YOUNG SCIENTIST ACTIVITY BOOK

CLASS - V

Sample Pages

EDUHEAL FOUNDATION
• LEARNING FOR LIFE •

DISCOVER ● INVENT ● EXPERIMENT ● EXPLORE

CLASS - V

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SYLLABUS GUIDELINES

CLASS - V

Questions	Key concepts	Activities/ Processes
1. Family and Friends **1.1 RELATIONSHIPS** ***Family tree*** Can you make a family tree with as many of your relatives you can get information about? Who are the relatives whom you have never seen? Where do they live?	Family in transition – Impact of larger socioeconomic forces are changing family structure and quality of life in families; Idea about several generations; how some people move away, some continue to live together, and how households get formed/reformed at several places. How these are affecting roles, relationships, value systems, aspirations within a family.	Activity-Write the names of all your family members along with their ages. How many generations have you been able to get details about?
Shifting from place to place Have you always lived at the place that you now live in? If not, where does your family come from?	Shifts in habitationmigration/ transfers/ demolition displacement Associated difficulties	Discussion or letter writing; drawing.
Who laughs the loudest? Who is the tallest/shortest in the family? Who has the longest hair? How long? Who has the loudest voice/laugh in the house? From how far away can you hear it? Who speaks the softest? When does a child cry the loudest? When she is hungry-or angry? Who is the best cook in the family?	Basic ideas of measurement - of height; Observing and appreciating qualities and skills of relatives; observing infants.	Mimicking people in the family – laugh and voices; drawing people in the family. Writing exercises about an infant they have observed.
Our likes and dislikes Which is your favourite colour? Which is your friend's favourite colour? Which is your favourite food? What about your friends favourite food? Do you know your friends' likes and dislikes? Are there any smells you don't like (fish, mustard oils, garlic, eggs etc) ? Do you eat fish?	Our bodies, our senses, our likes/ dislikes vary e.g. our concept of foul/ fragrant smell *Cultural influences of taste, smell, etc(to be discussed without stereotyping).*	Observation, discussion, describing and writing about a friend's likes/dislikes; a class survey about childrens favourite colour/ food etc.
Feeling to read Do you know how people read with their hands? Do you know someone who finds it difficult to walk/ speak/see etc.? How do you think they learn to overcome the problem?	Awareness and sensitisation towards the problems of physically challenged;	Activity with Braille paper (or simulated Braille paper).

1.2 WORK AND PLAY ***Team games – your heroes*** Do you play any games in teams? Have you ever been captain of the team? Do boys and girls play together? Have you heard of any Indian team playing in another country? Which is your favourite team sport? Do you know any National level player?	Types of games/sports, importance of team spirit in games, gender stereotyping. Some idea of other countries and national teams. Gender, class stereotyping in play.	Collecting information, making picture albums ; posters of sports persons
Local games/martial arts What are the local games/ martial arts of your area? Do you know someone who is good at them? Have you seen a young acrobat or wrestler practicing? Who taught them? For how long have they learnt the art/game? What are the new games in your area that were not played earlier? What do you do in the evenings for leisure? What if there is no TV? Who decides what programmes to watch?	Local and traditional martial art forms/games. Typical practice routines; teachers/gurus; changing patterns of local games. Changing nature of leisure.	Reading, discussion, collecting information and writing about local/ martial games.
Blow hot blow cold How many times do you breathe in a minute – on sitting still, just after a run? How much can you expand your chest by breathing deeply? Can you make a glass cloudy by blowing on it? How do you blow to make something cold? Do you also blow to keep a fire going?	Our breathing – estimates of different rates; chest expansion and contraction in the child's body while exhaling and inhaling; My breath – hot and humid; tacit understanding of cooling by blowing and helping a fire to burn.	Observation, , activity of breathing in and out and observing the difference (mirror/glass/on palm); measuring chest; counting heart beat and breathing rate , making and using a stethoscope
Clean work – dirty work? Can you list ten different types of work that people do for you. In this list what work is seen as dirty and what is seen as clean? What would happen if there were no one to - clean our streets/our home/clear the garbage?	Dignity of Labour Dependence of society on such essential services. Choice of work as a societal value.	Reading and discussion based on suggested resources.
1.3 ANIMALS ***How animals find their food?*** If you leave some food outside your house do some animals take it away? How do they find it? Do these animals also hear/speak/ see/smell/ eat/ sleep?	Sense organs; Comparison with humans – activities such as eating sleeping etc.	Observation of animals to study their response sound, food, light and other stimuli.
What we take from animals? What animal products do we use for clothing, shelter, etc.?	Animal products used by us.	Listing and drawing of items made from animal products.
Why is the tiger in danger? Why do people kill wild animals? Which are the animals that are poached?	Protection of wild life; selling of animal parts.	Discussion, reading, poster making activity with a message to save wild life

