

Subject : Science
 Grade : 9
 Term : 2nd Term
 Competency : Explores life and life processes in order to improve the productivity of biological systems
 Competency level : Investigates the mechanical support and movements in organisms
 Unit : 8 - Support and movement in organisms

This lesson investigates on the movement of plants and animals, support, effect of muscles and bones in movement and in -situ conservation

Activity 1

The vessel A contains names of a few animals and vessel B contains appendages used by animals for their movements.

Vessel A



Vessel B



I. By observing the animals in vessel A or by watching videos on them match the appendages in vessel B and complete the following table.

	Name of the animal	Appendages used for movement
Ex:	Iguana	Legs

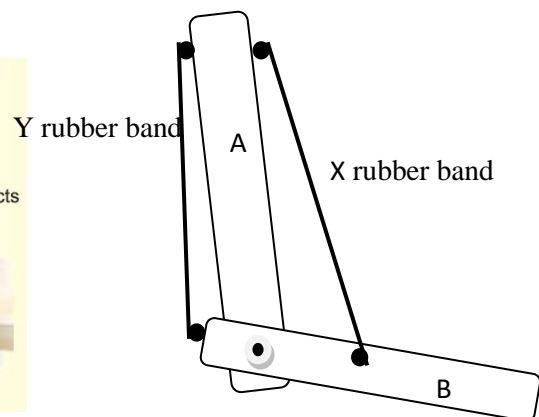
II. Write down the animals who do not have special appendages for movement from those who mentioned in vessel A.

III. Write down the animals whose appendages are not directly related to the movements from those who mentioned in vessel B.

IV. Write down the names of animals who use bones apart from muscles for their movement from those who mentioned in vessel A.

- Animals move their body parts and most of them use muscles for their movement. Invertebrates use muscles while vertebrates use both muscles and bones for their movement.
- Bones gives rigidity to the body and through that provides mechanical support.
- The various muscles attached to the bones aid in movement of bones.

Let's make an elbow joint



An elbow joint

Model of an elbow joint

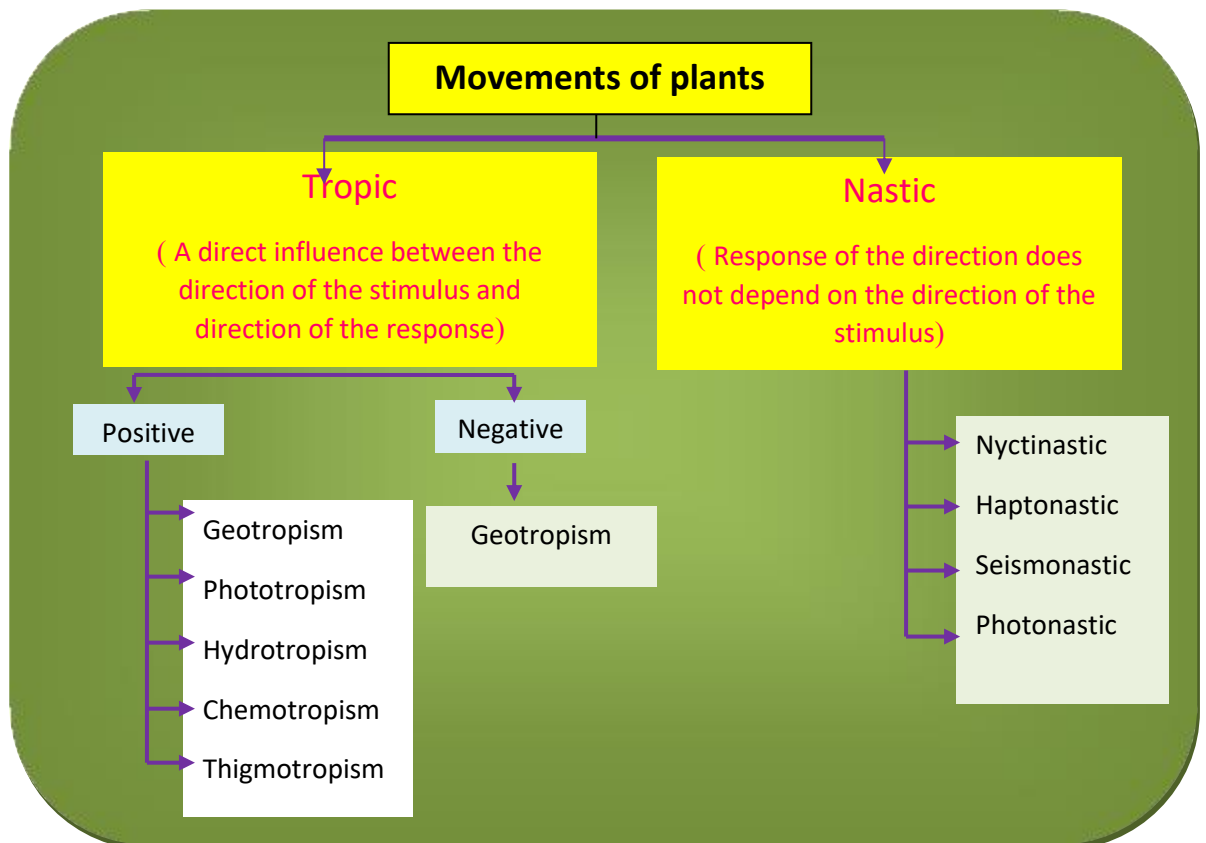
- Design and operate a model of an elbow joint as shown in the above diagram using the materials that you can easily find at home.

