

► Heal with Herbs

Nature has provided us with numerous medicinal plants. They are often referred to as 'Green gold'. Since ancient times, plants have been used to treat ailments. Given below are the descriptions of a few such plants with their jumbled name in the boxes. Unscramble them to find out the name of the plant.

1. It is also known as 'Night shade'. It is used as sedative or antispasmodics. Modern day atropine is derived from this.

l	a	b	o	e	n	i	d	a



2. It is a perennial plant with aromatic leaves. It is well-known as a cooking spice with rich aroma and flavour. It improves digestion, beats bad breath, improves appetite, detoxifies the body and regularises heart beat.

m	a	m	c	o	r	a	d



3. It is regarded as a master healing plant, popularly known as 'Gwarpatta'. It is highly effective for treating burns, cuts and many inflammatory conditions of the digestive system. It also helps to restore bone growth and improve the delivery of nutrients in the body. Application of its gel on skin helps to control the ageing process of the skin.

l	e	a	o	a	r	e	v



4. It is also known as 'Fever grass'. It is a perennial plant with thin and long leaves. It has many medicinal properties like anti-inflammatory, antiseptic, antifungal, anti-bacterial, and anti-cancer and also used as analgesic and diuretics.

n	o	i	m	e	s	a	g	s	r



5. It is also known as 'Linseed'. It is a rich source of several vitamins and minerals. When mixed with water, it acts as a natural laxative and prevents constipation. It also helps to regulate blood sugar and cholesterol levels.



a	l	f	x	e	d	s	e

6. Its name comes from the peculiar odour of this herb which is like a sweaty horse. It stimulates immune system, inhibits inflammation, improves memory and reduces stress.



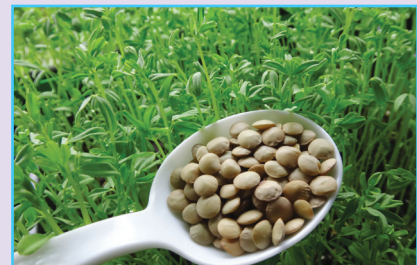
h	s	d	a	g	w	a	a	a	n	h

7. It is commonly known as 'Eye bright'. It is used in the treatment of eye problems, other infections and allergic conditions affecting eyes, middle ear, sinuses and nasal passage.



e	u	a	p	r	i	s	h	a

8. It is also known by different names, such as 'Reed gram' or 'Pigeon pea'. It is used for expelling worms (parasites) from the body. It helps to cure early stages of leprosy, ulcers of the mouth, tumours, bronchitis and vomiting. It is useful in obesity and rheumatism.



n	i	l	t	e	l

9. It is a biennial plant, commonly used as a spice. It is useful for preventing malaria, dysentery and other stomach disorders. It is also used to check leucodermas, and to improve taste and eyesight.

a	a	a	r	y	w	c



10. It is medicinally useful sweet root of a herb that commonly grows in sandy places near the sea. It is used as a remedy for peptic ulcers, sore throats, coughs, etc. It is also known by the name 'Honey stick'. It detoxifies and protects the liver.

l	i	r	o	i	c	c	e



? DO YOU KNOW?

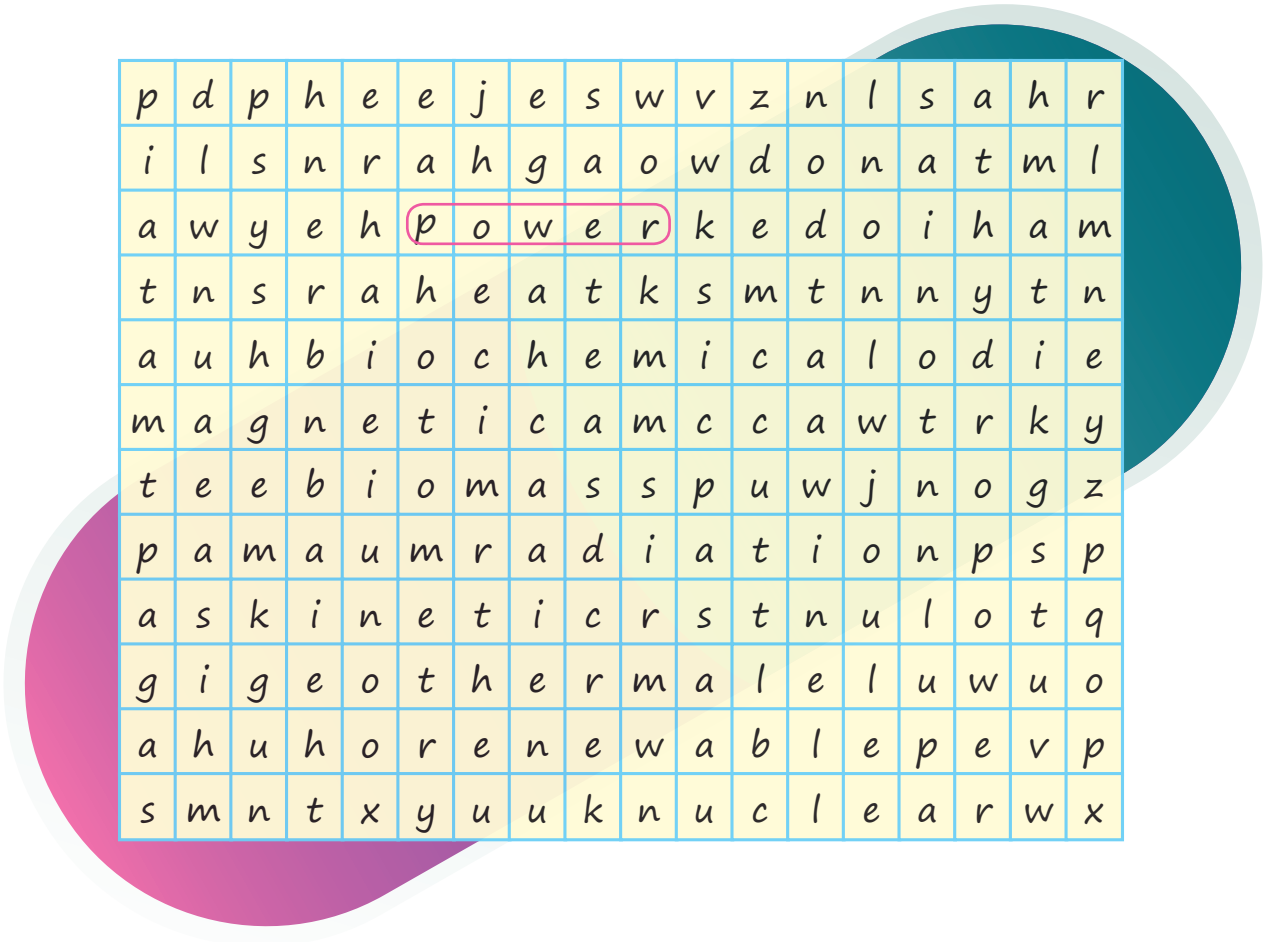
The natural astringent and antibacterial properties of lemon juice are great for cleaning up skin, reducing appearance of scars and preventing pimples.



▶

Energy Capsule

All living and non-living things are dependent on energy. Given below is the Energy Capsule containing various terms related to energy. Read the given clues and encircle the related terms within the capsule. One is done for you.



Clues:

- It is the amount of energy used every second and measured in watts.
[5-letter word →]
- It is the form of energy which is transferred between two bodies due to the difference in temperature.
[4-letter word →]
- It is the form of energy to which light energy gets converted into during the process of photosynthesis.
[11-letter word →]

4. It is the form of energy to which electrical energy gets converted into an electromagnet.
[8-letter word →]
5. It is the renewable form of energy which can be converted into biogas.
[7-letter word →]
6. It is the mode of transmission of heat energy from the sun to the earth.
[9-letter word →]
7. It is the type of energy possessed by flowing water which is used to turn a water wheel.
[7-letter word →]
8. This energy occurs in the form of steam and hot water that emerge from some places on the earth.
[10-letter word →]
9. The sources of energy that are also known as 'alternative sources' of energy.
[9-letter word →]
10. It is the expenditure of energy.
[4-letter word ↓]
11. The standard unit which is a measure of energy, released during the breakdown of food.
[7-letter word →]
12. It is the huge amount of energy, stored inside the nucleus of an atom, which can be liberated by two methods — fission and fusion.
[7-letter word →]
13. It is the power generated by constructing dams on the rivers which convert kinetic energy of flowing water into electrical energy.
[10-letter word ↓]
14. It is the standard unit of measuring energy.
[5-letter word ↓]
15. It is a branch of Physics dealing with the measurement of light energy.
[10-letter word ↓]

Chemistry Mystery

Many advances, both great and small, in the history of civilisation were preceded by the development in Chemistry. These advances are numerous and it is virtually impossible to spend even a single day without experiencing them. Given below are a few questions related to the role of chemistry in our lives. Tick (✓) the best option out of the four alternatives given.

- What is the chemical name of the preservative that is added to preserve squashes for a long time?

potassium metabisulphide	<input type="checkbox"/>
calcium metabisulphide	<input type="checkbox"/>
sodium metabisulphide	<input type="checkbox"/>
sulphur metabisulphide	<input type="checkbox"/>
- Which fibre is cotton made up of?

polythene	<input type="checkbox"/>	synthetic fibre	<input type="checkbox"/>
rayon	<input type="checkbox"/>	cellulose	<input type="checkbox"/>
- What do soft drinks, such as colas contain in significant quantities?

caffeine	<input type="checkbox"/>	nicotine	<input type="checkbox"/>
tanin	<input type="checkbox"/>	renin	<input type="checkbox"/>
- Which iron-based alloy containing chromium and carbon is resistant to rusting?

steel	<input type="checkbox"/>	pig iron	<input type="checkbox"/>
chromium	<input type="checkbox"/>	gun metal	<input type="checkbox"/>
- Which precious metals, compounds are used in photography?


gold	<input type="checkbox"/>	silver	<input type="checkbox"/>
lead	<input type="checkbox"/>	platinum	<input type="checkbox"/>
- Which micro-elements are needed to increase soil fertility?

nitrogen, hydrogen, calcium	<input type="checkbox"/>
nitrogen, phosphorous, potassium	<input type="checkbox"/>
iron, calcium, potassium	<input type="checkbox"/>
manganese, copper, zinc	<input type="checkbox"/>
- Which is the most commonly used source of energy for cooking and lighting purposes in rural India?

biogas	<input type="checkbox"/>	solar energy	<input type="checkbox"/>
nuclear energy	<input type="checkbox"/>	tidal energy	<input type="checkbox"/>



ENVIRONMENT AROUND

8. Which chemical is used to coat the tape of tape recorder?
 copper sulphate ☐ mica ☐
 ferromagnetic powder ☐ zinc oxide ☐
9. What is the composition of LPG (Liquefied Petroleum Gas)?
 methane, ethane and acetylene ☐
 methane, propane and hexane ☐
 methane, ethane and hexane ☐
 butane, heptane and pentane ☐
- 
10. Which acid does not contain oxygen?
 hydrochloric acid ☐ sulphuric acid ☐
 nitric acid ☐ all of these ☐
11. Which atomic rich mineral is largely found in India?
 uranium ☐ thorium ☐
 radium ☐ none of these ☐
12. Why is helium preferred to hydrogen in airships?
 it does not form explosive mixture with air ☐
 it is cheaper ☐ it has greater lifting power ☐
 it is less dense ☐
13. Which acid is responsible for watering of eyes when we chop onions?
 hydrochloric acid ☐ hydrocyanic acid ☐
 nitric acid ☐ sulphuric acid ☐
14. Which of the following has the strongest bond?
 graphite ☐ limestone ☐
 oxygen ☐ diamond ☐
15. Which is the main chemical compound found in human kidney stones?
 uric acid ☐ calcium oxalate ☐
 ammonium hydroxide ☐ calcium sulphate ☐



