BYJU'S IMAGINARIUM

CLASS 4

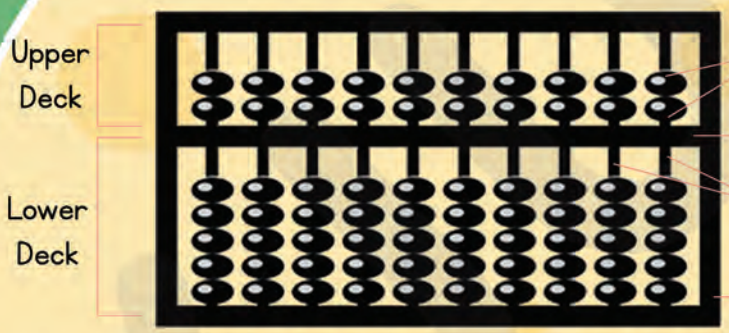
Tips for parents

Here are a few tips that will help your child get the most out of the worksheets:

- Let the child set the pace.
- Provide a quiet place for the child to work.
- Give the child colourful pencils to make it more fun.
- Intervene only if the child asks for help.
- Check completed work immediately and provide feedback.

Did you know?

ABACUS



Parts of an abacus

- Abacus is a calculating tool used for basic mathematical calculations.
- It was used in ancient times before the introduction of modern number systems.

Did you know?

- Different civilisations developed their own abacus during ancient times. Currently, there are 4 popular types of Abaci (plural of abacus)- School Abacus, Chinese Abacus, Japanese Abacus and Russian Abacus.

- The operations that can be handled on an abacus are Addition, Subtraction, Multiplication and Division.

- On expertise, it is believed that one can calculate faster on an abacus than a calculator.

- It is also used by blind people to do calculations.

Activity

Division Bingo

B

This board game focuses on the art of finding remainders. With a few simple materials that you can find around the house, you can create a fun new way to work on important concepts. You will start out by creating a bunch of division problems, solve them and finally, turn the remainders into a game of bingo.

Things you need

White paper

Pencils

Ruler

Counters (plastic chips, beads or any game tokens)

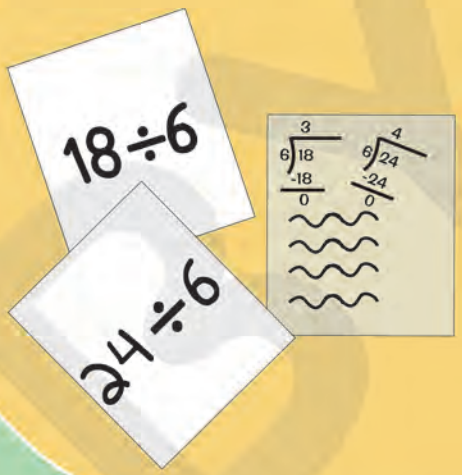
Rough pages

Process

Step 1

Gather as many friends as you can.

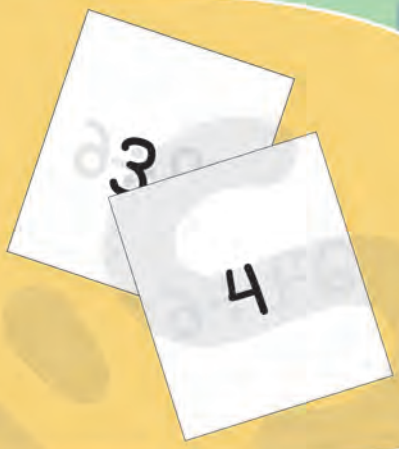
Step 2



Write unique division problems on 25 white paper chits. Distribute the cards evenly among the players and figure out the answers on a rough paper. Double check the answers to make sure they are correct.

Step 3

Write the correct answer on the back of the respective 25 chits.



Step 4

B	I	N	G	O

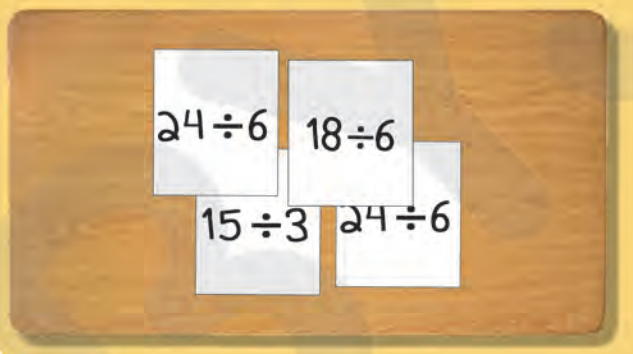
Create a BINGO card by making a grid on paper. This grid should be 5 squares across and 5 squares down. Write B-I-N-G-O at the top of the grid.

Step 5

Read aloud all of the answers on the back of the index cards. Have the players write down the numbers inside the squares on their bingo cards. They should choose which square they wish to write each number in and continue writing numbers in the squares until each square has a number in it.

B	I	N	G	O
6	8	2	3	1
2	4	9	5	5
2	8	7	9	4
1	3	5	4	7
7	4	9	2	6

Step 6



Shuffle the paper chits and place them face up in a stack in the middle of the table, so the answers cannot be seen.

Step 7

Read aloud the division problem on the first card and let all the players work out the answer on their pieces of rough paper. The first player to call out the correct answer gets to use that number on his bingo card.