Activity 2

- Answer the following questions according to the operation of the model.
1. What will happen if the length of the “X” rubber band is decreased?
 2. Will the length of the “Y” rubber band increase or decrease when the length of “X” rubber band is decreased?
 3. Does the length of the “Y” rubber band increase or decrease as B moves upward?
 4. When the bicep muscles contract the lower part of the elbow lifts up. Then, the length of the triceps muscles When the hand is stretched the length of the triceps muscles while the length of the biceps muscles
- (Use increase or decrease as necessary to fill the blanks)

Movements of plants

- Growth of a part in a plant as a response to a stimulus or change of location due to a turgor change is known as movements of a plant.



Activity 3

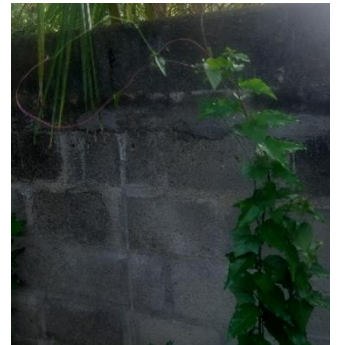
Following are some of the plants that can be found in the garden.



A



B



C



D



E



F

Relevant cases are not mentioned as A, B, C, D respectively.

- i. Elongation of roots downwards of an uprooted temple tree plant
- ii. a branch of a tamarind plant when dark falls
- iii. a vine wound in a tree
- iv. elongation of the apex upwards in a temple tree plant
- v. shrinking of leaves of mimosa plant when touched
- vi. a sesbania tree after the sun set

1. Match the cases in correct order.

2. Mention the type of movement of plants for each instance.

Ex: positive phototropism, nyctinastic movements etc...

Activity 4

- Fill the following paragraph using the suitable words. Once you complete the paragraph you will be able to understand what is in-situ conservation.
- Below the paragraph is a list of words to be used to fill the blanks.

Plants cannot (a)..... . But animals can (b)..... . Therefore, when all the necessary (c)..... are received by the plants, they (d).....in their habitat. If it is essential to (e)..... plants, it should be done in their (f).....Conservation of animals in its living environment is known as (g)..... Plants are conserved in Sri Lanka through (h).....forests.

External factors/ conserve/ locomote/ grow/ locomote/ habitat/ strictly reserved// in-situ conservation

Translated by : Nayomi Wijesooriya

Answers

Activity 1

i.

Name of the animal	Appendages used for locomotion
Iguana	Legs
Dog	Legs
Pigeon	Legs / wings
Tiger	Legs
Tuna	Fins
Whale	Flippers
Penguin	Legs
Butterfly	Wings
Amoeba	Pseudopodia
Bat	Flippers
Dragon fly	Wings
Monkey	Legs
Elephant	Legs
Human	Legs
Frog	Legs
Cockroach	Legs / wings
Millipede	Legs

ii. Rat snake, snail, earthworm

iii. nails, scales, feathers

iv. Iguana, dog, rat snake, pigeon, tiger, tuna, whale, penguin, bat, monkey, elephant, human, frog

Activity 2

i. B moves upwards

ii. Increase

iii. Increase

iv. (a) increase (b) decrease (c) increase

Activity 3

1. F, E, C, D, B, A

2. i. Positive geotropism

ii. Nyctinastic movement

iii. Positive thigmotropism

iv. Positive phototropism

v. Haptonastic movement

vi. Nyctinastic movement

Activity 4

- (a) locomote (b) locomote (c) external factors (d) grow (e) conserve
(f) habitat (g) in-situ conservation (h) strictly reserved