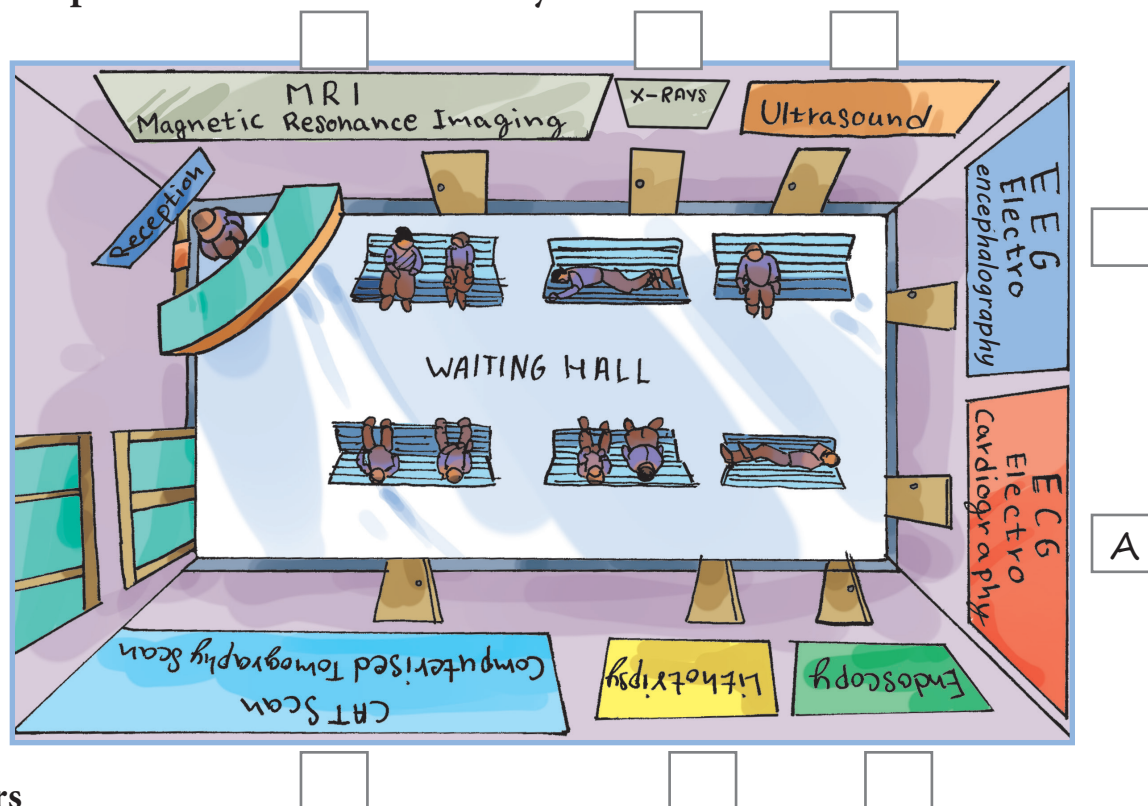
DO YOU KNOW?

Monosodium Glutamate (MSG), commonly known as 'Ajinomoto', is one of the main ingredients of Chinese food items as it enhances the flavour. Excessive intake of this ingredient can over stimulate the nerve cells and upset the balance of neurotransmitter. It also leads to problems like irregular heart beats, blood pressure, diabetes and even obesity.



Treatment Technologies

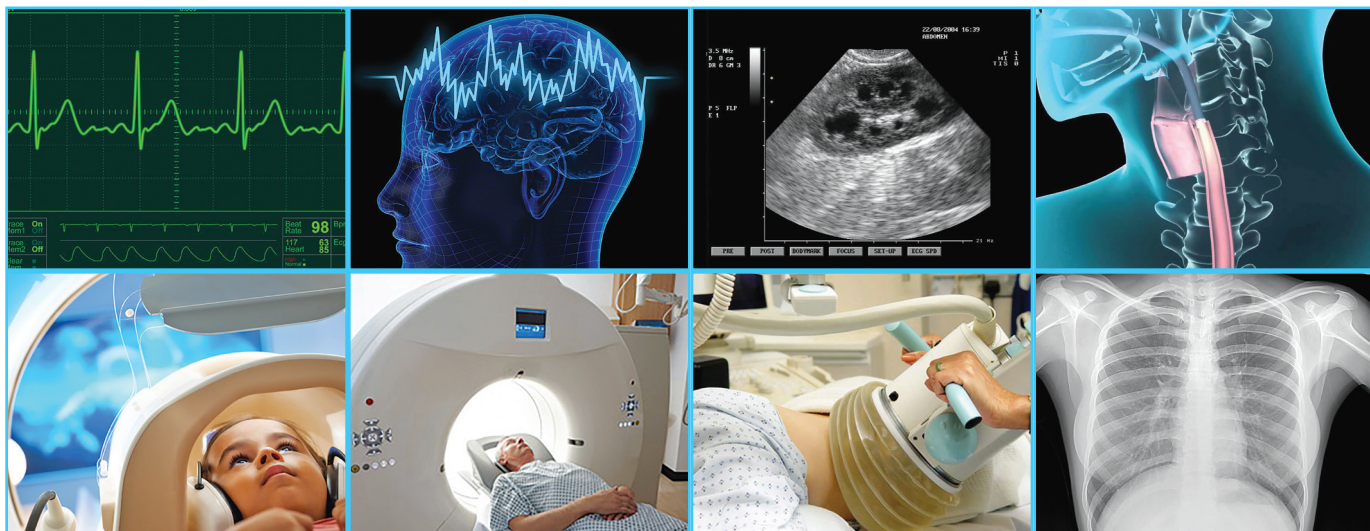
Given below is the layout of the hospital waiting hall showing the placement of various chambers or units where specific techniques of diagnosis and treatment are carried out. Read carefully the description and label each chamber according to the description. First one is done for you.



Chambers

- A. This technique is useful in ascertaining various disorders of heart functioning. It is a process of graphic recording of the heart's activity in the form of a wave pattern.
- B. This technique helps in diagnosing several neurological disorders, like epilepsy. In this technique, graphic recording of the electrical activity of neurons — the brain cells — is recorded.
- C. This technique is used to evaluate many internal organs, thus, detecting gall bladder stones, liver and kidney abnormalities and also monitoring foetal growth. In this technique high frequency sound waves are used (as in SONAR) for imaging the body organs. The pattern of reflected waves is converted into diagnostic information through a device called 'Transducer', that is, run over the area being imaged.
- D. This technique allows doctors to directly peep into the patient's body (only hollow organs like food pipe, wind pipe, bladder, intestine and uterus) using a sophisticated tool which consists of light emitting fibres, viewing lens and a steering device on one end. Besides viewing, surgical attachments on its end help in performing minor operations.

- E. This technique is important in the evaluation of head, chest, spine, organs of the abdomen, like liver, gall bladder, pancreas, kidneys, urinary bladder and also pelvis. It can also accurately depict abnormalities within the bone marrow, arteries, etc. This technique utilises the physical properties of magnetic fields, radio waves and computers to generate images of the body in any plane.
- F. This technique is used for imaging various body organs for evaluating the extent of trauma injuries and disease progression. It allows physicians to view wafer thin cross-sections of internal anatomy, all without the need of surgery. Imaging capabilities of the X-rays with highly sophisticated processing power of computers are used for accomplishing this task.
- G. This technique helps in the crushing of certain types of kidney stones and stones of other organs like gall bladder or liver by shock waves. It does not require surgery. It is simple, short procedure of about 45 minutes to one hour that requires no formal hospitalisation.
- H. This technique is the oldest and the most frequently used form of medical imaging. It uses a very small dose of ionising radiation to produce pictures of body's internal structures. It is often used to help diagnose fractured bones, look for injury and to locate foreign objects in soft tissues.



DO YOU KNOW?

- PET – Positron Emission Tomography is a modern non-invasive imaging technique that uses a radioactive drug (tracer) to create images of body function and metabolism. The tracer may be injected, swallowed or inhaled, depending on which organ is being studied by the PET scan.
- Mammography – It is a specific type of breast imaging that uses low-dose X-rays to detect cancer early (before women experience symptoms).

Major Endocrine Glands

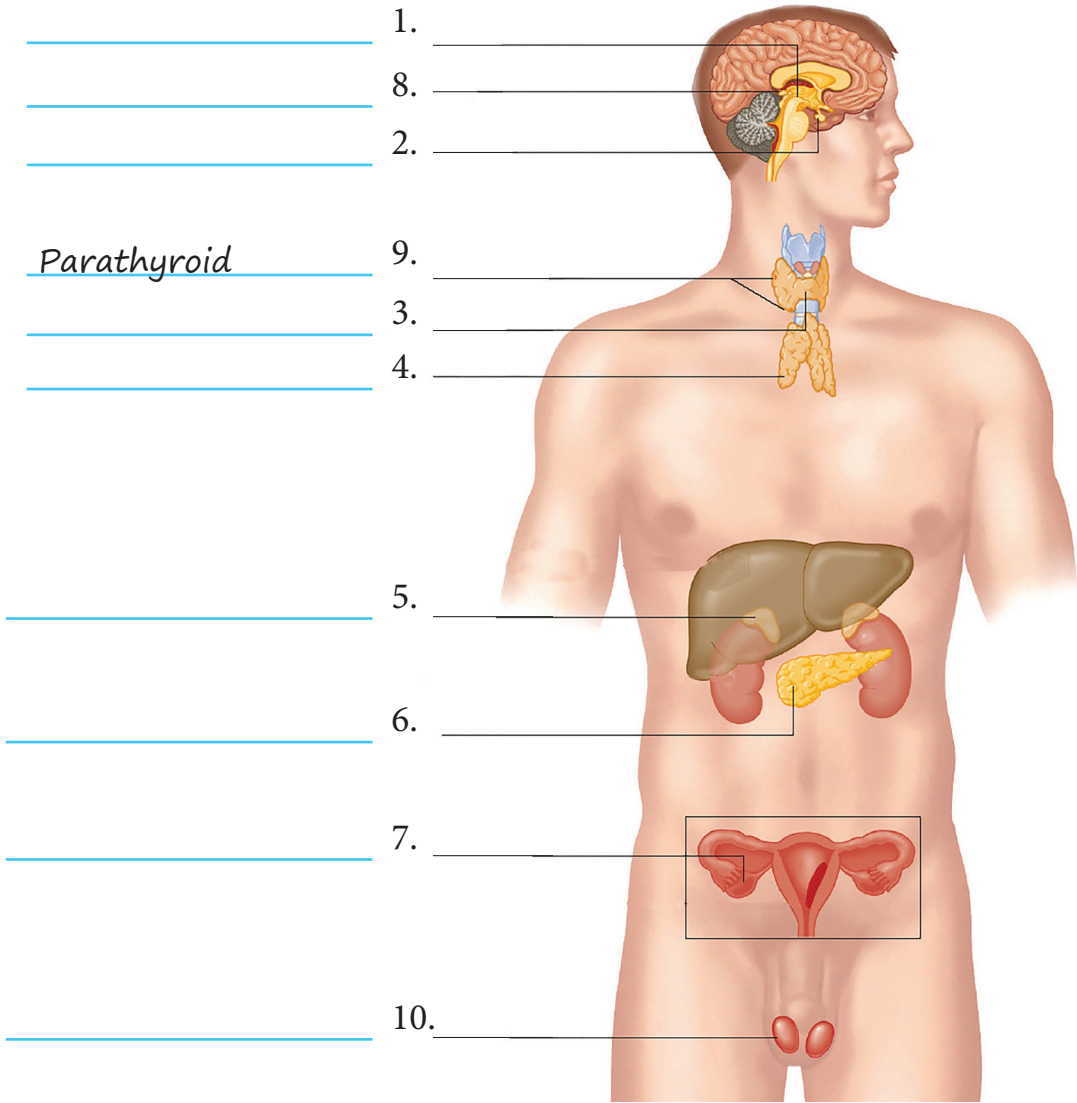
A. Endocrine System, also known as Hormonal System, is a group of endocrine glands which produce various hormones that help in coordinating the activities of our body. These glands are located in different parts of our body. Let us know more about the major endocrine glands, their hormonal secretions and functions by completing the given table.