People who depend on animals Do you know people who catch/trap/hunt/ entertain using animals? Have you seen how snake charmers/gujjars depend on animals? What do you understand by cruelty to animals? Do you think a snake charmer is cruel to the snake? Have you seen scenes of hunting in rock paintings or on ancient seals?	Communities dependent upon animals; hunters restricted to smaller spaces; changing patterns of wild and domestic animals. To be sensitive about cruelty to animals; realize that people who depend on animals for their livelihood are not necessarily cruel to them. Basic idea of pre-historic hunters and the wild animals seen at that time.	Discussion on people whose livelihood depend on animals; drawing Discussion on people teasing/troubling animals at the zoo/other places.
1.4 PLANTS ***Growing plants*** How does a plant grow from a seed? Can you grow a plant without seeds? How do you grow mangoes/potatoes? Where does the seed come from? Have you seen seeds that fly/stick to your clothes/drift in the water?	Seed germination, root and shoot axis, baby plant, storage of food in the seed; seed dispersal.	Study germination of some seeds, experiment to determine conditions suitable for germination (air and water)
Forests and forest people Have you seen or heard about a forest? How do people live in forests? How is their life threatened by forests being cut? What kinds of foods do they collect from the plants there? What leaves are used for eating on? Do your parents remember places with trees/ forests where there are none today? Why were the trees cut and what is there today?	Tribal life; effects of deforestation; communities dependent on forest products e.g., '*pattals*', bamboo products, etc.	Exploring from parents, reading, and discussion.; tracing tree trunks.
Protected trees Have you heard of a park/sanctuary? Who looks after it? Doesanybody own it? Have you seen a place where trees are worshiped or protected by the villagers?	Public/private ownership of trees/ forests. Sacred groves; people's movements to protect their forests.	Enactment of chipko andolan; poster – 'save trees'; survey and identify any 'green belt' in your neighbourhood.
Plants that have come from far Does tea come from a plant? Where did people first grow tea and what does the plant look like? Does it grow only insome places/ climates? What did people drink when there was no tea in India?	Plants from different countries.	Local knowledge, reading, and discussion, reciting the poem together; making tea.
2. Food ***When food gets spoilt*** How does food spoil? How do we know that food is spoilt? Which food spoil sooner than others? What can we do to prevent food from getting spoilt? What do we do to keep it fresh during travel? Why do we need to preserve food? Do you leave food in your plate?	Spoilage and wastage of food. Preservation of food, drying and pickling.	Keep some bread, other food for a few days – see how they spoil.

