowl
- A small piece of sponge
- Organic Indian red colour
- Thread/wire- for cutting the clay lantern from the wheelbase
- Fine and coarse sand
- Gravel
- Impure water

**PRE-REQUISITE KNOWLEDGE:** Students should have previous knowledge about:

- the importance of pure water
- water pollution
- the various pollutants
- potable water



**DURATION OF THE ACTIVITY:** 90 minutes

**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 both 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 an earthen pot (Matka)

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



2. 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.



3. Insert the hands into the jar and position it near the base of the jar (Speed – medium)  
This will help in creating the curve on the inside.



4. The desired shape is ready. Smoothen it with a piece of wood, tapping it gently to form a perfectly shaped earthen pot.



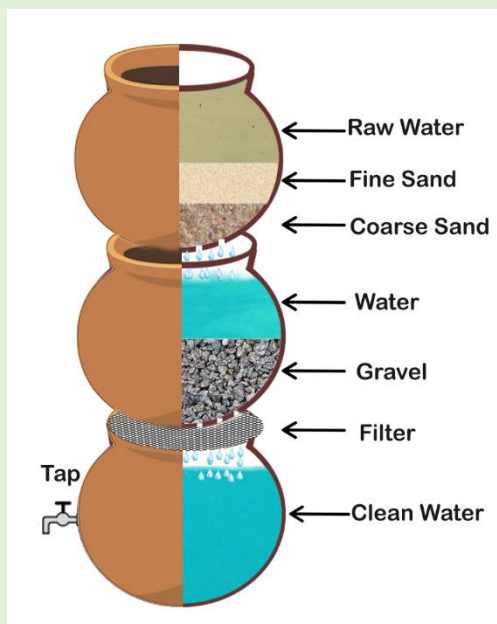
5. Take a thread or a wire and push it against the base of the jar with the thumbs or index fingers. Run it all the way through, keeping it tight and straight.



6. Paint the earthen pot with organic Indian red colour (geru). The pot is ready!



7. Now match each shape of the pot with the different states of India, where it is commonly found.
8. Take 3 such pots.
9. Fill pot 1 with fine and coarse sand, pot 2 with gravel and cover the top of pot 3 with a fine piece of cloth acting as a filter.
10. Arrange the 3 pots as shown in the diagram.



Credits: <https://kiranenterprisesranchi.com/2020/03/13/vestibulum-tortor-quam/>

11. Now add impure water which needs to be filtered, to pot 1.
12. Collect the filtered water in a separate container.

### **OBSERVATIONS AND CALCULATIONS:**

Pot water filter works by allowing water to flow through many tiny pores present on the surface of the pot. These pores trap impurities as water passes through them.