B	I	N	G	O
6	8	٢	3	1
●	4	9	5	5
٢	●	7	9	4
1	3	5	4	7
7	4	9	٢	6

Step 8

Continue playing until the first player makes a full row on his card and shouts.

«Bingo!»

1 Introduction to Geometry

Find the following words in the crossword puzzle.

ACUTE	LINE	POINT	SQUARE
ANGLE	OBTUSE	RAY	TRIANGLE
HEXAGON	PENTAGON		RIGHT

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

AURORA

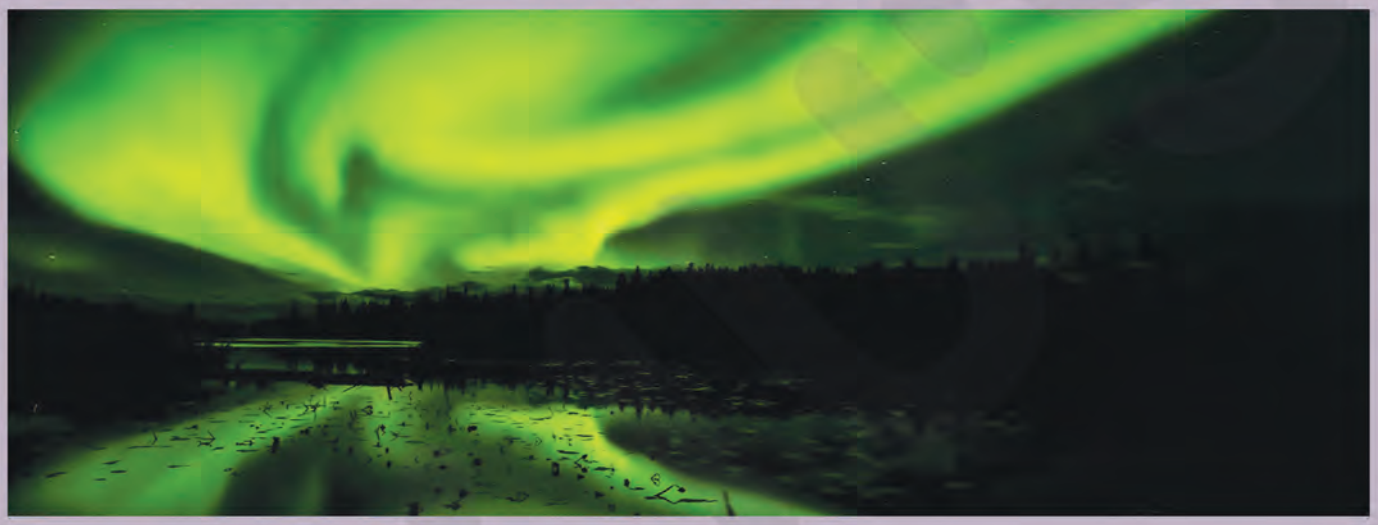
Our planet Earth is full of secrets, begging to be unravelled by mankind. Ever thought to take a step back and appreciate the beauty of this incredible nature? From time immemorial, wanderlust and a knack to explore have driven crazy travellers to discover and witness phenomenal sights all around the world!

Here, take a look at this breathtaking piece of beauty.

The sky is dominated by the outlandish beauty of Aurora Borealis - one of the most stunning naturally occurring astronomical phenomena observed in the Polar Regions. It offers an entrancing, ethereal display of coloured light shimmering across the night sky. Characteristically, Auroras paint the sky with the shades of greenish yellow light, but occasionally they emit blues and reddish-violet hues as well.

AURORA

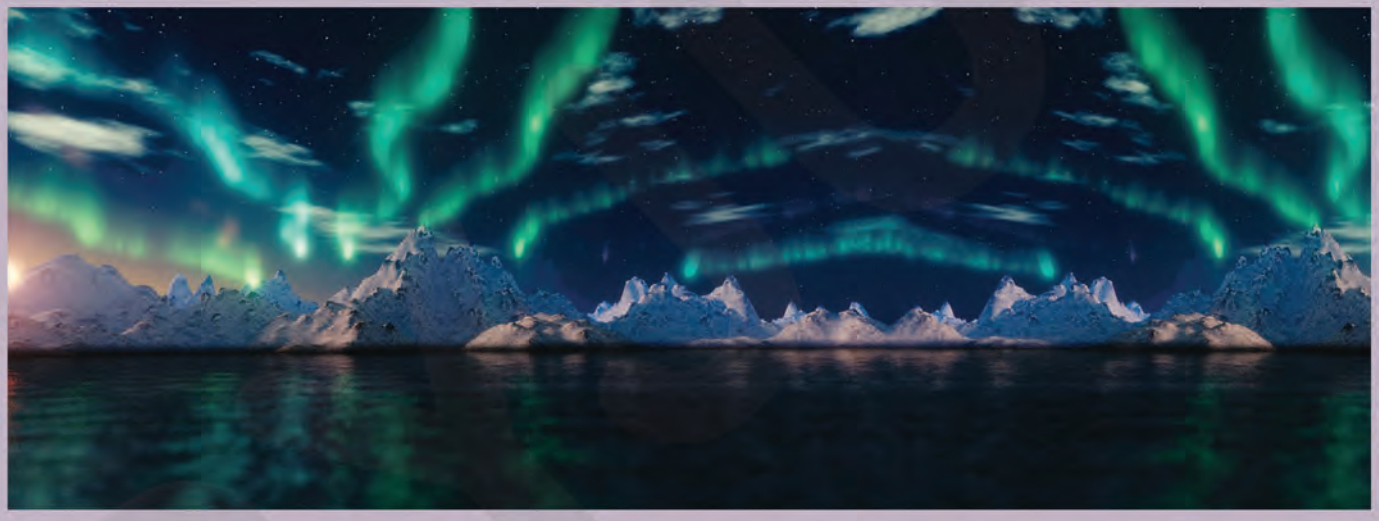
Not only the unique colours, dramatically different Auroral shapes can also be spotted in a single night, from the east-west "curtains" to the ring shaped projections. The colour and pattern of Aurora are determined by the altitude and layer of the atmosphere, varying from green to violet of the VIBGYOR spectrum.