Who produces the food we eat? Do you know of different kinds of farmers? Do all farmers own their land? How do farmers get the seeds they plant every year? What else besides seeds is required for a crop to grow?	On different types of farmers. Hardships faced by subsistence farming, including seasonal migration. Need for irrigation, fertilizers.	Study germination of seeds, experiment to determine conditions suitable for germination; Observations in any farm.
What did people grow earlier? Did your grandparents or any elderly person eat the same food you eat today? Do all of us eat the same kind of food? Why do we eat different kinds of food?	Changing food habits, changing crops grown in some areas. Different food habits in different places/cultures.	Collection of samples or pictures of food from different places/cultures.
When people do not get food Do you know of times when many people do not get enough food to eat? Have you seen where extra grain is stored?	Hunger, famine (as both a natural and man-made phenomenon); grain being spoilt in storage; nutrition deficiency diseases.	Collection of pictures related to natural calmities; discussion on affects.
How do you know when you are hungry? Do you know of people who get ill because they do not have enough to eat?	Tasting food; chappati/ rice becomes sweeter on chewing; digestion begins in the mouth; glucose is a sugar.	Tasting activity, action of saliva on rice/chappati.
Our mouth – tastes and even digests food! How do we taste food? What happens in the mouth to the food we eat? Why do we give glucose to patients? What is glucose?	Water, manure, air for plants; Insectivorous plants e.g. pitcher plant, Venus fly trap; basic idea of food chain/web	Observations and discussion on food for plants; making amodel of a food chain/web.
Food for plants? What do plants need for food? Do you know of any plants that eat insects? What do animals eat? Do all animals eat the same food? Do animals eat other animals?	Variation in shelter: regional difference, difference due to climate and materials available, economic status, etc.	Making models of houses; collection of materials used to make houses in different places.
3. Shelter ***Why different houses*** Why do you have different kind of houses in different places? Different houses in the same place?	Need for living close to others, the idea of neighbourhoods.	Write and draw the area you live in, find out about people who work for everybody.
A shelter for everyone? Does everyone have a shelter to live in? Why do people live together in villages, hamlets, colonies, neighborhoods?	Need for sharing resources and spaces, division of spaces.	
Ants live in colonies? Do you know how bees/ ants live together in colonies?	Ant or bee colony, social behaviour in insects.	Observations and drawings of ant colonies, different types of ants.

Times of emergency Have you heard of houses being damaged by floods/earthquakes/ cyclones/fires/storms/ lightening? What would it have felt like? Who are the people who come to help? What can you do to help others before the doctor comes? Where can we look for help at such times? Who runs such institutions?	Disaster and trauma of losing one's home; community help; Hospitals, police stations, ambulance, shelters, fire station, first aid.	Discussion, finding out about the hospital, police station, fire station, etc. Enquiry from grand parents/ other elders; drawing, model making of a step well.
4. Water ***Water from where in earlier times?*** From where and how far did your grandparents get water? How far do you have to go for water? What are underground wells/'baolis'? Do you still see them being used? Have you seen a '*piaao*'?	Estimates of distance measurement; changes in sources and water availability over time; community service especially for longdistance travellers.	Interaction with a farmer, visit to a field, making water wheel., activity with water wheel.
Water flow From where do farmers get water to grow crops? Do all crops need the same amount of water? Have you seen water flowing upwards? What are the different ways in which you have seen water being lifted? How is flowing water used to grind grain?	Sources for irrigation; different quantities of water for different crops; Different methods of lifting water; the use of a waterwheel.	Listing and classification; drawing of water body.
Plants and animals in water What kinds of animals and plants live in water? Are there weeds that are covering your pond/ lake/ river? Can you classify all the animals you see around you to show which ones live in water and which live on land?	Animals and plant life in water; classification in terms of similarities and differences.	Hands-on activity to observe solubility in water, floatation; discussion, interpretation.
What floats, sinks or mixes? Have you ever seen anything floating in water? Can you classify as many things around you to see which float, which sink and which mix with water? Does oil mix with water? What are the similarities and differences in water, oil, milk, cold drink, etc.? How do we measure these?	Basic observations and classification related to floatation and solubility in water; oil and water are liquids that do not mix; basic concepts about liquids; litre as unit of measurement of volume.	Interaction with a community doctor; observation of site of stagnant/flowing water.
Is there any way to reduce the mosquitoes in water? Have you heard of malaria? In what season do you find more people getting ill with malaria?	Stagnant and flowing water; mosquitoes and malaria.	
5. Travel ***Petrol or diesel*** Do all vehicles need petrol to run on? What other fuels do you know that are used for vehicles? What do trains run on? In the past what did they run on? What do tractors use as fuel? For what other purposes are petrol and diesel used? Find out the cost of a litre of petrol/diesel in your area? Do all vehicles run an equal distance on a litre of fuel?	Fules used in vehicles; Fuel is costly. Non renewable source.	Discussion, finding out different fuels used, comparison of cost of petrol and diesel.