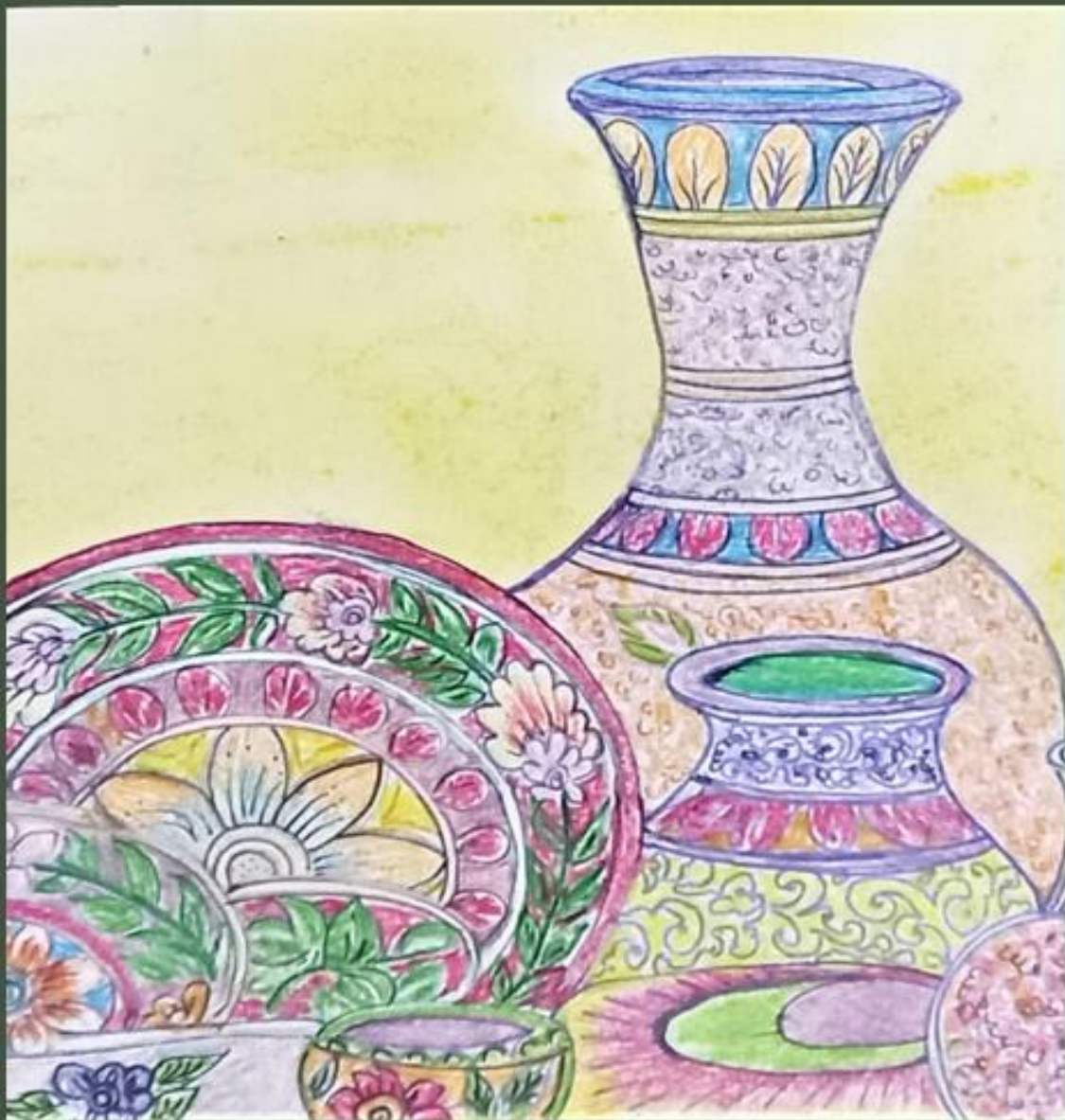
- Total quantity of impure water taken = \_\_\_\_\_ ml
- Time taken for the water to pass through the pot = \_\_\_\_\_ min
- Quantity of pure water collected = \_\_\_\_\_ ml
- The shape of the pot is commonly found in the \_\_\_\_\_ state of India.

### **CONCLUSION:**

- This system of filtration imitates a part of the earth's natural water purification process. Similarly, water from aquifers seeps through layers of rocks within the earth's surface.
- With the help of the earthen pots we were able to purify the impure water.

### **OBJECTIVE QUESTIONS:**

1. What is water pollution?
2. Name the agents that pollute water.
3. Name a few diseases which are spread by drinking contaminated water.
4. What are the factors responsible for water pollution?
5. Which factors decide the quality of potable water?



## Khurja Pottery

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Credits: Art Department

Deepak: Surahi, while going home yesterday in my school bus, I looked across the road and saw various articles of pottery like cups, bowls, pots and many more.

Surahi: Yes! Even I have seen them and wonder what kind of pottery it is?

Deepak: You know, I had gone to my grandmother's house in Bulandshahr and saw these items being sold there as well. So beautiful and colourful, isn't it?

Surahi: I don't know much about it. Let's ask our Social Science teacher about the history of pottery, as today we have a class with her.



Source: [https://swadesi.org/wp-content/uploads/2022/11/30TY\\_KHURJA\\_POTTERY.jpg](https://swadesi.org/wp-content/uploads/2022/11/30TY_KHURJA_POTTERY.jpg)



# SOCIAL SCIENCE

Khurja pottery is an art form that is native to India. It derived its name from Khurja, a place in Uttar Pradesh. It is one of the oldest glazed potteries in India.

**ACTIVITY:** Making Khurja Pottery

**AIM:** To understand the art of Khurja pottery and the various processes involved in the creation of this ceramic ware.