The term Aurora Borealis, also known as the Northern Lights, is often credited to have first been used by the French astronomer, Pierre Gassendi (1592 - 1655), who witnessed the phenomenon on September 12, 1621. It is named after the mythical Roman goddess of dawn, Aurora, whereas, Borealis is the Greek name for the north wind. Interestingly, the sighting of Aurora, by Eskimos and Scandinavians, has been dated back to as early as 700 AD.

AURORA

Auroras are particularly observed in the high latitude (Arctic and Antarctic) regions. The best places to view are in Alaska, Canada, and Scandinavia, during the late evening hours. Norway, Sweden and Finland also offer excellent vantage points. The Aurora Australis (or the Southern Lights) is the southern counterpart which has features identical to that of the Northern Lights. But they are visible only on rare occasions - perhaps once in a decade, in Australia, New Zealand and Japan down south.



The Northern Lights are most frequent between late autumn and early spring. They occur at any time of the day, but are visible to the naked eyes only in the dark. Lower levels of light pollution and the clean, crisp air facilitate the view which makes winter the best time to see them.

AURORA

The Aurora Borealis has intrigued people from ancient times and has been subjected to a number of positive and negative associations. On one hand they are indicative of royal birth, while on the other hand they are considered to be omens of war and famine. In Norse mythology, the Aurora was a fire bridge to the sky built by the gods. The ancient locales of Alaska interpreted the northern lights as the dancing of human spirits. Another native American tribe believed that when the lights shined the brightest, it meant that their deceased friends were very happy.

While the myths have portrayed the Auroras in a mixed light, we can't help but mesmerize over this completely out-of-the-world element of nature that redefines beauty. It devises a sight so phenomenal that you just cannot get enough of it, no matter how hard you stare. Although it might seem like an ordeal, the Aurora is one to be added to your bucket list to witness in a lifetime. Take your travel goals to a lucky stargaze level. Because yes, it is real!

Word Meaning

Unravelled
-Investigate and solve or explain.

Wanderlust
-A strong desire to travel.

Outlandish
-Foreign or Alien.

Ethereal
-Extremely delicate and light

Spectrum
-A band of colours, as seen in rainbow.

Vantage
-A place or a position offering a good view.

Counterpart
-One remarkably similar to another.

Intrigued
-Arouse the curiosity.

Deceased
-Recently dead..

Mesmerize
-Fascinate.

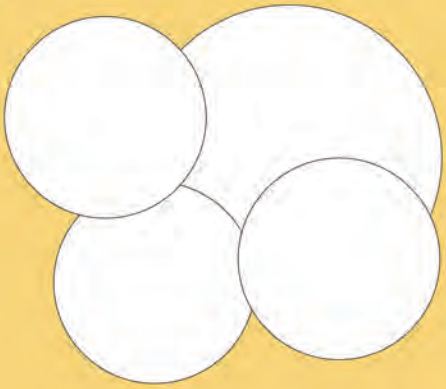
Ordeal
-A prolonged experience.

Activity

Paper Plate Elephant

B

Materials required

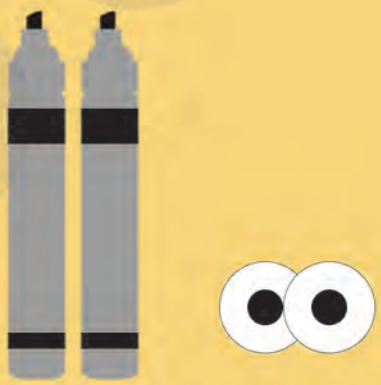


4 paper plates
(3 small and 1 big)