Rough and tough Have you seen or been to a mountain? How and why do you think people make such difficult trips? How do you think they train for it?	Mountains, expeditions and the spirit of adventure; some idea of training for high altitude; national flag.	Act/dance to show climbing on a difficult mountain; Designing a flag for your school; identifying some other flags
Ride on a spacecraft What all do you see in the sky – at day time? And at night? How many of the things you see in the sky are man-made? Have you heard of people traveling in a space craft?	The sky in the day and night. Basic exposure to the aerial view of the earth and what India looks like from there.	Observation from a terrace to draw its aerial view. Imagine yourself in a spacecraft giving an interview to the PM about what you see from there!
Oldest buildings Is there any well-known monument/ historical place in your area that people come to visit? What are the oldest buildings around your area? Have you traveled far to see any historical monuments?	Heritage buildings as a source of knowledge about our past; to be able to understand how they were built; materials usedcome from a variety of places, skills of the crafts person; Some historical personalities.	Drawing pictures of the building or the monument in your neighbourhood or memory or imagination.
Have you heard of those personalities who lived in these monuments or who built these?	After basic needs met, exploration leading to improving and overcoming human limitations; greater expression of creativity; overuse of natural resources needs to be checked.	Observing and talking about processes of growing food; drawing tools used in different processes; finding out about different dishes made from the same grain, say, wheat/rice.
6. Things we Make and Do ***Growing Food*** How do we grow food? What tools do we use for preparing the field? For cutting and harvesting? For cutting and cooking different vegetables/ dishes?	Some idea of the story of a grain from the field to our plate – in terms of processes and the tools used. Different things made from the same grain, say, wheat/rice.	Making a simple waterwheel, sprinkler, pump.
How do we water the crops? How do we lift water through a pump or a waterwheel? Can we make a water wheel, sprinkler, etc.?	Simple observations of water lifting in fields or in homes; making of a water wheel, sprinkler, etc.	

Sense Your Senses

☺ We have five senses. And if you have the sixth one then you are a genius! So use your sixth sense to match the beginnings and endings of the following sentences, and become a GENIUS !

Beginnings	Endings
 A rabbit has good hearing...	to look for its prey.
 An owl can see...	too high for a human to hear.
 A bat makes sounds that are...	because it has a large voice box.
 A fox's whiskers...	because of his big ears.
 A human can make a loud noise...	appears to make a noise.
 A lion has very good eyesight...	further round than most animals.
 A worm...	in the dark to catch its prey.
 A parrot can turn his head...	is sensitive to touch.

☺ Name

1. The animal with very good sense of smell

   _____

2. A bird with extra ordinary sense for sight

   _____

3. The animal who can defeat any animal in race

   _____

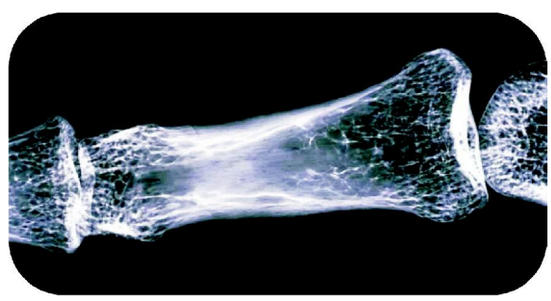
All About SKELETON

Have you ever imagined, how you would be without bones i.e. the skeleton ? You would be like a big, floppy jellyfish. You wouldn't be able to stand up, move, play, write, dance i.e. you couldn't do almost all things that you can do now. You wouldn't be like the one you are now. Also the bones in your skeleton protect important parts of your body, such as the brain, heart, lungs, and the spinal cord, from bumps and knocks.

What are Bones Made of?