S.No.	Gland	Hormone Secreted	Function
1.	Hypothalamus	Releasing and inhibiting hormones	Controls the pituitary hormones
2.	a. _____	b. <ul style="list-style-type: none"> • _____ hormone • Tropic hormone 	<ul style="list-style-type: none"> • Controls the growth of human body. • Regulates the secretion of hormones from other endocrine glands
3.	Pineal	c. _____	Controls mood and sleep.
4.	d. _____	Parathormone	Regulates calcium and phosphate levels in the blood.
5.	Thyroid	e. _____	f. Controls rate of _____
6.	g. _____	Thymosin	Regulates formation of lymphocytes, provides resistance to infection and allergy.
7.	Adrenal	h. _____ and _____	Regulates heart beat, breathing rate, blood pressure, carbohydrate metabolism and mineral balance.
8.	i. _____	Insulin and j. _____	k. Lowers _____ • Increases the blood glucose.
9.	Ovaries	l. _____ • Progesterone	<ul style="list-style-type: none"> • Controls the development of female sex organs and female features. m. Helps in _____

10.	n. _____	Testosterone	<ul style="list-style-type: none"> Controls the development of male sex organs and male features.
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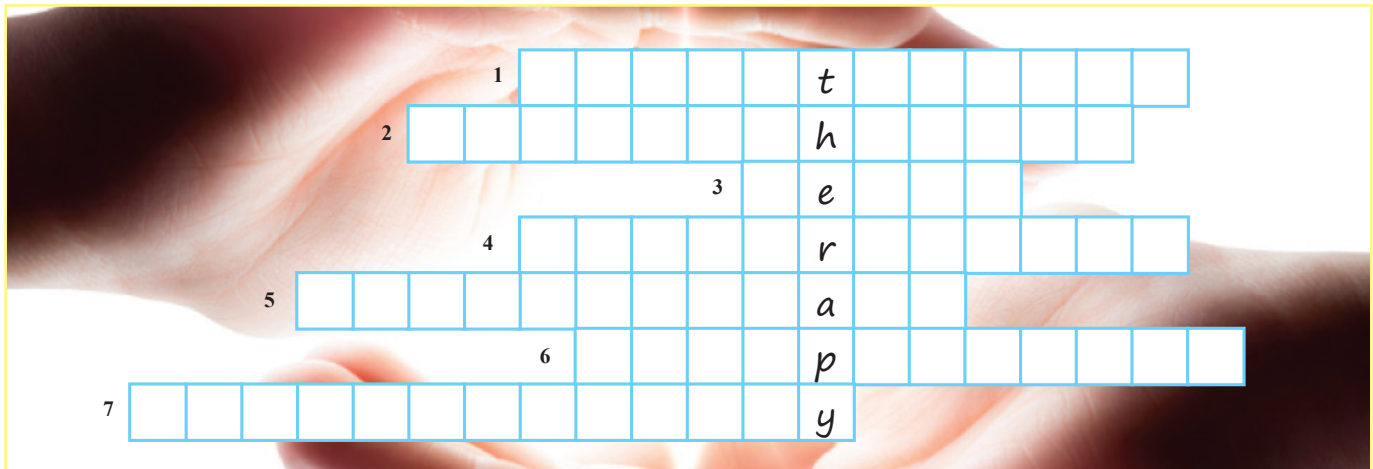
Help Box			
growth	glucagon	pituitary	blood sugar
melatonin	parathyroid	pancreas	estrogen
metabolism of carbohydrates, fats and proteins	thyroxine	adrenaline and corticoids	maintenance of pregnancy
thymus		testes	

B. In the diagram of human body below, identify and label the endocrine glands.



▶ Spectrum of Therapies

These days various forms of healing are practised which can cure a person without any side effects. Find out the names of some such therapies by completing the puzzle on the basis of the clues given below.



1.
 - This technique is based on the skilled and controlled use of plant essences and essential oils.
 - These oils are extracted from different parts (flowers, leaves, stems roots, seeds, etc.) of a plant possessing healing qualities.
2.
 - This technique involves the practice of spending time with a trained therapist to help diagnose, and treat mental and emotional problems.
 - It aims to improve an individual's well-being, to resolve troublesome behaviours, beliefs and thoughts, to improve relationships and social skills.
3.
 - This technique is based on the application of universal life force energy. In this, the practitioner places his hand upon the person to be healed to make the energy flow, which is capable of healing anything.
 - It is a Japanese system of natural healing.
4.
 - This technique involves the use of finger pressure on specific points along the body. It is a way of accessing and releasing blocked energy centres in the body to fight illness and restore harmony.
 - It is an ancient Chinese technique.
5.
 - This technique uses injections of natural substances, such as dextrose, glycerin and phenol in order to stimulate the growth of connective tissue.

ENVIRONMENT AROUND

- It is used to treat degenerative arthritis, lower back pain, torn ligaments and cartilage.
6. • This technique involves insertion of fine needles at specific points in the body to stimulate, disperse and regulate the flow of vital energy and to restore a healthy energy balance.
- It originated about 2,500 years ago in China.
7. • This technique involves a form of gentle exercise composed of movements, that are repeated a number of times, often stretching the body, increasing fluid movement.
- It is China's 3,000 years old system of self-healing.



DO YOU KNOW?

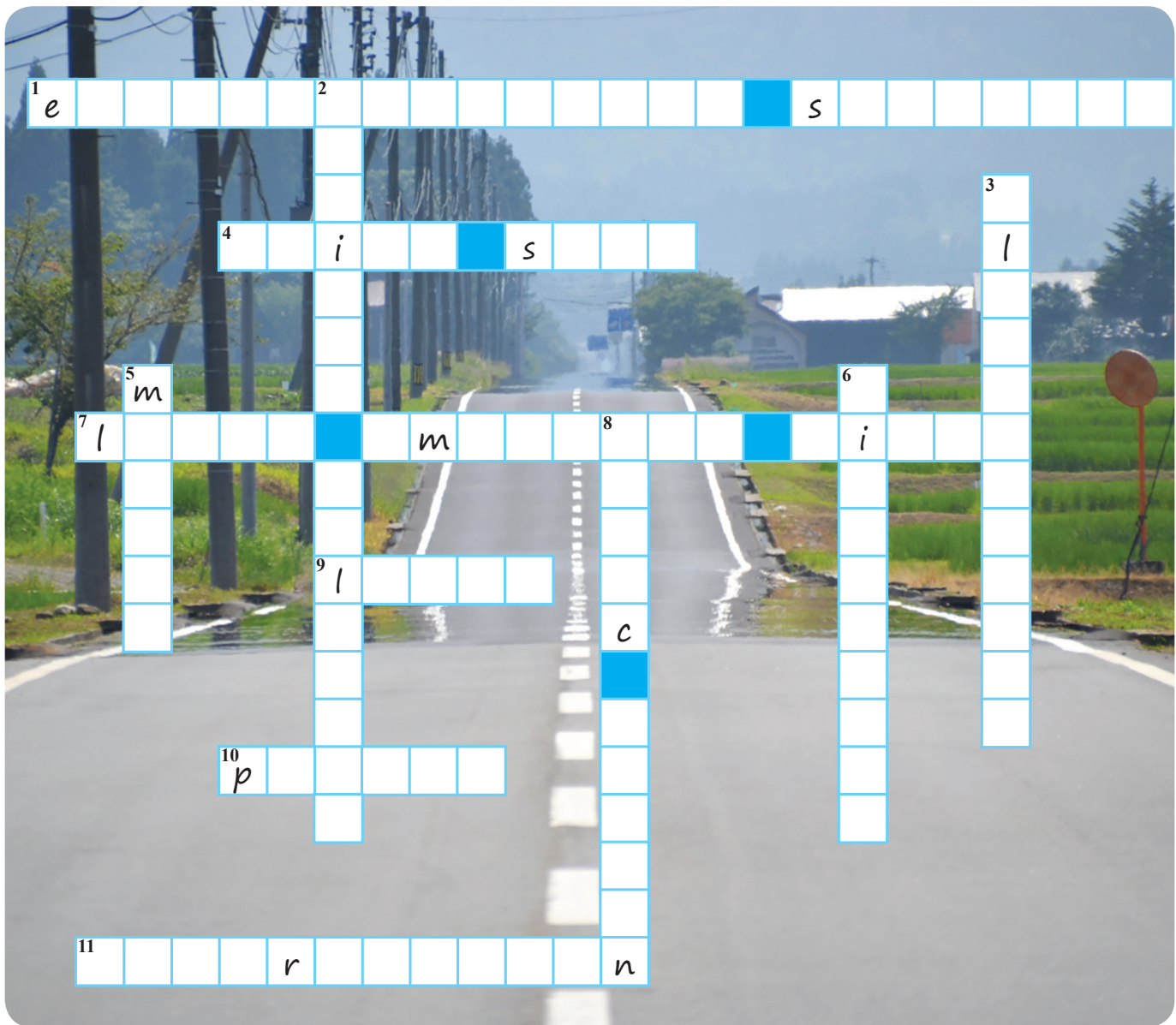
- Once a French chemist, Rene Maurica Gatte Fosse in 1920, was working in his lab. Accidentally, he burnt his hand and more out of reflex than reason, he immediately immersed his hand in a vat of pure lavender oil. To his immense surprise, there was an immediate cooling effect and also oil healed his hand without any blister or scar. This motivated him to pursue research for other possible therapeutic effects of essential oils and hence, originated aroma therapy.
- In water therapy, hot water is avoided and cold water is used for treatment. A short cold water application acts as a tonic while an extended application acts as a depressant. Cold water is restorative, re-energising and helps build resistance to diseases.

FIND OUT

Many alternative treatments are attractive because of their novelty or style. It must always be remembered that a few offer any genuine scientific evidence for their effects, and most are suspected in conventional medical eye. Try to find out scientific logic behind these treatments. You can consult a specialist of each area.

Miracles of Light

Light is something we see and use every day, but do not often think about. Many years ago, light was described as the opposite of darkness. But today, light is considered as a form of energy that radiates rays. Let us now solve the crossword puzzle on light using the clues given below.



Across →

1. It is the complete range of Electromagnetic waves. It includes radio waves, microwaves, ultraviolet waves and the colours of rainbow which we can see through only this part of spectrum.

4. It is the point where optic nerve is attached to the retina, and no image is formed.
7. This device changes electrical energy into light energy and gives out light when current flows through it. It is small, consumes very less power and lasts longer than filament lamps.
9. It is a device that produces a narrow beam of intense light. It was invented in 1960 and in recent times, it is used in medical fields to vaporise tumours.
10. It is an elementary particle of light. It is massless and has no electric charge.
11. It is the process of transforming unpolarised light into polarised light.

(Polarised light waves are the light waves in which the vibrations occur at a single plane.)