**LEARNING OBJECTIVES:**

Students will be able to:

- recognise the importance of local crafts such as pottery, and explore the glazed pottery of Khurja.
- acquire a sense of creating representative models. (clay figures)
- develop hand-eye coordination, perfect the dissociation of the hands, thumb, and fingers from the forearm and improve fine motor skills and dexterity through the usage of tools and clay.
- learn about the demand of pottery by the British during World War II.
- understand how Khurja emerged as a Ceramic city and know the process and techniques used in Khurja pottery.

**LEARNING OUTCOMES:**

It will enable the students to:

- understand the history of the demand for pottery by the British during World War II.
- understand the process and tools used in Khurja pottery and appreciate the floral and geometric designs used to create ceramic glazed pottery.
- learn pottery making as a skill and create different objects and appreciate the dignity of labour.

**KEY WORDS:**

- Ceramic
- Autonomy
- Nationalism

**MATERIAL REQUIRED:**

- Ceramic Clay- 250gms (approx.)
- Water- small bowl
- A small piece of sponge
- Craft knife/needle tool
- Sandpaper
- Acrylic colours/brushes/marker
- Transparent wood varnish

**DURATION OF THE ACTIVITY:** 3 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

**PREREQUISITE KNOWLEDGE:**

Students are expected to have previous knowledge about:

- the different styles of pottery during the ancient and medieval period
- the difference between clay and ceramic
- the utilitarian and decorative properties of pottery
- potters in different parts of India who have developed their own styles

**PREPARATION: (10 minutes)**

❖ 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 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 Khurja Pottery

1. Prepare the ceramic clay into a dough.



2. Place the ceramic clay in a mould and shape it into the desired design and keep it for drying.



3. Once partially dried, the article is removed from the mould and kept aside to dry.



4. Handles for the cups are made separately and cut into the required shapes.



5. The handles are then fixed to the cup when the clay is still moist.



6. Prepared articles are arranged and kept to dry at room temperature.



7. Remove the excess clay formed while moulding, using a craft knife.



8. Rub the sides with the sandpaper to even the surface of the cup. Later, it can be sent to the kiln for hardening/baking.



9. Paint the cup with white acrylic colour. Draw floral motifs with a black permanent marker on the cup. Colour the required areas of the design.



10. Once the product is ready, spray it with transparent wood varnish. A smooth, shiny cup is ready.



## **CONCLUSION:**

1. Pottery was developed as a response to the needs of mankind.
2. This art is a gift from our ancestors and needs to be preserved.
3. Khurja, also known as the ‘Ceramic City’, supplies a large portion of pottery and ceramics used in the country.

## **OBJECTIVE QUESTIONS:**

1. When did World War II break out?
2. Which place is considered the ‘Ceramic hub’ of India and in which state is it located?
3. Name the act passed by the British in 1935, prior to the Second World War that prescribed provincial autonomy.
4. Mahatma Gandhi decided to initiate a new phase of the movement against the British in the middle of the Second World War. Name the movement.
5. Name one of the oldest glazed potteries in India.

## **LINKS AND REFERENCES:**

- **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, replacing traditional apparatus made of clay.

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

- **Economic impact of World War II and Khurja as a ceramic hub:** Imported supplies of sanitaryware were adversely affected during World War II. Therefore, a factory was set up in Khurja to conduct trials for whiteware sanitaryware.
- **Rise of Ceramic Industry in India:** The ceramics industry in India came into existence about a century ago and has matured over time to form an industrial base. From traditional pottery making, the industry has evolved to find its place in the market for sophisticated insulators, electronic and electrical items. Over the years, the industry has been modernising through new innovations in product profile, quality and design to emerge as a modern, world-class industry, ready to take on global competition.