Bones are made up of water, minerals, and body tissues.

The outer surface of bones is called the ***compact bone***. Inside the bones there is a honeycomb-like structure, called *cancellous*. All bones have blood vessels running through them, and lots of bones have marrow inside them. Bone marrow makes blood cells for the body.

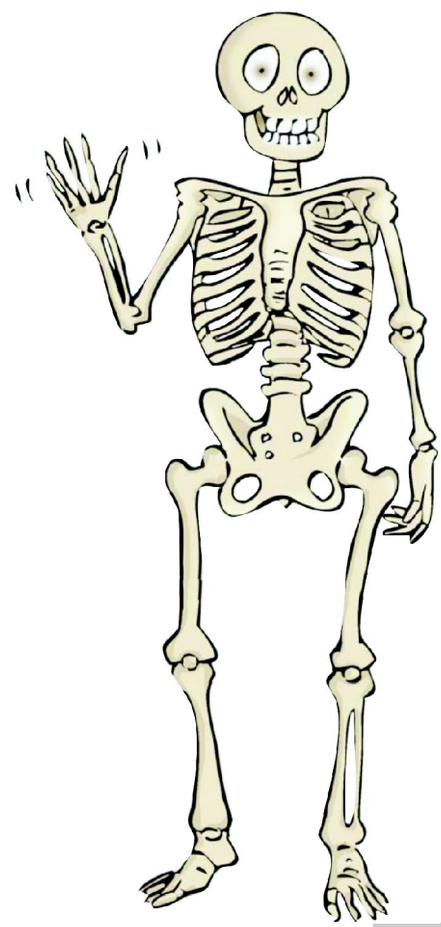


Bones are joined together by strong tissues called *ligaments*. Where two bones meet in our body, we have joints. Fixed joints are where the bones have fused. Movable joints are the ones

that let us walk, swim, eat and so on. Movable joints can be **hinge joints**, such as our elbows, knees, fingers, and toes, or **ball and socket joints** (hinges are plates on which doors/windows move), such as our hips and shoulders.

Drinking or eating foods rich in calcium, such as milk, meat, lemon etc, helps look after your bones. Calcium keeps bones strong and healthy. When playing sport, wear the right sports gear, such as helmets, shin guards, mouth guards, and wrist supports so that your bones are well protected. While riding a cycle try to wear helmets.

How Many Bones?



When you were born, you had around 300 bones. As you grow older, some of these bones join together (or fuse). By the time you grow into an adult, your skeleton has only around 200 bones. Bones keep growing until you are about 25 years old.

The smallest bone is in the ear. It is called the stirrup bone. Without this tiny bone, you wouldn't be able to hear.

The largest bone is in the leg. It is called the femur (the thighbone). It has to be very strong because it supports your whole skeleton when you run or walk.

Ball and Socket Joint :-

This joint is freely movable joint. It is present in your shoulder. This joint can be explained through this activity.

You Will Need

- ☺ one table tennis ball
- ☺ a piece of thin card, 8 cm wide and 20 cm long
- ☺ sticky tape
- ☺ scissors
- ☺ an eggcup

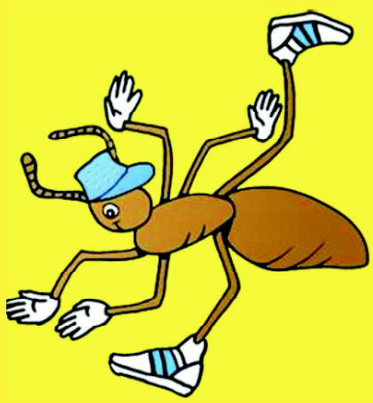
Roll the length of card into a cylinder about two centimetres wide and tape it up. Cut slits one centimetre deep into the edge at one end of the cylinder, and tape this end on to the ball.

Now place the ball into the eggcup. Holding on to the free end of the cardboard cylinder, turn the ball around. This action is the same as the movement in your shoulders, allowing you to swing your arms around in a circle. **TRY IT!**

Now put more pressure on the cardboard. What happens?