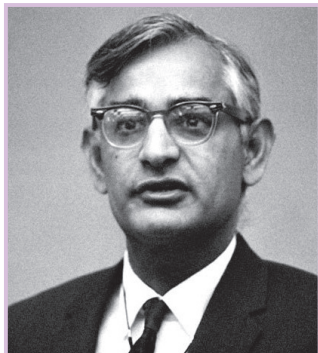
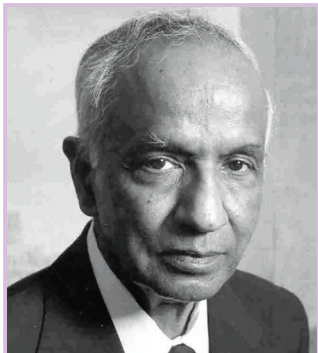
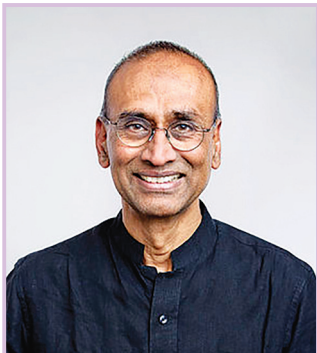
Down

2. This phenomenon can use colour, light and patterns to create images. The information gathered by an eye is processed by the brain, which creates a perception that, in reality, does not match the true image.
3. It is the phenomenon due to which some chemicals absorb UV light and then release energy as visible light.
5. It is a false image (of a distant object) which is formed when light is refracted in a curved path. This happens as light travels more quickly through warmer air near the ground than it does through the cooler air above. It is commonly seen in deserts.
6. It is an optical instrument that uses a lens or a combination of lenses to produce magnified images of small objects, especially of objects, too small to be seen by an unaided eye.
8. He is a famous English scientist who found that when a narrow beam of sunlight is passed through a triangular prism, white light splits into multi-coloured beam (spectrum). When he passed the coloured spectrum through another triangular prism, he could produce white light.

Great Scientists

The credit of our country's progress and development goes to hard work, dedication and intelligence of our scientists to a large extent. Given below in Column A are the contributions of some of the leading scientists and in Column B, are their names. Match the contribution with the correct name.

A	B
1. He was an Indian-American biochemist who received the Nobel Prize for Physiology in 1968 for interpretation of the genetic code and its function in protein synthesis.	V. Ramakrishnan
2. He was an Indian physicist born in Tamil Nadu. In 1930, he was honoured with Nobel Prize in Physics for his work on scattering of light and for the discovery of the Raman Effect.	Subrahmanyam Chandra Sekhar
3. He was India born US physicist who was awarded the Nobel Prize for Physics in 1983 for his work on astrophysics.	Har Gobind Khorana
4. In 2009, he was awarded the Nobel Prize for chemistry for the study of structures and functions of the ribosomes.	C.V. Raman



ENVIRONMENT AROUND

A

5. In 1975, India's first satellite 'Aryabhata' was launched under his guidance.

6. He was an eminent Indian scientist, also known as the 'Father of Indian Pharmaceuticals'. He invented mercurous nitrite and also extracted several of its derivatives.

7. He was an Indian ornithologist and naturalist popularly known as the 'Birdman of India'. He was awarded the Padma Bhushan in 1958 and the Padma Vibhushan in 1976.

8. A renowned Indian nuclear physicist who is regarded as the 'Father of Nuclear Programme' of the country. He was the founding director of two research institutions — Tata Institute of Fundamental Research (TIFR) and Bhabha Atomic Research Centre.

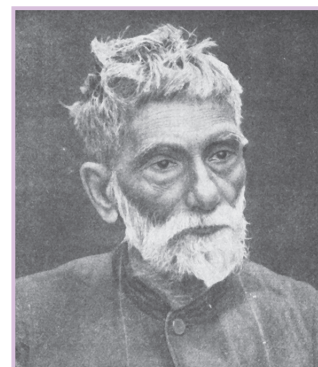
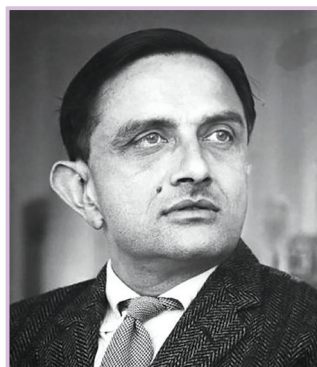
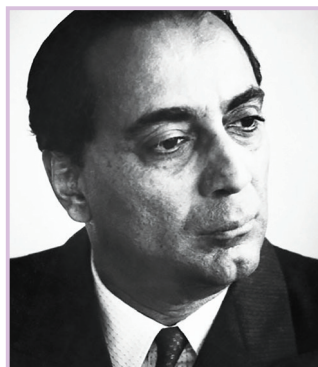
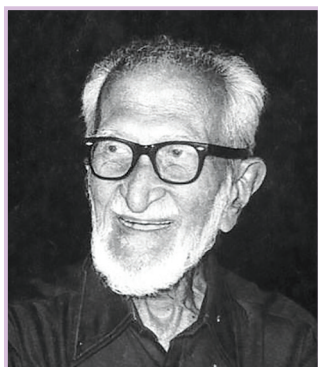
B

Salim Ali

Homi Jehangir Bhabha

Vikram Sarabhai

Prafull Chander Ray



Close Encounter with Planets

With the advent of space age, many fascinating facts related to the mysterious planets have appeared before us. Given below are a few facts regarding the Giant planet and Red Planet. Read carefully the given statements and fill in the blanks with appropriate answers from the Help Box.

A. Jupiter (Brihaspati)

1. Jupiter is the _____ planet from the Sun.
2. Jupiter takes _____ earth years to complete one orbit.
3. Jupiter is the largest planet in the solar system. Its diameter is _____ km.
4. Jupiter is so big that _____ Earths could fit within its volume.
5. Jupiter, despite its massive size, is only _____ times heavier than Earth because of its density.
6. A day on Jupiter is just _____ hours and 50 minutes long making it the shortest day in the solar system.
7. Jupiter has _____ known moons. It has four major moons which are collectively known as the Galilean Moons. Its _____ moon is the largest in the solar system.
8. An year on Jupiter lasts for almost _____ days.

Help Box

9

11.86

318

13,000

67

Ganymede

fifth

10,400

1,42,800



B. Mars (Mangal)

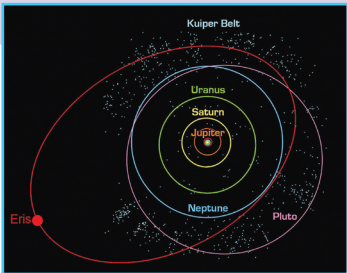
- Mars is the _____ planet from the Sun. It is named after Mars, the Roman god of war.
- The period of revolution of Mars around Sun is _____ earth days.
- The diameter of Mars is _____ km.
- The surface gravity of Mars is about _____ % of the gravity found on Earth.
- The average temperature on Mars ranges widely from _____ K (at the winter pole) to _____ K (on the day side during summer).
- Mars has seasons like the Earth has, but they last _____ as long. This is because Mars is tilted on its axis by about 25.19°.
- Mars has two moons, _____ and _____ which were discovered in 1877 by an American astronomer Asaph Hall.
- The atmosphere of Mars is about _____ times thinner than the Earth and it has _____ % carbon dioxide.

Help Box
687
twice
150
95
Phobos
100
fourth
310
6,787
38
Deimos



? DO YOU KNOW?

The Kuiper belt is a circumstellar disc in the Solar System beyond the planets. It extends from the orbit of Neptune and is 20 times wider than Asteroid belt. It is largely composed of frozen volatiles like methane, ammonia and water. Dwarf planets like Pluto and Haumea also lie in this belt.



▶ Plant Diseases

Plant disease is defined as the abnormal growth of a plant. Different plants are susceptible to different microorganisms that can cause diseases. Read the given information about some common plant diseases. Identify the disease and write the correct answer in the space provided. You can take help from the Help Box.

1. It is a physiological disease which is usually seen on tomatoes planted in cold, heavy soils as they have poorly developed root system. It appears as a dark spot at the blossom end of the fruit. The skin of the affected area becomes black and leathery.

o o e o



2. This is a fungal disease which appears as roundish, black spots with fringed margins on rose leaves. The infected leaves turn yellow and fall from the plant. The optimal conditions for the disease to develop are temperature ranging 75°F – 85°F and high relative humidity.

a o



3. It is a fungal disease affecting large flowered clematis hybrids. The leaves turn black and leaf veins develop a purple colouration. This is followed by discolouration and wilting of the stem.

e a i



4. This is a fungal disease mostly seen on roses, tomatoes and cucumbers. Environment with high humidity and moderate temperatures favours this disease. Infected plants display white powdery spots on leaves and stems.

o e l e



5. It is a fungal disease usually found on grasses. It is usually found from early summer till autumn, when soil moisture is low. Affected grasses show white or straw coloured lesions across the grass blades. As the blades begin to die, the area enlarges until there are dead circles, 2-3 inches, in diameter.

o a o



6. This is a highly destructive disease of grapevines where there is spring and summer rainfall at temperature above 10°C. The leaves get yellow spots with an oily appearance and eventually the entire leaf turns yellow. Spots appear between veins on the leaves and the plant dies very quickly once attacked.

o l e



7. This is a fungal disease that usually attacks ornamental and fruit trees. It occurs often in mild and moist conditions. Dry, reddish orange blister-like swellings are usually found on the underside of leaves. In some cases, plant growth and productivity get reduced, while in others, the plants wither and die.

u



8. This is a horticultural disease which attacks seedlings as they emerge. It thrives in wet, poorly drained and cool soils. The affected seedlings discolour, wilt and collapse.

a i o



9. It is a bacterial disease affecting pears, apples and raspberry in the spring season. Blossoms and leaves suddenly turn brown or black, but they usually stay attached to the plant. Young twigs and branches die from the terminal end and appear deep rust coloured.

i e i



10. It is a fungal disease that affects peach and almond trees. Symptoms appear in the spring season as reddish areas on developing leaves. These become thick causing leaves to curl and distort.

e a u



Help Box				
Powdery mildew	Damping off	Dollar spot	Black spot	Downy mildew
Leaf curl	Blossom end rot	Rust	Fire blight	Clematis wilt

▶ Hydro Puzzle

There are many terms in science, with 'Hydro' as their prefix. Given below are a few statements, answers to which are the terms prefixed with 'Hydro'. Read these statements carefully and write the answers in the space provided. You can take help from the Help Box.

1. A compound of hydrogen and carbon. _____
2. A highly poisonous volatile liquid having an odour of bitter almonds. _____
3. The process of generating electricity by the utilisation of water. _____
4. A gel in which liquid component is water. Hydrogel
5. A colourless gaseous element, without taste or odour. It is the lightest of the elements which occur in water and all organic compounds. _____
6. A chemical reaction of a substance with water usually resulting in decomposition. _____
7. An instrument for measuring the density of liquids. _____
8. It is the term used to describe - 'having an affinity for water'. _____
9. A microphone to detect sound waves in water. _____
10. The action of heated water on the earth's crust. _____
11. Tendency of plant roots to turn towards the moisture. _____
12. Accumulation of fluid in the brain, especially in young children, which enlarges the head and can cause mental handicap. _____

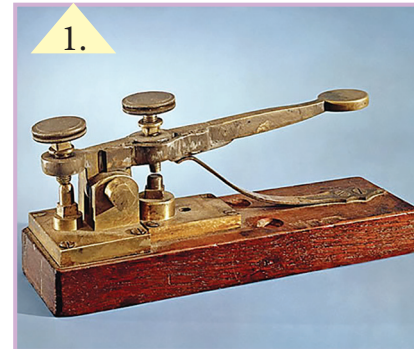
Help Box

H Y D R O			
carbon	meter	cephalus	cyanic acid
electric	philic	tropism	phone
thermal	gel	lysis	gen

► Important Inventions

Today's conveniences come from great inventions of the past. These inventions have changed the way of our lives. Read the given information about some of the inventions. Identify the invention and write the correct answer in the space provided.

1. It is a communication system in which information is transmitted over a wire through a series of electrical current pulses, usually, in the form of Morse code. The basic components include a source of direct current, a length of wire or cable, and a current-indicating device, such as a relay, buzzer, or light bulb.



2. This machine is used to harvest grains like wheat, rye, barley, oats, corn, flax and soyabeans. Instead of using separate machines for reaping, threshing and winnowing the grain, it combines all these functions into one machine.



3. It was designed by Johann Zahn in 1685. It is a hardware device that takes photographs and consists of a lightproof box with photosensitive film or plate within the box. When a picture is taken, its shutter opens and closes, exposing the photosensitive film with light recording the image onto the film.