Glue

Scissors

Acrylic paint

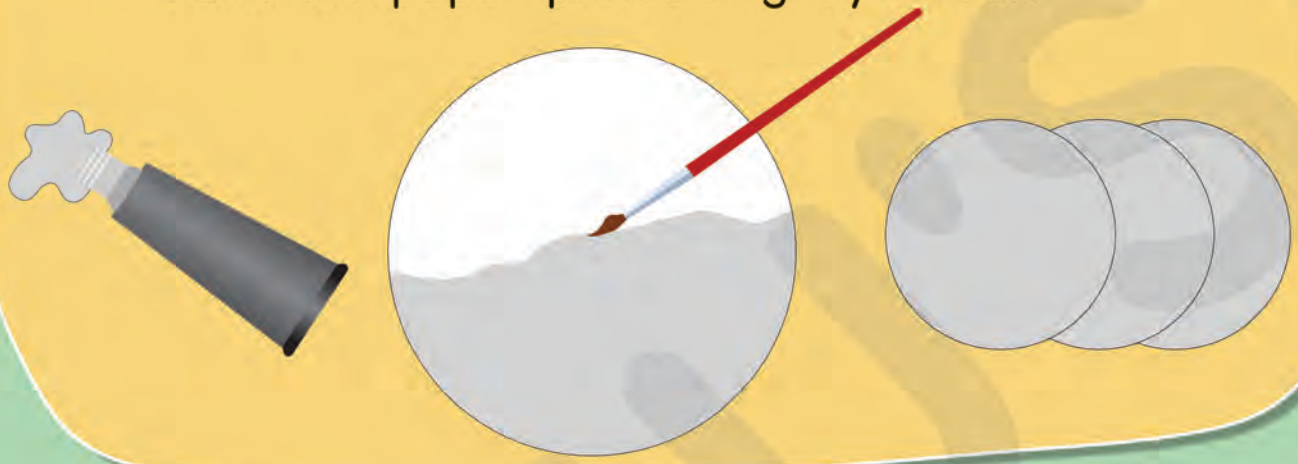


Stickers or markers
for eyes

Procedure

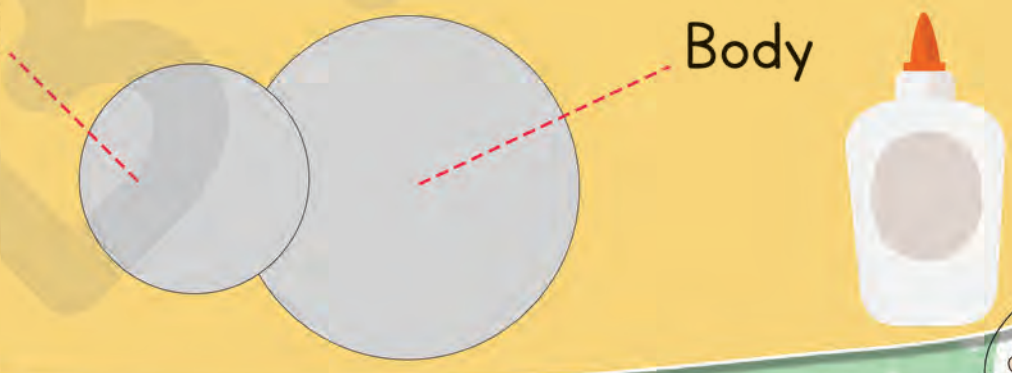
Step 1

Paint the paper plates in gray colour.



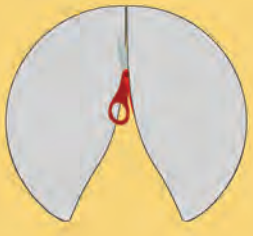
Step 2

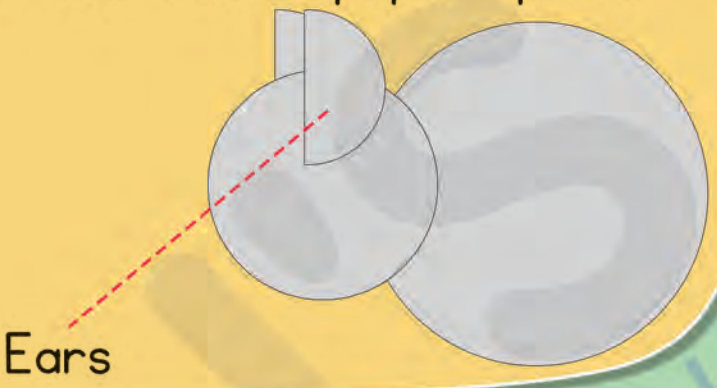
Glue the small paper plate to one end of the big paper plate. This becomes the body and head of the elephant.



Step 3

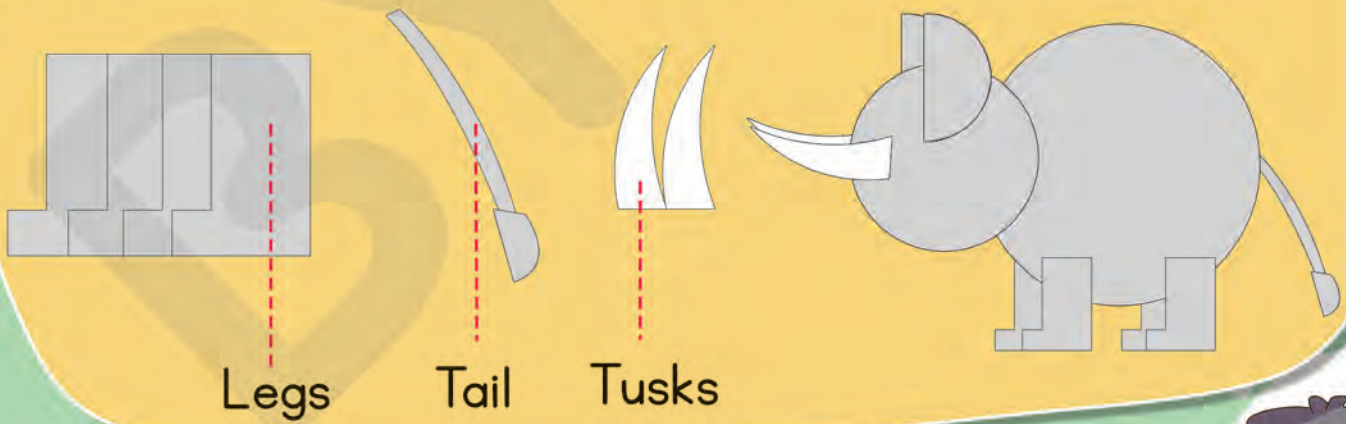
Cut another small paper plate into half and glue the halves as ears to the small paper plate.