Link 1: [https://www.business-standard.com/article/news-ians/ceramic-industry-looks-to-double-turnover-by-2021-119030100015\\_1.html](https://www.business-standard.com/article/news-ians/ceramic-industry-looks-to-double-turnover-by-2021-119030100015_1.html)

Link 2: <http://www.bulandshahr.org/about/Khurja-Pottery>

- **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](https://www.youtube.com/watch?v=XJKET_N4QBk)

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# Glossary

<b>Amplitude</b>	: The maximum displacement from the mean position in an oscillation.
<b>Audible</b>	: The sound which can be heard.
<b>Autonomy</b>	: the right or condition of self
<b>Bowl</b>	: Schal (German)
<b>Bowl</b>	: el tazón (Spanish)
<b>Ceramic</b>	: A ceramic is an inorganic non-metallic solid made up of either metal or non-metal compounds that have been shaped and then hardened by heating to high temperatures. In general, they are hard, corrosion-resistant and brittle.
<b>Clay</b>	: Klei (German)
<b>Clay</b>	: barro / arcilla (Spanish)
<b>Coin</b>	: La pièce de monnaie (French)
<b>Contaminants of water</b>	: Sewage, agricultural chemicals and industrial waste are some of the major contaminants of water.
<b>Currency</b>	: La monnaie (French)
<b>Data</b>	: It is a collection of numbers gathered to give some information.
<b>Earthenware</b>	: la alfarería (Spanish)
<b>Filtration</b>	: Filtration is a process of separating components of a mixture of an insoluble solid in a liquid.
<b>Glaze</b>	: vidriar (Spanish)
<b>Glazed</b>	: covered with a smooth, shiny coating or finish.
<b>Gold</b>	: L'or (French)
<b>Hertz</b>	: SI unit of frequency.
<b>Jar</b>	: taro (Spanish)
<b>Jug/ Carafe</b>	: el garrafón/la garrafa (Spanish)
<b>Khurja</b>	: Khurja is a city in the Bulandshahr district in the Indian state of Uttar Pradesh famous for its unique pottery.
<b>King</b>	: Le Roi (French)
<b>Nationalism</b>	: advocacy of or support for the political independence of a particular nation or people.
<b>Notes</b>	: The pitch and duration of a sound in musical notation.
<b>Oscillation</b>	: Movement of a body from one extreme position to the other and back.
<b>Paint brush</b>	: pinsel (German)
<b>Paint brush</b>	: el pincel (Spanish)
<b>Paints</b>	: Farben (German)
<b>Paints</b>	: la pintura (Spanish)

<b>Pie Chart</b>	: The ‘pie chart’ is also known as a ‘circle chart’, dividing the circular statistical graphic into sectors or sections to illustrate the numerical problems. Each sector denotes a proportionate part of the whole.
<b>Pitch</b>	: The characteristic of sound that depends on the frequency of a vibrating body.
<b>Plate</b>	: el plato (Spanish)
<b>Pollutants</b>	: Pollutants are substances which contaminate water and air.
<b>Potable water</b>	: Water which is suitable for drinking is called potable water.
<b>Pottery</b>	: Töpferei (German)
<b>Pottery</b>	: la cerámica (Spanish)
<b>Reign</b>	: La règne (French)
<b>Right circular cylinder</b>	: A cylinder whose bases are circular in shape and parallel to each other is called a right circular cylinder.
<b>Sponge</b>	: Schwamm (German)
<b>Thread</b>	: Faden (German)
<b>Thread</b>	: el hilo (Spanish)
<b>Tile</b>	: el azulejo (Spanish)
<b>Time period</b>	: The time taken for one oscillation.
<b>Total surface area</b>	: The total surface area of a cylinder is equal to the sum of areas of all its faces.
<b>Vibration</b>	: Fast to and fro movement of a body which produces sound.
<b>Volume of Cylinder in Litres</b>	: When we find the volume of the cylinder in cubic centimetres, we can convert the value in litres by knowing the below conversion: One Litre = 1000 cubic cm or cm <sup>3</sup>
<b>Volume of the cylinder</b>	: The volume of a cylinder is the density of the cylinder which signifies the amount of material it can carry or how much amount of any material can be immersed in it.
<b>Water Pollution</b>	: Water pollution is the contamination of water sources by substances which make the water unusable for drinking, cooking, cleaning, swimming and other activities.
<b>World War II</b>	: World War II, also called Second World War, was a conflict that involved virtually every part of the world during the years 1939–45. The principal belligerents were the Axis powers—Germany, Italy, and Japan—and the Allies—France, Great Britain, the United States, the Soviet Union, and, to a lesser extent, China.

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