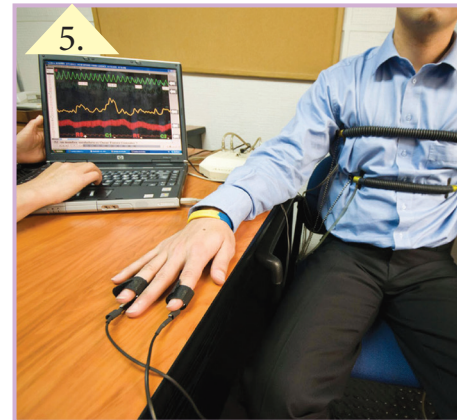


4. In 1942, German scientist Wernher von Braun led the team to produce this vehicle, which was 14 metres long and 1.65 metres in diameter. It made its first successful test flight from Peenemunde, Germany across the Baltic Sea. In five minutes, it travelled a distance of 187 kilometres and reached the maximum altitude of about 80 kilometres.



ENVIRONMENT AROUND

5. It was invented in 1921 by John Augustus Larson. Popularly referred to as a lie detector, it measures and records several physiological indices, such as blood pressure, pulse, respiration and skin conductivity while the subject is asked and answers a series of questions. The principle behind the working of this machine is that deceptive answers will produce physiological responses that can be differentiated from those associated with non-deceptive answers.



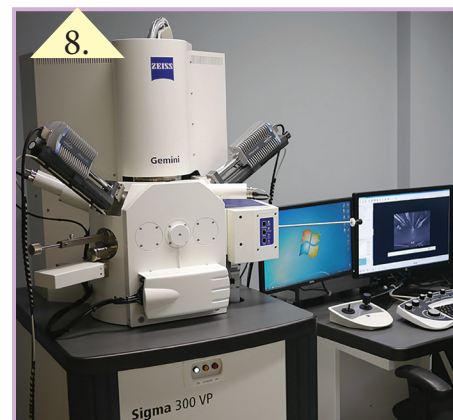
6. The first modern coin-operated machine was introduced in London, England in the early 1880s, dispensing postcards. The machine was invented by Percival Everitt in 1883 and soon became a widespread feature at railway stations and post offices, dispensing envelopes, postcards and notepaper. Now-a-days, it is commonly used to dispense beverages and snack items.



7. Charles G. Pravaz and Alexander Wood were the first to develop this in 1853. This word is derived from the Greek word 'syrinx' meaning 'tube'. It was first used to inject morphine as a pain killer. It has a fine needle to pierce the skin and a simple pump consisting of a plunger that fits tightly into a cylindrical tube. The plunger can be pulled and pushed along inside the tube, allowing a liquid to flow through the opening at the end of the tube.



8. This instrument uses a beam of accelerated electrons as a source of illumination. As the wavelength of an electron can be up to 100,000 times shorter than that of visible light photons, it has a higher resolving power and can reveal the structure of smaller objects.



Vital Vitamins

Vitamins are the organic compounds which are needed in small quantities to sustain life. We need to take vitamins through food because the human body either does not produce enough of them or none at all. Read carefully the description of some vitamins in the given table and complete the remaining information.

S. No.	Vitamin	Chemical Name	Nature (Water or Fat Soluble)	Functions	Deficiency Disease or Symptoms
1.	Vitamin B1	a. _____ _____	Water soluble	<ul style="list-style-type: none"> For body functions, including nervous system and muscle function. Carbohydrate metabolism 	b. _____ _____
2.	a. _____	Folic acid	Water soluble	<ul style="list-style-type: none"> For synthesis and repair of DNA and RNA. To produce healthy red blood cells. 	b. _____ _____
3.	Vitamin C	a. _____ _____	b. _____ _____	<ul style="list-style-type: none"> For synthesis of collagen, an important protein used to make skin, cartilage, tendons, ligaments and blood vessels. Needed for repairing and maintaining healthy bones and teeth. 	c. _____ _____
4.	a. _____	Riboflavin	b. _____ _____	<ul style="list-style-type: none"> Crucial for breaking down food components and absorbing other nutrients. 	Ariboflavinosis
5.	Vitamin D	a. _____ _____	b. _____ _____	<ul style="list-style-type: none"> To maintain normal blood levels of calcium and phosphorus. Helps the body absorb c. _____ which forms and maintains strong bones. 	Rickets

ENVIRONMENT AROUND

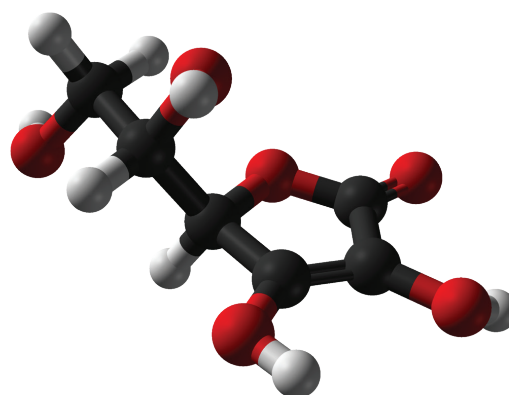
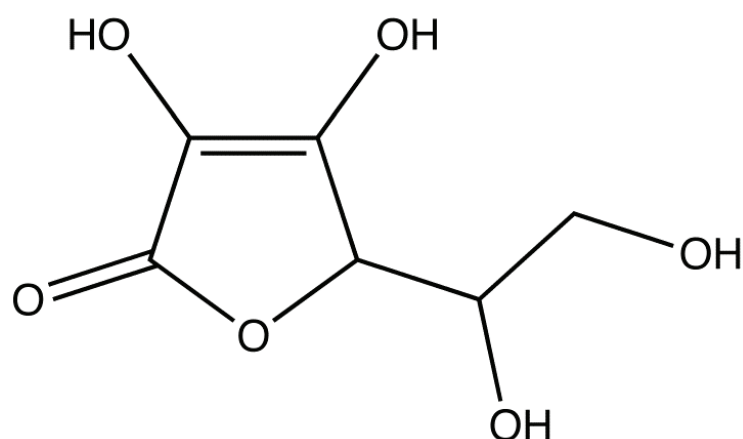
6.	a. _____	b. _____	Fat soluble	<ul style="list-style-type: none"> • For normal functioning of the visual system. • Cell growth and development. • Healthy skin. 	Night blindness
7.	Vitamin B3	a. _____	Water soluble	<ul style="list-style-type: none"> • For proper functioning of the nervous system and brain. • Lowers cholesterol levels and control them. 	b. _____
8.	a. _____	Phylloquinone	Fat soluble	<ul style="list-style-type: none"> • Plays an important role in blood clotting. • Prevents heart disease. 	b. _____
9.	Vitamin B6	a. _____	b. _____	<ul style="list-style-type: none"> • Helps body to maintain a healthy nervous system. • Makes haemoglobin that carries oxygen in red blood cells throughout the body. 	<ul style="list-style-type: none"> • Poor growth • Kidney stones • Depression • General fatigue • Dizziness • Nerve problems
10.	a. _____	Tocopherol	b. _____	<ul style="list-style-type: none"> • Acts as an antioxidant to slow down processes that damage cells. 	<ul style="list-style-type: none"> • Poor transmission of nerve impulses • Muscle weakness • Weakened immune system
11.	Vitamin B12	a. _____	b. _____	<ul style="list-style-type: none"> • Maintains healthy nerve cells. • Helps in the production of DNA and RNA, the body's genetic material. 	c. _____

ENVIRONMENT AROUND

12.	a. _____	Pantothe- nic acid	b) _____ _____	<ul style="list-style-type: none"> Plays an important role in the utilisation of fats and carbohydrates in energy production. Helps in manufacturing of adrenal hormones and red blood cells. 	<ul style="list-style-type: none"> Fatigue Insomnia Depression Irritability Upper respiratory infections
13.	Vitamin B7	a) _____ _____	b) _____ _____	<ul style="list-style-type: none"> For the metabolism of carbohydrates and fats. For healthy metabolic, nerve, digestive and cardiovascular functions. 	<ul style="list-style-type: none"> Impaired growth and neurological disorders in infants. Inflamma- tion of the intestines.

FIND OUT

Citrus fruits are a rich source of Vitamin C. Vitamin C was discovered by Albert Szent-Gyorgyi in 1930s. Its structure is as follows–



Formula is - $C_6H_8O_6$

Try to find out the structure and formula of other vitamins.

Surrounded by Sound

A. Sound surrounds us all the time. The buzzing of an alarm clock or the chirping of birds may awaken us in the morning. Sound is the vibration that travels through the air or another medium and can be heard when it reaches a person's or animal's ear. Find out a few terms related to sound by reading the clues given below. One is done for you.

e	c	o	h	p	q	s	d	i	f	f	o	p
u	l	t	r	a	s	o	u	n	d	d	m	b
r	p	g	k	d	b	n	a	o	l	i	n	e
d	t	s	c	n	j	i	g	a	m	f	h	a
a	o	a	f	d	b	c	y	p	a	f	z	t
d	b	q	g	e	a	b	u	o	s	r	x	s
f	h	a	l	t	t	o	k	i	d	a	c	s
g	e	r	k	l	g	o	e	u	f	c	v	a
i	c	y	b	y	a	m	r	y	g	t	b	i
l	h	i	r	e	f	r	a	c	t	i	o	n
y	o	j	v	u	r	a	e	t	h	o	n	r
d	d	h	t	h	y	r	u	f	j	n	m	f
t	h	r	n	f	j	y	i	r	f	z	l	t
d	o	p	p	l	e	r	e	f	f	e	c	t
u	l	q	s	o	k	l	h	w	l	x	c	o
i	p	t	r	n	l	o	u	q	o	c	j	t
r	e	v	e	r	b	e	r	a	t	i	o	n
s	o	u	l	t	r	p	a	i	l	g	h	l

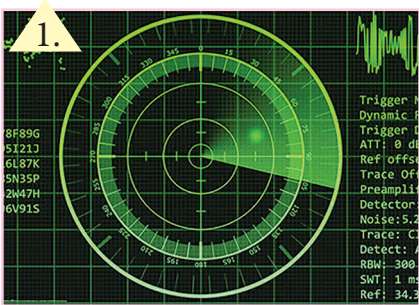
Clues-

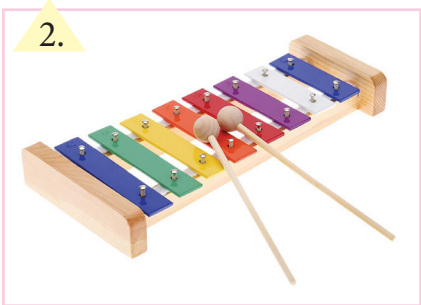
- 1. This is the phenomenon of the bending of sound waves around obstacles, or the spreading of waves by passing through an aperture. [11-letter word ↓]
- 2. It is a sound with frequencies above the range of human hearing. Dogs and cats are sensitive to this sound. It aids in the diagnosis of tumours, gall stones, heart disease and other disorders. At some frequencies, it can produce enough energy to weld certain metals. [10-letter word →]
- 3. It is a loud sound which is caused by shock waves created by any object that travels through the air faster than the speed of sound. It creates huge amounts of sound energy. When an object moves through the air, it makes pressure waves in front of and behind it. [9-letter word ↓]

ENVIRONMENT AROUND

- 4. This phenomenon causes an increase (or decrease) in the frequency of sound waves as the source and the observer move towards (or away from) each other. This results in the apparent change in pitch produced by moving objects. [13-letter word →]
- 5. It is a phenomenon which involves a change in the direction of waves as they pass from one medium to another. This bending of the path of waves is accompanied by a change in speed and wavelength of the waves. [10-letter word →]
- 6. This is the repetition of original sound when a person shouts into a well. This happens because the sound waves reflect from the bottom of the well and travel back to the person's ears. [4-letter word ↓]
- 7. This phenomenon is created when a sound or signal is reflected causing a large number of reflections to build up and then decay as the sound is absorbed by the surfaces of objects in the space like furniture, people etc. This happens when the sound source stops, but the reflections continue decreasing in amplitude, until they reach zero amplitude. [13-letter word →]
- 8. These are the periodic variations of loudness which are produced when two sound waves of different frequencies approach our ears. As a result, we hear a single sound that gets louder and softer at regular intervals. [5-letter word ↓]