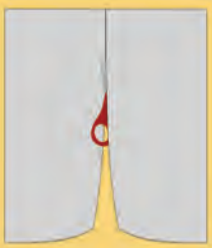
Step 4

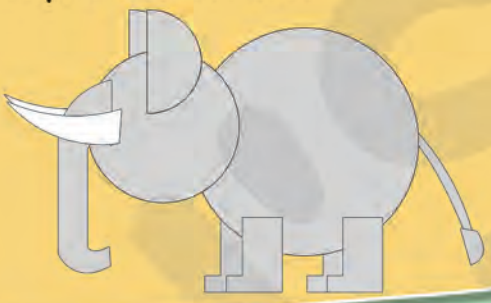
Cut shapes of elephant legs, tails and tusks from the last paper plate. Paste the legs and tail to the big paper plate and the tusks to the small plate.



Step 5

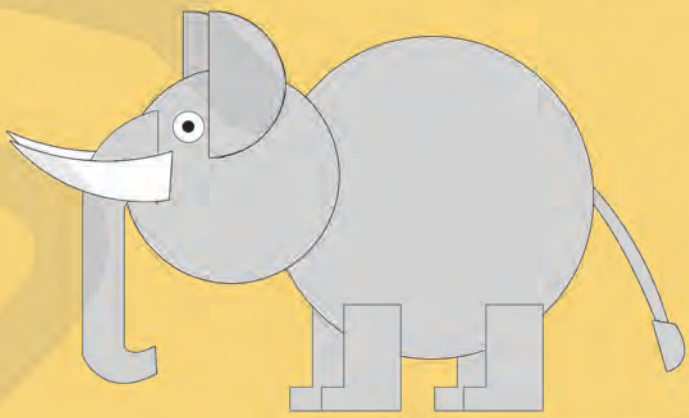
Cut a strip of paper for the trunk from the left over piece of the last paper plate. Roll it on one end and paste the other end to the elephant head.





Step 6

Paste the black stickers for eyes or draw the eyes using marker and your elephant is ready.



Learning Outcome

Learning to make a paper elephant

Activity

Sow A Seed

B

Germination

For weeks, months or even years, a seed can remain inactive. But when the conditions are right it will burst into life and begin to grow. So, what's going on? With this experiment you'll be able to see for yourself.

You will need

- Blotting paper or Kitchen towel
- Broad bean seeds
- Jar
- Water

Top Tip

Broad bean seeds are great for this expreriment because they start growing fast and the seeds are large, which makes it easy to watch them develop. But you can experiment with different seeds (they all take different times to germinate).

How does this work

Germination is the production of roots and shoots from a seed. In order to grow, the seed needs water, sunlight and warmth. A seed contains food stores called cotyledons that hold all the energy it will need. When the seed absorbs water, it is prompted to start using its food store and swells up until the seed coat cracks. The plant embryo inside the seed begins to grow, the radicle (embryonic root) forces its way out and as it grows downwards, the plumule (embryonic shoot) emerges and begins to grow upwards.

Procedure

Step 1

Soak your bean seed in water for a day or two. Dip a piece of blotting paper or kitchen towel in water to moisten it and then roll it up.

Step 2

Fill the jar with the rolled up paper and wedge the broad bean seed between the paper and the jar about halfway down. If the paper won't pop up the seed by itself, pack some more paper inside the roll.

Step 3

Add 2 cm (0.8 in) of water to the jar, but only to a level below the seed. Place the jar in a warm and dark place so that the seed can germinate.

Step 4

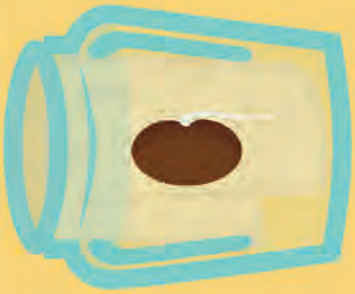
Leave the jar for a few days, keeping the paper moist by adding drops of water if it feels dry. Eventually, a small root will sprout growing downwards.

Step 5

After several more days, a green shoot will sprout from the bean, growing upwards seeking light. Move the jar into a sunny spot to help the shoot grow.

Science in Seconds

Up or Down



A plant's roots will always grow downwards. Soak a bean seed in water for a few days, then push some florist's wire through it. Put some wet cotton wool into a jar and attach the wire to the lid. Lay the jar on its side for a few days until a root sprouts and grows downwards. Then turn the jar so that the root points upwards and observe it again in a few days. The root will have changed direction. Gravity pulls a hormone called auxin in the plant downwards. If more of it collects on one side of a root, the root grows faster on the other side, turning it downwards.

Cold Storage

To try and prevent plant species from becoming extinct, the Millennium Seed Bank in Kew, England, holds 1.5 Billion seeds from around the world, making it the world's largest wild seed bank. To preserve the seeds for hundreds of years without them dying, they are dried out and frozen at -20°C (-4°F). To make sure that the seeds are surviving the freezing process and will be able to grow in the future, a sample of the seeds are defrosted and germinated every 10 years.

