

Grade 8				
Ch. 3 Lesson 2				
Life Science				
Page #	Question	Answer(s)	Links/Sources	Student Resources
102	In the sunflower's bud phases, where would you expect the auxin concentration to be the greatest?	*The auxin concentration would be the greatest on the shaded side of the plant.		
102	How are they adapted to withstand high temperatures during the day and low annual precipitation?	Sample answer: They have small leaves, they have a waxy cuticle covering the stem, they have both long and shallow roots.		
102	How are those adaptations different from those plants living in the arctic?	Sample answer: Arctic plants grow in clumps to reduce heat loss, they have rapid flowering, they have darker leaves. They have many small hairs on them that shield them from the cold and wind.		
102	What would happen if you moved a plant from a very different environment to your environment?	It is likely that the plant would die, unless you could provide the conditions it needs to leave.		
103	How can we demonstrate phototropism?	*By letting a plant grow indoors by a window, letting it grow toward the light, then turning it away from the light and watching the plant turn toward the light.		
103	How are positive and negative tropisms alike?	*They are both directional movements in response to stimuli.		
103	How do roots and stems compare in their phototropic response?	*Stems are positively phototropic and roots do not demonstrate a phototropic response underground because they are not exposed to light.		
103	Which best describe you?	*Answers will vary. John 12:32 says that Jesus came to draw all men to himself. John 3:19-20 describe people who do not wish to be drawn to the light. John 3:21 describes others who are drawn to Jesus.		
103	What does it mean to have a positive phototropism?	It means that something grows toward the light.		
103	How would this be different in a plant that has a negative phototropism.	The cells that were exposed to the light would grow faster than the cells that were shaded from the light and the plant would grow away from the light.		
103	Do you think there are any plants that lack phototropism? Why or why not?	Sample answer: Plants require light for photosynthesis, if plants did not have a positive phototropism would not survive in darkness.		
103	What is the advantage of a plant being heliotropic?	The plant can keep its flowers and leaves pointed directly at the sun to receive the maximum amount of sunlight possible.		

103	What is the disadvantages?	If it is an extremely hot day, the increased might cause a rapid loss of water causing the plant to wilt at which point it would not be able to carry out its life processes as well.		
103	Why do you think this happens?	Sample answer: To protect the new flower from intense sun exposure.		
104	Do you think plants have the same response to gravity while orbiting Earth in the International Space Station?	No. Because there is no gravity in space.	https://www.nasa.gov/content/growing-plants-in-space	
104	How long would it take for the temperature to reach 14°C if it continued changing at the same rate?	*At a rate of 0.2°C/min the change would take 50 minutes.		
104	Where does this tree exhibit negative geotropism? Where does it exhibit positive geotropism?	*Negative geotropism occurs in the stems, leaves, and branches. Positive geotropism occurs in the roots.		
104	Which direction would that be on Earth?	Towards the center of the Earth.		
104	Do you think plants have the same response to gravity while orbiting the Earth in the International Space Station?	Sample answer: No. Because there is no gravity in space.		
104	Have you ever seen a tree that has slid with the dirt down a hill?	Sample answer: Yes.		
104	What happened to the shape of the tree?	The trunk was laying down the hill rather than standing upright, but in time the end of the tree began to grow up and the branches all began to turn up.		
105	How can we identify plant tropism?	We can test how plants grow in certain conditions.		
105	In what directions will the roots grow?	They will try to grow down no matter how the Petri dishes are turned.		
105	How does light affect plant growth?	The plant always grows toward the light.		
106	How are geotropism and thigmotropism alike?	*Both are directional growth responses to a stimuli's.		
106	How are they different?	*Geotropism is in response to gravity. Thigmotropism is a response to touch.		
106	Give an example of these tropisms from your own experience?	*Sample answer: Growing morning glories along a fence; trying to grow an upside-down tomato plant.		
106	What needs have been met by this adaptation?	*These plants grow in nutrient-poor soil. Digesting insects provides the plant with the nutrients it needs to survive.		
106	How does their climbing movement offer them an important advantage for survival?	It allows them to grow up tall above other plants so they can reach light better than other plants.		
106	Why does the flytrap trap the insect?	To digest the insect and utilize the nutrients it yields.		
106	What is the relationship between the flytrap and the fly?	The flytrap is the predator, the fly is the prey.		

107	Why is seed dispersal a good example of plant adaptation?	*Sample answer: A plant's seed dispersal method helps it adapt for survival and successful reproduction in its environment.		
107	What characteristic of the seeds allow for wind dispersal?	*The seeds are light and wispy, so they are easily blown by the wind.		
107	What are four methods of seed dispersal?	*Wind, water, animals, and bursting.		
107	Is dispersal over a wide area an adaptation for a plant?	*In most cases, the answer is probably yes, especially if the plant seeds are large in numbers. Although many seeds fail to germinate in unsuitable locations, there is always the chance that a small number of seeds will fall in environments where they can survive.		
107	What, in your opinion, is the ideal method of seed dispersal?	*Some students may argue that there is no ideal; adaptations depend on species characteristics and environments. Others may have reasons for favoring one method over another.		
107	How do plants respond to the environments around them?	Sample answer: They respond by regulating their growth rate, by producing flowers that have variations that improve reproductive rate, the number of seeds they produce, their root systems, and the size and colors of leaves.		
107	They can't leave harsh environments, so how do plants protect themselves from cold, heat, drought, and pests?	Sample answer: cold - dense growth, many tiny hairs on stems, leaves, flowers; heat - small leaves, thick cuticle; drought - deep root systems, slower growth and smaller size; pests - thorns, thick leaves, chemicals.		
107	What would be the advantages of seedlings developing at a distance from mature plants?	Less competition for resources (nutrients and water).		
107	How might mature plants hinder the growth of seedlings?	By competing for resources (nutrients and water), by shading seedlings from sunlight.		
107	Are any of the plants native to your neighborhood?	Sample answer: Yes. Note - Let students share the plants they see in their neighborhood and describe where they see them growing.		
108	How do desert plants protect their stored water from animals?	*Stored water is protected by spines, bitter taste, or toxins as well as growing in hard to reach locations, or within canopies of armored plants, or relying on camouflage.		
108	What adaptations protect this plant?	*Small leaves, needle-like leaves, and glossy or waxy leaves, or even fleshy leaves.		

108	How might opening stomata at night help desert plants survive?	*High temperatures during the day might increase the rate of transpiration, causing the plant to lose too much water. Opening stomata only at night when temperatures are cooler, allows gas exchange for photosynthesis at a lesser cost in water loss.		
	* Means the answer is found in the TE.			