B. The devices and instruments shown below use sound waves. Identify and name them.

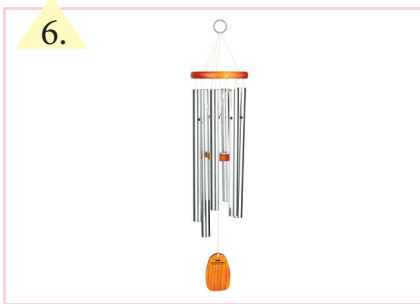












Fact File

Robotics

- ▶ A robot is an electronically controlled programmable mechanical device capable of carrying out a complex series of actions automatically.
- ▶ The branch of technology that deals with the design, construction, operation and application of robots as well as computer systems for their control is known as **Robotics**.
- ▶ The word 'robot' was first used in 1921 by Czech playwright Karel Capek in his play *R.V.R. (Rossum's Universal Robots)*. The play involved a factory that produced artificial people to be servants for humans.
- ▶ In 1926, Metropolis became the first movie to portray a humanoid robot on screen.
- ▶ The first electronic autonomous robot was created by William Grey Walter at Bristol, England in 1948.
- ▶ The first digital and programmable robot was invented by George Devol in 1954 and was named 'Unimate'. In 1961, General Motors installed this robot to work in a factory to lift pieces of hot metal.
- ▶ In 1966, the first autonomous intelligent robot was invented at Stanford. It was named 'Shakey'. It made its own decisions about how to behave.
- ▶ Robots can be guided by an external control device or the control may be embedded within.
- ▶ Some popular robots are—



Shakey–the robot

Name	Made by	Height
QRIO	Sony	61 cm
HRP	Kawada industries	1.5 m
ASIMO	Honda	1.2 m

Test Your Wisdom

1. Fill in the blanks.

- The phenomenon of the bending of sound waves around obstacles is known as _____.
- _____ gland secretes insulin which lowers the glucose level in blood.
- Deficiency of thiamine in our diet can cause _____ disease.
- _____ is a biennial plant and is used as a spice. It is also used to check leucoderma.
- The chemical reaction of a substance with water resulting in decomposition is known as _____.

2. Match the following.

A		B
a. SI unit of Energy	→	← (i) 1975
b. Affinity for water	→	← (ii) Calcium oxalate
c. Vitamin D	→	← (iii) Joule
d. Human Kidney stones	→	← (iv) Fat soluble
e. Aryabhata satellite	→	← (v) Hydrophilic

3. State whether the following statements are True or False.

- Camera was designed by the German scientist Wernher von Braun in 1685. ☐
- Adrenal glands are located on the top of two kidneys. ☐
- Aloe Vera is regarded as the master healing plant. ☐
- Hydrogen is preferred to helium in airships. ☐
- Dollar spot is a fungal disease which is usually found on grasses. ☐

4. Replace the underlined words with the correct one.

a. The repetition of original sound when sound waves get reflected from a surface is called Ultrasound.

b. Vending Machine is a lie detector machine.

c. Deficiency of Vitamin A causes Pellagra.

d. Fever grass helps to regulate blood sugar and cholesterol levels.

e. Endoscopy technique is used to detect disorders of heart functioning in the form of wave pattern.

5. Expand the following abbreviations.

a. GMO —

b. AIDS —

c. UHF —

d. AMU —

e. TNT —

6. Find out the important events or days and complete the table.

Event	Date
a. World Aids Day	<input type="text"/>
b. <input type="text"/>	April 7
c. National Science Day	<input type="text"/>
d. World Environment Day	<input type="text"/>
e. <input type="text"/>	September 16

7. Unjumble the letters to find the names of branches of science.

- a. Branch of science concerned with the chemical processes that occur within the living organisms.

s h b e t i m i o r c y
- b. Science dealing with the selective genetic improvement of human race.

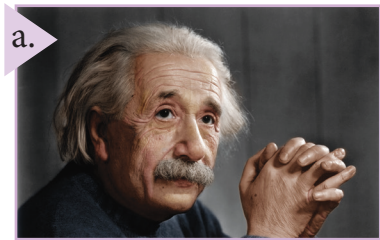
i u n e s c g e
- c. Study of the earth's features with the help of the theories of physics in areas like gravity, magnetism, electricity, light, sound and heat.

s o s g p i y e c h
- d. Legal science used in crime detection.

c o n f s i r e c n s e i e c
- e. Branch of science which links information technology and biotechnology.

a t i n c b o i s f o r m i

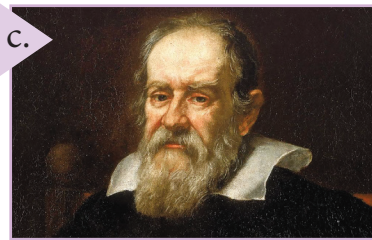
8. Given below are the pictures of some eminent scientists and their famous quotes. Identify and name them.



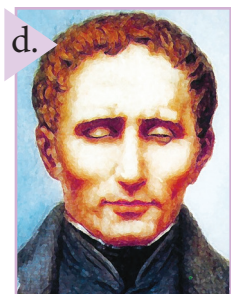
"Imagination is more important than Knowledge."



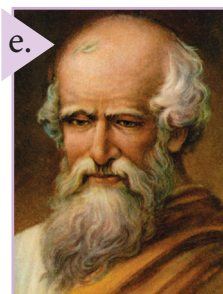
"One thing my pea plants taught me: always do science with things you can make into a soup."



"All truths are easy to understand once they are discovered; the point is to discover them."



*All are equal
"We must be treated as equals, and communication is the way we can bring this about."*



"Give me a fulcrum and a place to stand, and with a lever I will move the Earth."

Fast Fingers

If we look into the pages of history, the occurrence of different events whether natural, political, religious or social has its own importance. Some such events are given below. Arrange them according to the statement asked. One is done for you.

1. Arrange the following in the order in which they came to India.

A	B	C	D
British	French	Portuguese	Dutch
D	C	A	B

2. Arrange the given US Presidents in the order of their visit to India.

A	B	C	D
Jimmy Carter	Bill Clinton	George W. Bush	Barack Obama

3. Arrange the names of following women in the order in which they were elected Prime Ministers of their respective countries.

A	B	C	D
Indira Gandhi	S.M. Bhandarnaike	Margret Thatcher	Benazir Bhutto

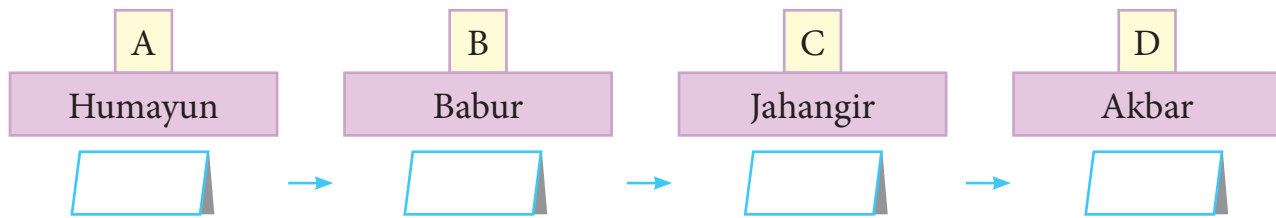
4. Arrange the given dynasties in the order in which they ruled over India.

A	B	C	D
Mauryas	Nandas	Guptas	Sungas

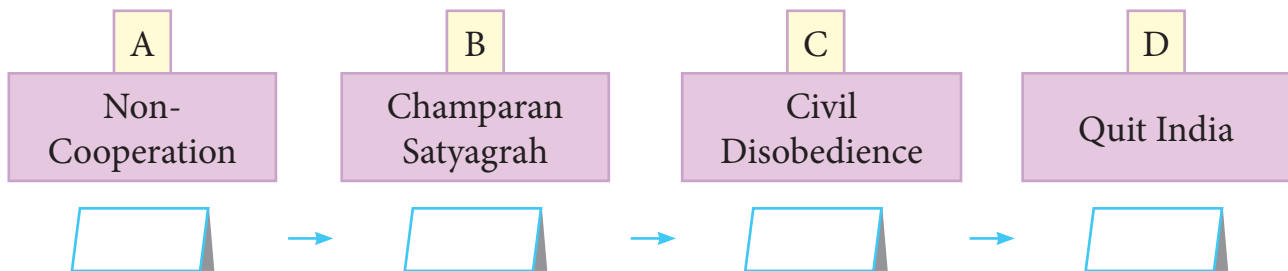
5. Arrange the following things according to their year of invention.

A	B	C	D
Mechanical Computer	Flying Shuttle	Pocket Calculator	Refrigeration Machine

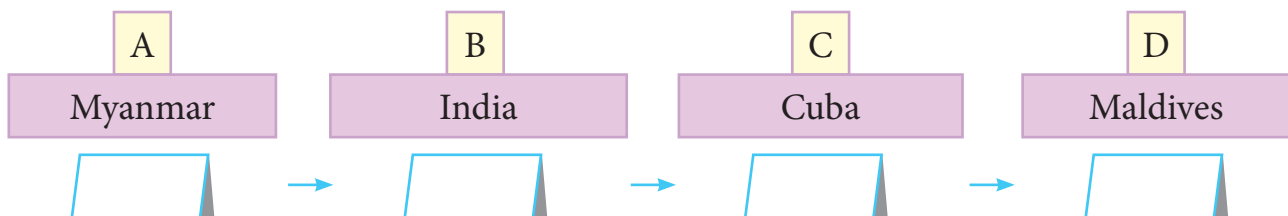
6. Arrange the given Mughal rulers in the order in which they ruled over India.



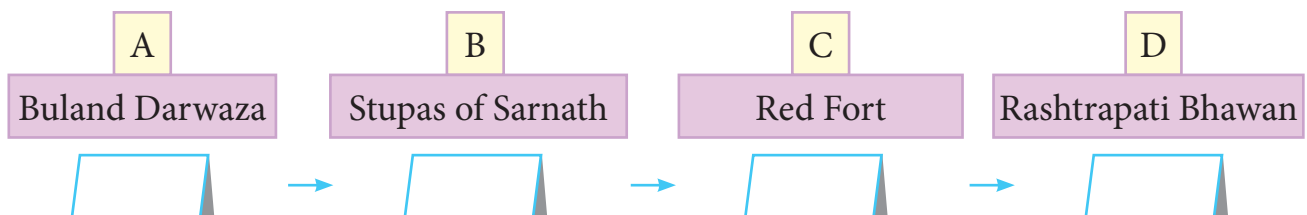
7. Arrange the following 'movements' in the order in which Mahatma Gandhi started them.



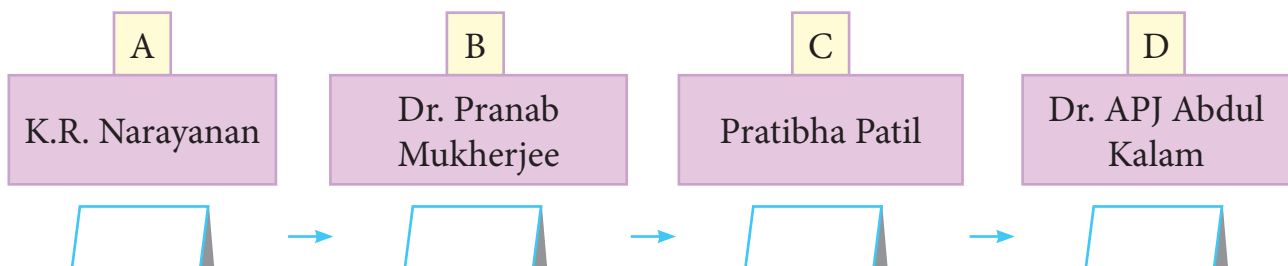
8. Arrange the following countries according to their year of achievement of independence.