Growing Race

1 2 3

This experiment takes seconds to set up, but you'll need to monitor it for a couple of weeks. Fill three pots with soil and plant a sprouting bean seed into each of them, with the seed and roots under the soil surface. Label the pots 1 to 3. Place pots 1 and 2 near a window and pot 3 in a cupboard. Water pot 1 and 3 a little every day for 3 weeks. Pot 1 will have grown the most because it has light, water and nutrients. The other two wont have grown much, or may have died, because pot 2 had no water and pot 3 had no light.

Activity

Violent Volcano

B

When acids and bases meet they react with each other. They are said to "neutralise" each other because the reaction always ends up with chemicals that are neither acidic nor basic. Reactions like this can be dramatic, especially with some added foam and colour.

Materials required

- Empty plastic bottle
- Baking soda
- Liquid detergent
- Warm water
- Vinegar
- Red food colouring
- Tray
- Stand

Procedure

Step 1

Pour warm water into the bottle until it is about three quarters full. Add two heaped tablespoons of baking soda. Cover the top and shake so that the baking soda fully dissolves.

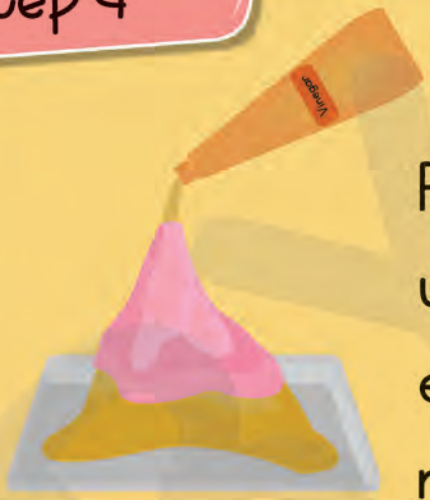
Step 2

Add five drops of food colouring and then a big drop of liquid detergent.

Step 3

Pile damp sand around the bottle in a cone shape, but leave the mouth of the bottle exposed. Take care not to let any sand fall into the bottle.

Step 4



Pour vinegar into the bottle until your volcano starts erupting. If it stops, pour in more vinegar.

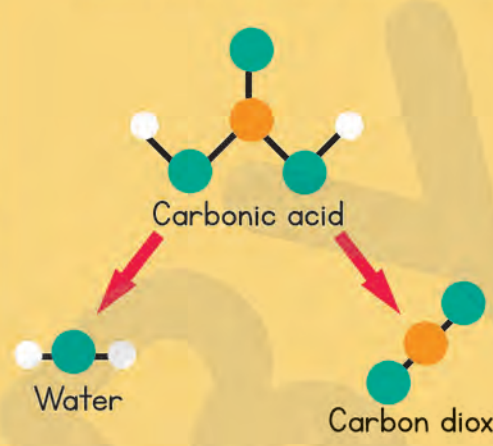
TOP TIPS!

If it's too difficult to get the vinegar into the bottle, use a plastic funnel. Take it out as soon as the volcano erputs.

If your volcano does not produce much lava try using warmer (but not boiling) water. Adding more baking soda should also increase the amount of foam produced.

HOW DOES THIS WORK?

When an acid and a base react, they always produce a salt and water. Vinegar contains acetic acid and baking soda contains sodium bicarbonate, a basic salt. They react to produce sodium acetate (a salt) along with a new acid called carbonic acid. However the carbonic acid immediately breaks down into water and carbon dioxide. Carbon dioxide mixes up the liquid detergent to make foam.



Science around us

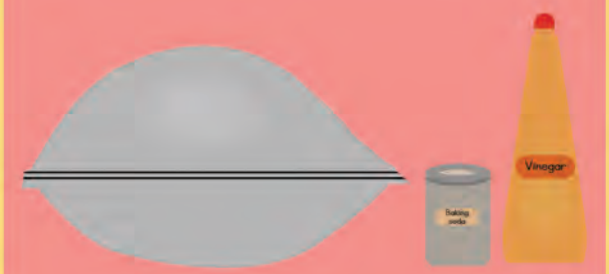
Natural explosion

Real volcanoes erupt because of a physical process, not a chemical reaction as in this experiment. Molten (liquid) rock called magma forces it's way up from deep underground and fills a chamber beneath the volcano. The pressure builds up until the surface rock cracks open and the molten rock known as lava, once it reaches the surface, bursts out.

Science in seconds

Artificial explosion

You can use the reaction of vinegar and baking soda to create a bang. Fold two tablespoons of baking soda tightly inside a paper towel. Pour half a cup of vinegar and a quarter of a cup of warm water into a sealable plastic bag. Hold the towel parcel inside the bag, above the liquid, while you seal the bag and stand well back. When the liquid soaks through the paper towel, the bomb will go off!



QUESTIONS

1 Look and Copy

Draw circles using a large coin or bottle cap and try to copy the designs that are shown below.

Note:- One sample has been done for you.

Learning Outcome

Identifying circles as the basic shape of different objects and tracing them.

2 Front View

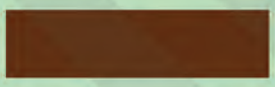
If you look at these objects from the front, what do you see? Put a tick mark against the correct picture.