If too much pressure is placed on the top of an arm, the humerus bone (bone present in upper arm) can slip out from the scapula (shoulder blade). This is called a dislocated shoulder.

Let's Talk About INSECTS

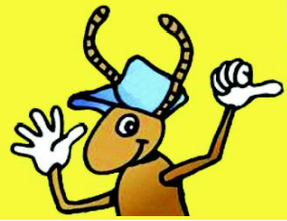


Insects belong to a group called **Arthropods**.

Arthropod means having limbs with many joints that bend in many directions.

Humans have elbows and knees that bend, but their movement is limited. We insects have them best! We can do things with our limbs that humans can only dream about!

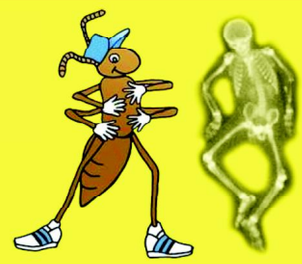
Even American space agency has tried to copy our ability to move their Martian exploratory robots.

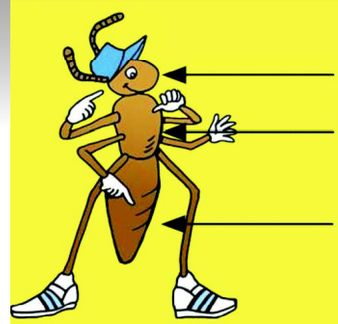


This one has 36.

But not all arthropods are insects. Spiders and centipedes are arthropods, but they are not insects!
It's because insects **only have six legs!** Spiders have 8 legs and centipedes have many more.

Another characteristic of insects is that they do not have bones or a skeleton. They have a rigid "skin" called an exoskeleton.





Insects have body parts just like you-
There are three basic body parts.
In an ant like me, it's easy to see three body parts.

Let's look more closely at the head.

We have antennae, eyes and a mouth.

Antennae can be very simple or incredibly complex.

With our antennae, we can detect smells, vibrations, or sounds.

We can even use them to find each other.

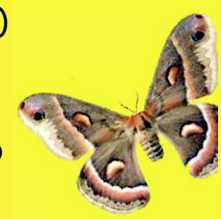
The next body part is the thorax.

It is divided into three parts. Each part holds a pair of legs. The legs can be used to jump, grab, dig or even swim.

The wings are also located on the thorax.

Most insects have four wings (two pairs) like moths or dragonflies.

Some like the housefly only have two wings or one pair.



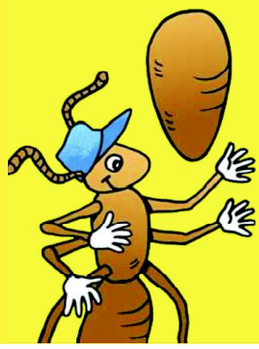
The wings are also located or the thorax.

Worker ants never have wings, but the queen ant is born with wings.
She sheds them after she forms a new ant colony.

There are very few wingless insects around.
However, some common ones are fleas and ants.

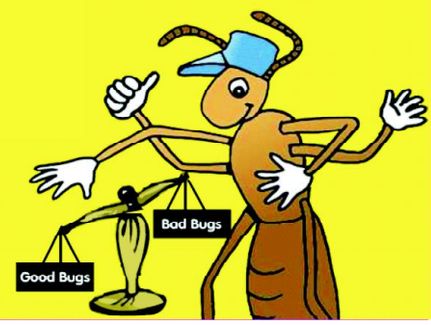
The abdomen is the last of the three body sections. It seems to be the simplest part, but it is quite complex.

ABDOMEN



Located in the abdomen are the insect's respiration, digestion, and reproduction systems.

There are many insects doing good things such as pollination of flowers, producing honey etc. rather that those that stings us.



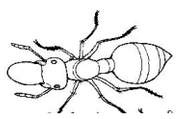
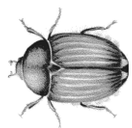
☺ Can you name three insects which are useful to you, and in what way ?