9. Arrange the famous examples of architecture given below in the order in which they were built.



10. Arrange the names of following Presidents of India in the order in which they were elected.



River Forever

Every country has one or more ancient rivers, which may be regarded as its important landmark. Now, read the following questions related to some famous rivers and encircle the correct answer from the options given.

1. Which river is known as the Yellow river? Henar | Hwang-Ho
2. Which river is known as the Ganga of South India? Krishna | Godavari
3. On which river bank does Washington DC exist? Kansas | Potomac
4. Which is the longest river flowing in England? Thames | Trent
5. Which river forms the border between Syria and Turkey? Tigris | Euphrates
6. Which river originates as well as ends in the territory of India? Brahmaputra | Betwa
7. Which river is sometimes known as Granta? Danube | Rhine
8. Which river flows into Caspian sea? Volga | Seine
9. Which river is famous for its Salmon, and even forms a part of the border between England and Scotland? Dee | Tweed
10. Which two rivers meet at the city of Khartoum? Wadi Abbad | Blue-White Nile



? DO YOU KNOW?

The River Thames is now considered as one of the cleanest rivers in the world. It was once about 50 years ago, declared biologically dead.



Stamp It Out

Stamps are not only a part of history but also play a very important role in the economy of a country. You can take help from the Help Box. Read the following questions and write the answers in the space provided. One is done for you.

- Which country's first stamp was called the 'Scinde Dawk'?
- Which country issued a stamp in 2013 that smelt and tasted of chocolates?
- Who was the first Indian King to be depicted on an Indian stamp?
- Which European nation issues stamps inscribed with the words 'Magyar Posta'?
- If 'Polska' indicates Poland, which country does 'Sverige' indicate?
- Which country did not have trading stamps in the late nineteenth century?
- Which country does not display its name on its postage stamp?
- The fans of a famous toy staged a demonstration on 13 May, 1998 in Los Angeles for the launch of a stamp in its honour. Name the toy.
- Which two Indians were featured in a set of stamps released by Guyana to honour prominent figures of the twentieth century?
- Which country, in 1973, issued a stamp that could play its national anthem if put on a record player?

India



Help Box

M. K. Gandhi	Bhutan	India
Belgium	Mother Teresa	Hungary
USSR	United Kingdom	Barbie
Chandragupta Maurya		Sweden



DO YOU KNOW?

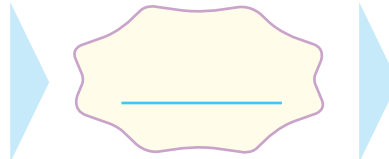
Post Office at Dakshin Gangotri in Antarctica (1983) is the first 'Indian Post Office' outside the territory of India.



Facts and Dates

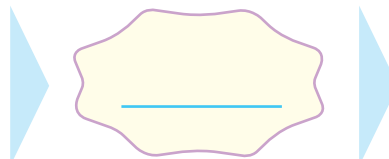
Historical events help us to learn about great people, cultures, discoveries, etc. Given below are the pairs of events that occurred in the same year. Pick up the correct year of their occurrence from the Help Box and write them in the space provided.

1. Sarvapalli Radhakrishnan began his political and diplomatic career.



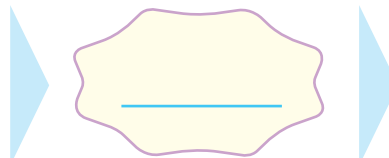
India gained Independence

2. Burma gained Independence



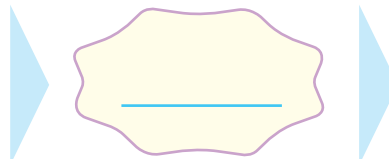
WHO was formed by UNO

3. Maple leaf became official flag of Canada



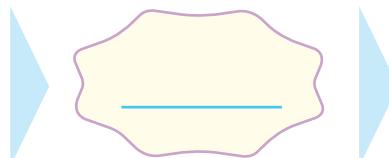
Indo-Pakistani War took place over the status of state of Jammu and Kashmir

4. Nelson Mandela released after 27 years of imprisonment in South Africa



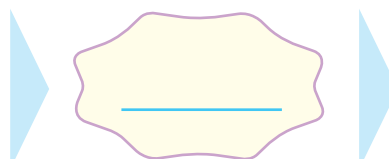
Space probe Voyager I took photograph of the entire solar system

5. An earthquake hit Gujarat causing more than 20,000 deaths



Mars Odyssey was launched.

6. Constitution of India came into effect

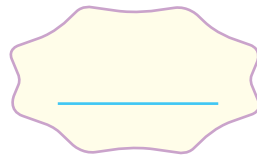


Netherlands gave recognition to People's Republic of China

WORLD AROUND

7.

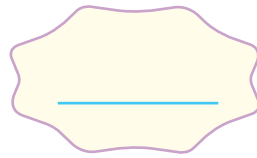
American Revolution
began



African-American
poet Phillis Wheatley
freed from slavery

8.

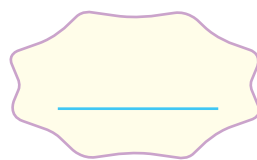
United Nation
published its first
postage stamp



William Shockley
invented junction
transistor.

9.

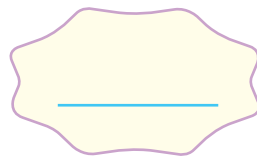
Mahatma Gandhi
returned to India



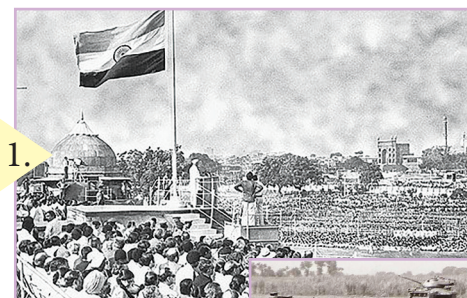
Pluto was
photographed for the
first time.

10.

USSR launched two
cosmonauts to MIR
Space station



Croatia was declared
independent



1.



5.



3.



7.

Help Box

1947	1990	1948	1965	2001
1991	1950	1775	1915	1951

Climb Every Mountain

Landforms that rise prominently above their surroundings, generally, exhibiting steep slopes are known as 'Mountains'. Individual mountains are connected by ridges and separated by valleys. Given below are the clues about some famous mountains. Unscramble the letters in the boxes to find their names.

1. The mountain range shared between Spain and USA.

2. The mountain in Greece that is devoted to Sun God-Apollo.

3. The highest mountain in Western Hemisphere.

4. The mountain range that marks the physiographic boundary between Europe and Asia.

5. The mountain range that forms a part of the border between East and West Germany.

6. The world's longest continuous barrier.

7. The mountain range that contains the greatest number of active volcanoes.

8. The highest mountain of Great Britain.

n b e n v e s i

9. The mountain which is identified by the Tibetan Buddhists as the cosmic centre of the universe.

a i l s h a k

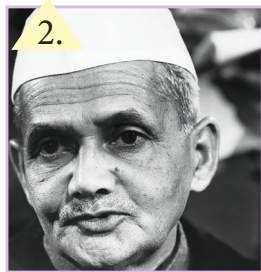
10. The highest mountain peak in India outside the Himalayan mountain range.

n a a i k a e p



Name Game

Throughout the ages kings, queens and other leaders have gained nicknames because of certain qualities of their character. Given below are the names of some great personalities in Column A. Match them with their nicknames in Column B.

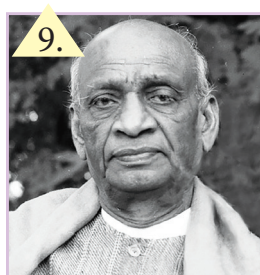
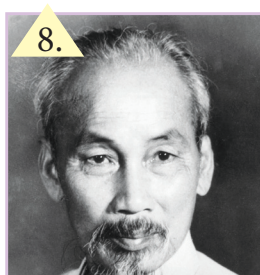


A

1. Queen Elizabeth I
2. Lal Bahadur Shastri
3. Adolf Hitler
4. Napoleon Bonaparte
5. Mother Teresa
6. Gautam Buddha
7. Bismarck
8. Ho Chi Minh
9. Sardar Vallabhai Patel
10. Irom Sharmila

B

- a. Man of Destiny
- b. Uncle Ho
- c. Iron Lady of Manipur
- d. Iron Man of India
- e. Maiden Queen
- f. Saint of Gutters
- g. Man of Peace
- h. Man of Blood and Iron
- i. The Enlightened One
- j. Fuehuer



All at Sea

Mass of salt water covering a greater part of the earth is known as 'Sea'. Some seas form natural ports and are very useful for trade. Read the given clues to find out the names of important seas in the grid below. Write the correct answer in the space provided. One is done for you.



1. This sea separates Italy from Sardin. (down) Tyrrhenian _____
2. The sea of tranquility is located here. (across) M _____
3. The ports of Baku and Astrakhan are located at this sea. (across) C _____
4. This sea separates Turkey from Greece. (down) A _____
5. This sea is called Hwang Hai by Chinese. (across) Y _____
6. This sea separates Europe and Asia. (down) M _____
7. This sea is on the west coast of India. (across) A _____
8. This sea is a part of the Arctic Ocean to the north of the Siberia and remains frozen over nine months a year. (across) K _____
9. This sea has its common alternative name – Sea of the Antilles. (across) C _____
10. This sea is located between Jordan and Israel. (across) D _____

Great Deserts

Deserts cover about 20 per cent of the Earth's surface. Given below in Column A are the names of the famous deserts. Match them with the countries where they exist, in Column B.

A

1. Great Basin Desert →
2. Chihuahuan Desert →
3. Patagonia Desert →
4. Arabian Desert →
5. Great Victoria Desert →
6. Syrian Desert →
7. Kalahari Desert →
8. Atacama Desert →
9. Karakum Desert →
10. Thar Desert →

B

- ← a. Argentina
- ← b. Australia
- ← c. Syria, Jordan, Iraq
- ← d. Mexico, Southwest USA
- ← e. Chile
- ← f. Middle East
- ← g. Uzbekistan, Turkmenistan
- ← h. USA
- ← i. India
- ← j. Botswana, South Africa, Namibia



Arabian Desert



Syrian Desert



Thar Desert

Windy Section

The air around the earth is always moving. This moving air is called 'Wind'. Given below in Column A are the names of local winds of different countries. Match them with the countries in Column B.

A	B
1. Norta	a. Australia
2. Zonda	b. Saudi Arabia
3. Simoon	c. South Africa
4. Samun	d. Sahara Desert
5. Khamsin	e. Iran
6. Bergs	f. Egypt
7. Mistral	g. Mexico
8. Harmattean	h. Argentina
9. Norwester	i. France
10. Brick Fielder	j. New Zealand



FIND OUT

In which country does the wind power provide the biggest share of the electricity supply?

Tug of War

Pages of history show us that many wars were fought between the countries for land, power, wealth, etc. Given below are some important events that took place during or after a particular war. Read them carefully and name the war in the space provided. You can take help from the Help Box.

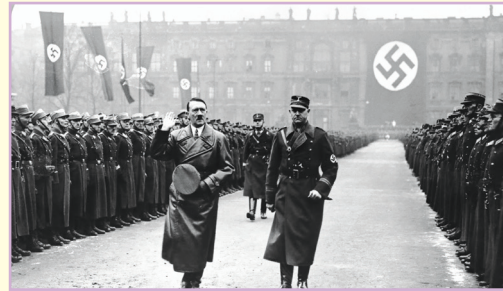
1.