1

a 

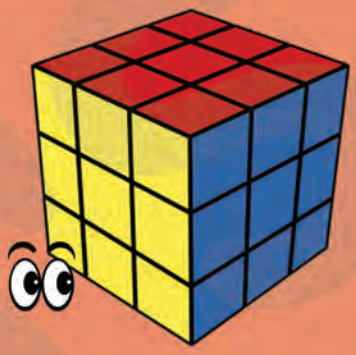
b 

2

a 

b 

3



a 

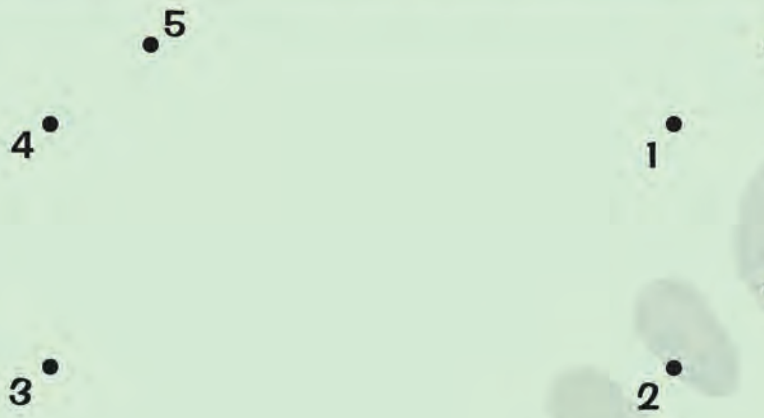
b 

Learning Outcome

Visualising different views of objects.

3 How to Draw a Brick

Join the dots as directed below:



- Join 1 and 2
- Join 2 and 3
- Join 3 and 4
- Join 4 and 1

1. You have drawn a four sided figure. Can you tell what it is called?

- Join 4 and 5
- Join 1 and 6
- Join 5 and 6
- Join 4 and 1

2. You have drawn a four sided figure. Can you tell what it is called?

- Join 2 and 7
- Join 7 and 6
- Join 6 and 1
- Join 1 and 2

3. You have drawn a four sided figure. Can you tell what it is called?

You have successfully drawn a brick.

Learning Outcome

Drawing a three dimensional figure by connecting the dots.

4 Aerial View

Jimmy is flying up in the sky in a hot air balloon. As he looked down, he could see his house. Identify the following things in the picture and label them.

(Stadium, Swimming pool, Temple, Cafe, Park, Bus stop)

Learning Outcome

Identifying things from their top view.

5 Help the Artist Complete the Pictures

Here are some pictures that the artist has left incomplete. Can you help the artist complete them? Use buttons of different sizes to suit your requirement and draw the circles.

Train

Car

Spectacles

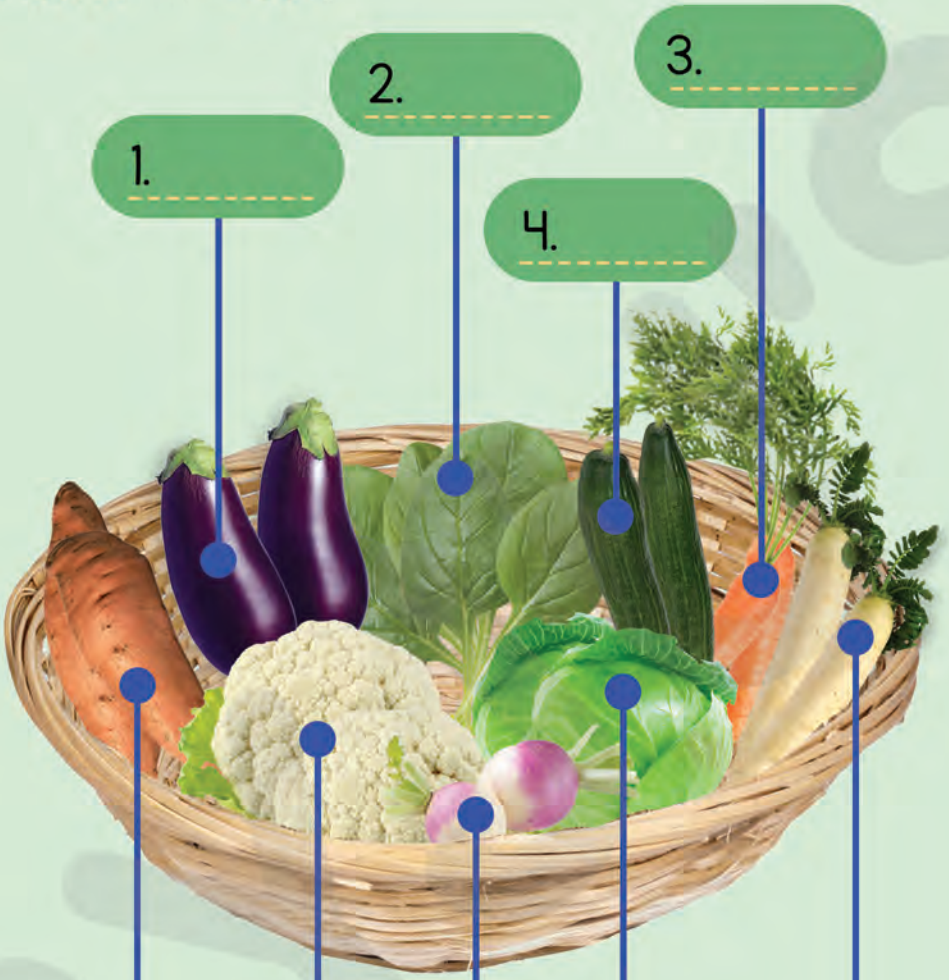
Caterpillar

Learning Outcome

Identifying and drawing circles.