	Name	Why
(1)	_____	_____
(2)	_____	_____
(3)	_____	_____

😐 Name three insects which are harmful and in what way ?

	Name	Why
(1)	_____	_____
(2)	_____	_____
(3)	_____	_____

☺ Can you name the following. Now you know the characteristics of insects. Based on that find out which of the following are insects.

	Picture	Name	Insect (Yes or No)
(i)		_____	_____
(ii)		_____	_____
(iii)		_____	_____
(iv)		_____	_____
(iv)		_____	_____

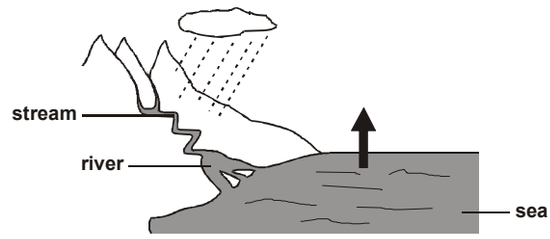
Nationwide Interactive Science Olympiad, 2007

Sample Paper

SCIENCE

1. For which life process is the flower important to the plant?
(a) Reproduction (b) Growth
(c) Nutrition (d) Movement

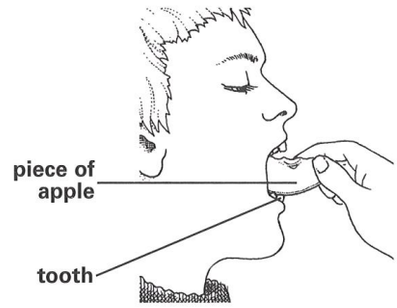
2. This picture shows a part of the water cycle. What the arrow shows?



(a) Water rising (b) Water vapour condensing
(c) Water evaporating (d) Gas changing to liquid.

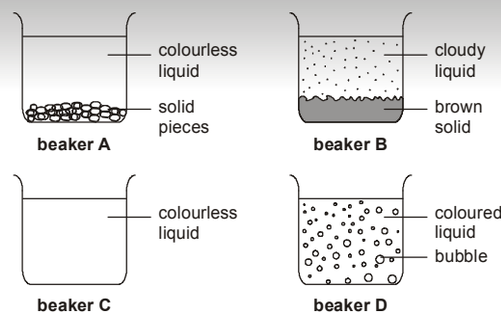
3. A human skeleton is made up of bones. Mark to show the main function for which bones are important.
(a) Breathing (b) Nutrition
(c) Movement (d) Reproduction

4. When John bites a piece of apple, there is a force from John's teeth on the apple. Mark the arrow to show the direction of the force from John's **bottom** teeth when he bites the apple.
(a) ↑ (b) ↓
(c) → (d) ←



5. Sarika wants to find out what happens when solids are mixed with water. She adds water to four different solids and stirs

the mixtures. After 20 minutes she draws pictures of her results.



The table below names the four solids that Sarika mixed with water. Which is the correct content in which beaker. Mark one option from the following.

	Solid	**Beaker**
(a)	soil	D
(b)	vitamin tablet	A
(c)	plastic beads	B
(d)	salt	C

6. Kavita wrote 4 statements about materials.

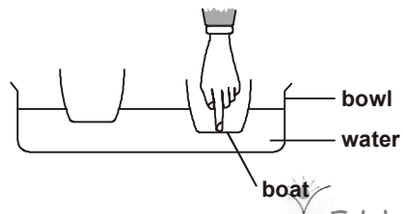
Kavita's statements

A. Cotton wool is a solid. It feels soft on my skin.
B. Salt is a solid. I can pour it.
C. I can see that my water bottle is half full.
D. I can smell the meat cooking

How has Kavita collected this information? Select one answer.