- Lord Canning was the Governor General.
- Bhakt Khan from Bareilly replaced the Mughal Prince Mirza Mughal in July 1857.
- Bahadur Shah II was arrested by Lt. Hadson at Humayun's Tomb.



2.

- Germany began its major war on 1 September 1939 against Poland.
- King Victor Emmanuel assumed the command of the Italian armed forces on the resignation of Mussolini in June, 1943.
- UNO was formed after this war.



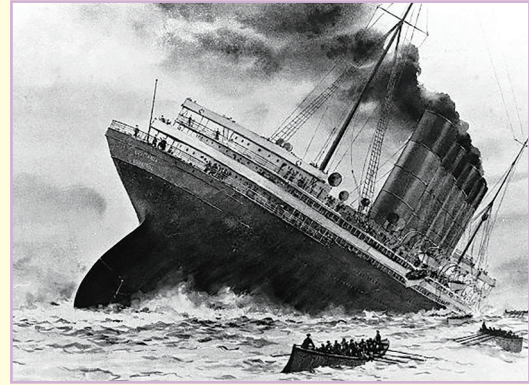
3.

- In the beginning of this war in 1775, the British believed that they could win the war by crushing American strongholds in the North.
- After three years of fighting with no results, the British forces began to concentrate on the South.
- Finally, a combined force of the American and the French defeated the British under General Cornwallis at York Town on 19 October 1781.



4.

- Archduke Franz Ferdinand was assassinated at Sarajevo and this became the immediate cause of the war.
- The 'Lusitania' the British liner was sunk by German U Boat on 7 May 1915.
- League of Nation was formed after this war.



5.

- In 1964, North Vietnamese torpedo boats allegedly attacked two American destroyers in the Gulf of Tonkin.
- In 1969, President Nixon began to withdraw troops while bombing the north of Vietnam.
- The conflict eventually engulfed Laos and Cambodia and more than 60,000 Americans, 72 million Vietnamese were killed.



Help Box

Vietnam War

American War of Independence

World War II

World War I

Indian War of Independence or Revolt of 1857



DO YOU KNOW?

The shortest war on record took place in 1896 when Zanzibar surrendered to Britain after 38 minutes.



The Great Reformers

Great people will always be remembered as long as we read history. Given below are the descriptions of 'Great Reformers' of the world. Read the descriptions and write their names in the space provided. You can take help from the Help Box.

Help Box

Sunder Lal Bahuguna	Martin Luther King Jr.	Acharya Vinoba Bhave	Dorthea Dixi
Malala Yousafzai	Baba Amte	Harriet Tubman	Juan Manuel Santos

- He worked for the rehabilitation of leprosy patients.
 - He received Padma Vibhushan in 1986.



- She helped hundreds of slaves to their freedom.
 - US Postal service issued stamp in her honour in 1978.



- He is an icon of the Civil Rights Movement.
 - He was awarded the Nobel Peace Prize in 1964.



- He started the 'Chipko Movement' and fought for preservation of forests in the Himalayas.
 - He was awarded the Padma Vibhushan in 2009.



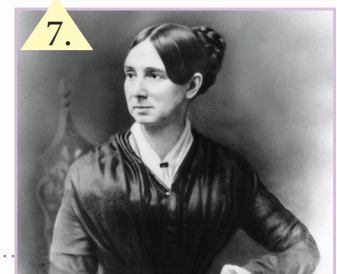
- 5.
- He made efforts to bring the country's more than 50 year long Civil War to an end.
 - He was awarded the Nobel Peace Prize in 1958.
-



- 6.
- He helped millions of landless people and started with *Bhoodan-Gramdan* Movement.
 - He was awarded the Bharat Ratna in 1983 posthumously.
-



- 7.
- She devoted her life for the welfare of the mentally ill and this led to wide-spread international reforms.
 - A crater on Venus was named 'Dix' in her honour.
-



- 8.
- She is working for the 'Girls Right to Education.'
 - She was awarded the Nobel Peace Prize in 2014.
-



FIND OUT

Who is the founder of Sulabh International – an organisation that promotes hygienic and sustainable sanitation?

Indian Revolutionaries

- A. While reading the pages of history, we come across the names of young men who sacrificed their lives for their motherland. Given below are some questions related to these young men. Answer them by taking help from the Help Box.

Help Box

Surya Sen	Seetharamaraju	Bhagat Singh	Khudiram Bose
Ram Prasad Bismil	Vinayak Damodar Savarkar	Hem Chandra Kanugo	Pritilata Wadedar

- Who was the chief of the revolutionary group at Chittagong in Bengal?

- Who penned the patriotic poem '*Sarforshi ki Tamanna*'?

- Name the tribal leader who led the revolt in Andhra Pradesh.

- Name the youngest revolutionary who was tasked with the murder of Kingsford, the magistrate of Muzaffarpur, Bihar.

- Who said, "*If the deaf are to hear, the sound has to be very loud*"?

- Who started an organisation called Mitra Mela in Nasik in 1900 to carry out Chapekar Brothers mission?

7. Whom did Barindra Ghosh send Paris to learn bomb manufacturing from a Russian socialist?

8. Name the woman who led a raid on the Railway Institute at Pahartali, Chittangong in September, 1932.

- B. Given below are the pictures of famous Women Freedom Fighters of India. Identify and write their names in the space given. You can take help from the Help Box.**



Help Box

Kanaklata Barua

Begum Hazrat Mahal

Sucheta Kriplani

Bhikaji Cama

Coinage

Coins were made of different materials in earlier times which gave us very important information about the art, rulers, religion and culture of that particular era. Fill in the following blanks using the clues given. You can take help from the Help Box.

- The Chinese coins were bronze version of hoes and _____.
- _____ was the first to establish standard silver coinage by issuing a coin called 'Tanka'.
- _____ is the word to describe a coin in excellent condition, with mirror like finish.
- _____ was the only yellow-coloured coin issued in India in 1964.
- Under _____ act of 1918, 270 million dollar worth coins were melted.
- The coins of _____ (country) inspired early Japanese coin designers.
- _____ was the first Gupta ruler who issued the *Ashwamedha* type of coins showing the sacrificial horse standing in front of a post.
- _____ has the oldest circulating coins.
- The first set of commemorative coins in India was issued in 1964 in the honour of _____.
- The earliest known coins were made during the seventh century BC in Lydia which is today located in _____.

Help Box

Sher Shah Suri	Turkey	China	Jawahar Lal Nehru	Pittman
Proof	Vikramaditya	20 Paisa	United Kingdom	Knife



DO YOU KNOW?

'Nissar' was the name of the largest coin first struck during Shah Jahan reign, meant to be scattered among the people.



Indian Polity

India has a democratic form of government in which people have the right to choose their own government. Given below are some questions related to Indian politics. Read them carefully and tick (✓) the correct answer.

- Who is the Chairman of the Rajya Sabha?
 President ☐ | Speaker ☐ | Vice-President ☐
- What is the first hour of every sitting of the Lok Sabha called?
 Zero Hour ☐ | Question Hour ☐ | Debate Hour ☐
- Who among the following can take part in the proceedings of either house of Parliament, but cannot vote?
 Solicitor General ☐ | Attorney General ☐ | Election Commissioner ☐
- Who discharges all the administrative and executive functions on behalf of and in the name of the Chairman of the Rajya Sabha?
 Vice-Chairman ☐ | Chairman Proterm ☐ | Secretary General ☐
- Who presides over the proceedings of the Rajya Sabha when the offices of both Chairman and Deputy Chairman are vacant?
 Chairman Proterm ☐ | Speaker ☐ | Speaker Proterm ☐
- Whom does the Indian Constitution vest with the executive power of the union?
 Prime Minister ☐ | President ☐ | Cabinet ☐
- What is the legislative proposal in the form of a bill brought forward by a minister known as?
 Government Bill ☐ | Public Bill ☐ | Minister's Bill ☐
- Which of the following provisions of the Indian Constitution contains the ideals, the government should strive for?
 Emergency Provisions ☐
 Directive Principles of State Policy ☐
 Fundamental Duties ☐
- Who was the first Chief Justice of India?
 S.R. Das ☐ | H.J. Kama ☐ | Chand Mahajan ☐
- Under which of the following Articles can financial emergency be imposed?
 Article 360 ☐ | Article 352 ☐ | Article 385 ☐



Fact File

Indian Railways

- ▶ Indian Railways is known to be the largest network in Asia and the world's largest railway system under a single management.
- ▶ The total distance covered by Indian Railways everyday equals three and a half times the distance to moon.
- ▶ Forty two Railway Companies operated in the country before independence.
- ▶ The first train in India was flagged off on 16 April 1853 between Boree Bunder and Thane, a distance of 34 km. Bombay Government declared that day as a Public holiday.
- ▶ Double decker coaches were introduced on Bombay-Surat train due to over-crowding, which became a problem in 1862.
- ▶ The Indian Mountain Railways – The Darjeeling Himalayan Railways, Nilgiri Mountain Railways and Kalka Shimla Railways – have been functional for 100 years and have been listed in UNESCO World Heritage site.
- ▶ National Rail Museum has an exotic collection of over 100 real size exhibits of Indian Railways.



Test Your Wisdom

1. State whether the following statements are True or False.

- a. Harz is the mountain range in America.
- b. Marmara sea separates Europe and Asia.
- c. Bahadur Shah II was arrested by Alfred Jodi at the Red Fort.
- d. Godavari is known as the Ganga of South India.
- e. The Britishers were the first to arrive in India.

2. Following sentences have some words or dates which are wrongly printed. Find the error and write the correct information in the space provided.

- a. Akbar was a Mauryan ruler.
- b. Champaran Satyagrah was started by Nehru.
- c. Washington DC stands on the River Cam.
- d. American Revolution began in 1776.
- e. H.J. Kama was the fifth Chief Justice of India.

3. Fill in the blanks.

- a. _____ is the highest mountain peak in India outside the Himalayan mountain range.
- b. _____ Sea is on the west coast of India.
- c. Simoon is the name of the wind which blows in _____.
- d. _____ is the highest mountain in Western Hemisphere.
- e. _____ is the only river in England.

4. Write the odd one out in the box provided.

- a. Halle Berry, Indira Gandhi, Benazir Bhutto
- b. Dutch, French, Bergs
- c. Caspian Sea, Black Sea, Harz
- d. Bhagat Singh, Raj Guru, James I
- e. Norta, Norwester, Norway

5. Given below are the pictures of Great reformers. Identify them and write their names in the given space.

a.



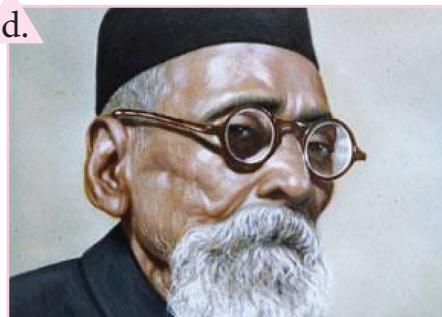
b.



c.



d.



e.



6. Read the clues given below and circle their correct answers in the puzzle.

a	m	a	z	o	n	a	c	b	d	e	f	p	g	f	h
v	t	u	s	q	r	p	o	l	n	m	k	r	i	r	j
q	u	e	e	n	i	s	a	b	e	l	l	a	g	a	w
w	y	x	z	b	a	c	r	e	d	f	c	g	h	n	x
j	l	k	m	n	p	s	q	o	t	i	w	u	x	c	z
a	u	s	t	r	a	l	i	a	b	y	b	e	y	e	b

- River that flows in the Atlantic Ocean.
- First woman honoured with a stamp.
- Largest Palace in the Private land is located here.
- Antherton is a table found here.
- La Poste is a postal service company of this country.

7. Match the following.

A

- Dadabhai Naroji
- C. R. Das
- Bal Gangadhar Tilak
- Samudragupta
- Nagarjuna

B

- Napolean of India
- Lokmanya
- Desh Bandhu
- Grand old man of India
- Indian Einstein

8. Match the events with the dates on the timeline.