6 Getting to know Plants - 1

Look at the pictures of vegetables given below and identify the category they belong to, label them as: leaf, fruit, flower or root.



Learning Outcome

Identifying the consumable parts of different plants.

7 Getting to know Plants - 2

Choose the correct option.

1. A plant has roots which keeps it
   - ○ Fixed in the ground
   - ○ Living
   - ○ From getting cold
   - ○ None of the above

2. Three important things a plant needs to grow are
   - ○ Soil, fertilizers and water
   - ○ Air, soil and water
   - ○ Sunlight, correct temperature and wind
   - ○ Air, water and sunlight

3. The stem above the ground helps the plant
   - ○ Bloom flowers
   - ○ Absorb water
   - ○ Carry water from the roots to other parts of the plant
   - ○ None of the above

4. Photosynthesis takes place in the
   - ○ Root
   - ○ Leaf
   - ○ Stem
   - ○ Flower

Learning Outcome

Recognising the role of different parts of a plant.

8 Elephants

Choose the correct option from the box and fill in the blanks.

210	2	HERBIVORES	5	MAMMALS	EYESIGHT
COWS		SMELL	ASIAN	HERD	TRUNKS

1. Elephants are the largest land-living _____ in the world.
2. Only the male _____ elephants have tusks. They use their tusks to dig and find food.
3. Female elephants are called _____.
4. An adult elephant needs to drink around _____ litres of water a day.
5. Elephants wave their _____ from side to side and up in the air to smell better.
6. An elephant trunk can grow to _____ metres long and can weigh up to 140 kilograms.
7. Female elephants spend their entire lives living in large groups called _____.
8. Elephants are _____ and can spend up to 16 hours in a day collecting leaves, twigs, bamboo and roots.
9. Elephants can hear each other's call up to _____ miles away.
10. Elephants have poor _____ but an amazing sense of _____.

Learning Outcome

Knowing the elephants.

9 Fill in the Blanks

Choose the right word to fill in the blanks.

1. Do you like _____ bag? [this/these]

2. Look at _____ building over there! [this/that]

3. _____ flowers are very pretty. [This/These]

4. _____ apples look delicious. [That/Those]

5. _____ was a great meal. I enjoyed it very much. [That/Those]

6. Did you see _____ girl in a red dress? [that/those]

7. _____ who teach are called 'teachers'. [Those/These]

8. _____ is indeed a pleasant surprise. [This/That]

Learning Outcome

Selecting the right pronouns.

10 Matching Verbs

My room is in a mess. Match these two lists and help me clear my room.

1	Crumpled shirt needs	a	Sorting
2	Torn blouse needs	b	Folding
3	Dirty shoes needs	c	Packing
4	Stained trouser needs	d	Mending
5	Mixed up files need	e	Washing
6	Strewn clothes need	f	Cleaning
7	Camping gear needs	g	Ironing

Learning Outcome

Demonstrating the appropriate usage of verbs.

11 Form Phrases

Match the words in the two sets to form phrases.

Raining	1	a	Silently
Waiting	2	b	Selfishly
Crying	3	c	Loudly
Singing	4	d	Carefully
Behaving	5	e	Heavily
Snoring	6	f	Soundly
Shouting	7	g	Softly
Driving	8	h	Hoarsely
Sleeping	9	i	Patiently
Whispering	10	j	Angrily

Learning Outcome

Associating verbs with adverbs.

12 Borborygmus

This is a very old word that describes sound that your digestive system makes. Follow the directions to learn what it is!

Change the B to ST STORBORYGMUS.

Change the first R to an M _____.

Change the Y to ROWL _____.

Move the G to the middle _____.

Change the MUS to ING _____.

Change the BOR to ACH _____.

ANSWERS

Answer

Front View

1) a 2) a 3) a

How to Draw a Brick

1) Rectangle 2) Parallelogram 3) Parallelogram

Aerial View

1) Stadium 2) Cafe 3) Bus Stop
4) Swimming Pool 5) Temple 6) Park

Roots and their Functions - 1

1) Fruit
2) Leaf
3) Root
4) Fruit
5) Root
6) Flower
7) Root
8) Leaf
9) Root

Roots and their Functions - 2

1) a
2) b
3) c
4) b

Elephants

1) mammal
2) Asian
3) cows
4) 210
5) trunks
6) 2
7) herd
8) herbivores
9) 5
10) eyesight, smell

Fill in the Blanks

1) this 2) that 3) these
4) those 5) That 6) that
7) Those 8) This

Matching Verbs

1) g 2) d 3) f 4) e 5) a 6) b 7) c

Form Phrases

1) e 2) j 3) a 4) h 5) b
6) c 7) j 8) d 9) f 10) g

Borborygmus

1) Storborygmus 2) Stomborygmus
3) Stomborrowlgmus 4) Stomborgrowlmus
5) Stomborgrowling 6) Stomach growling