(a) by fair testing (b) by observing
(c) by measuring (d) by modelling

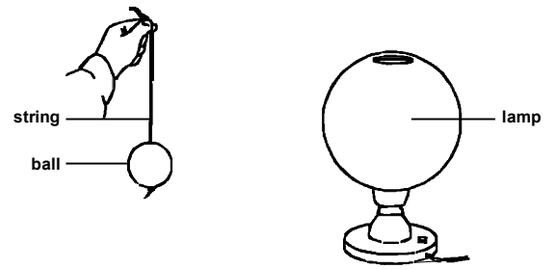
7. Mihir puts two boats in a bowl of water. They float on the water. Mihir pushes down on one of the boats with his finger.



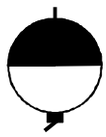
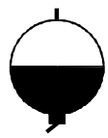
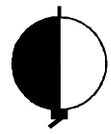
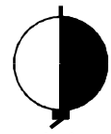
Mark the correct answer to show what Mihir can feel as he pushes down.
(a) The force from the water pushing the boat up
(b) The force from the water pushing the boat down
(c) The force from the air pushing the boat up
(d) The force from the air pushing the boat down.

8. What is the heart made from? Mark correct answer
(a) muscle (b) blood (c) bone (d) skin

9. Juhi makes a model of the Earth and the Sun to show day-time and night-time. She uses a lamp for the Sun and a ball for the Earth.



Which of the following correctly shows day and night in this model? Mark the correct answer.

(a)  (b)  (c)  (d) 

10. Divya has a balanced diet. It helps him to keep health. Which of the following **best** describes a **balanced** diet?
(a) eating mostly fruit and vegetables
(b) eating foods from different food groups
(c) taking vitamin pills
(d) not eating sweets

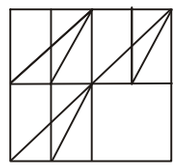
MENTAL ABILITY

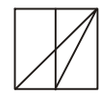
11. Use the table below to solve this problem. What is the missing number?

3	4	7
1	2	3
4	?	0

(a) 14 (b) 8 (c) 6 (d) 5

12. **Direction :** Determine the figure which without changing the direction will complete the problem figure.



(a)  (b)  (c)  (d) 

13. **Direction :** Find odd figure out.

(a)  (b)  (c)  (d) 

14. 5 min. + 25 sec =

(a) 6 min. 95 sec. (b) 3 min. 50 sec.
(c) 3 min. 65 sec. (d) 4 min. 85 sec

15. $5\frac{3}{4} = 5 + (\square + \square + \square)$

Here $\square$ stands for

(a) $\frac{3}{4}$ (b) $\frac{1}{4}$ (c) 3 (d) 4

COMPUTER

16. Refers to a combination of text, graphics, sound, animation, and video.

(a) Multiplication (b) Multitude
(c) Multilingual (d) Multimedia

17. Which of the following item is NOT input device?

(a) Keyboard (b) Mouse (c) Printer (d) Joy stick

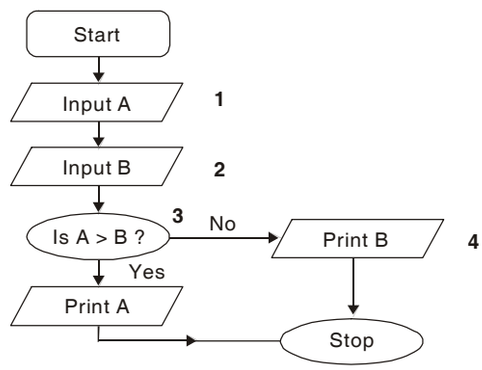
18. Moves the cursor up, down, left or right without erasing characters.

(a) Arrow keys (b) Space key
(c) Return key (d) Control key

19. A key that must be pressed each time a new command or information is entered.

(a) Escape key (b) Control key
(c) Arrow key (d) Enter key

20. The symbol at which of the following steps of given flowchart is drawn wrong ?



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

Answer key :-

1. (a)	2. (c)	3. (c)	4. (a)	5. (d)
6. (b)	7. (a)	8. (a)	9. (c)	10. (b)
11. (c)	12. (d)	13. (c)	14. (d)	15. (b)
16. (d)	17. (c)	18. (a)	19. (d)	20. (c)