

Grade 8				
Ch. 3 Lesson 1				
Life Science				
Page #	Question	Answer(s)	Links/Sources	Student Resources
88	How has the tree in photo adapted to its environment?	Sample answer: It has adapted to wind that consistently blows in the same direction, by growing in the direction the wind is blowing to keeps its leaves from drying out.		
89	How might humans change environments and affect plants survival?	*Sample answer: Cutting down a forest, introducing invasive species, climate change all affect plant survival.		
89	What are some ways seeds travel?	Sample answer: By wind, by water, by gravity, and by animals,		
89	How does this help a species survive?	By getting new plants of the species into areas where there is less competition for resources which improves its chances of surviving are reproducing.		
90	What are some characteristics that set plants apart from other living organisms?	*Sample answer: Plants can make their own food, they are unable to move from one location to another, plants give off oxygen and take in during photosynthesis.		
90	How does the leaf's structure enable the plant to make its own food and utilize the energy from that food?	*The leaf has a large surface area which allows it to capture much of the sun's energy, which is then converted into food for the plant.		
90	Is energy important.	Yes.		
90	Where do humans get energy to move, live, and reproduce?	From the food they eat.		
90	Where do plants get their energy?	From the food they produce by photosynthesizing.		
90	What do you know about the energy cycle of our planet?	Sample answer: The sun provides the energy for the planet, but the sun's energy needs to be converted to chemical energy that is needed by living cells. Plants convert light energy into chemical energy that can be used by living organisms.		
90	Where does all this energy come from and where does it go?	Sample answer: The sun provides the energy for the planet, but the sun's energy needs to be converted to chemical energy that is needed by living cells. Plants convert light energy into chemical energy that can be used by living organisms.		
90	What are some characteristics that separate plants from other living organisms?	Sample answer: Plants can make their own food, they are unable to move from one location to another, plants give off oxygen and take in during photosynthesis, plant cells have cell walls.		

91	Under what conditions to plants take in carbon dioxide?	*Carbon dioxide is used by plants during photosynthesis. Photosynthesis needs sunlight, water and carbon dioxide.		
91	Where do Christians get the power for their lives?	*The sun is the source of energy for plants. The Holy Spirit is the source of power for Christians.		
91	What gas are you adding to the solution?	Carbon dioxide.		
91	What color id the solution change to?	Blue.		
91	Did the color change? Why or why not?	Yes. The light tube changed to blue indicating that CO ₂ was taken in by the plant; the dark tube stayed the yellow indicating that CO ₂ was not taken into the plant.		
92	How can we observe the amount of water plants release into the air through their leaves?	By collecting the transpired water in a cup.		
92	What difference will you see between the two cups?	Water will collect on the plastic wrap of the cup that is covered.		
92	How does surface area affect transpiration rate?	The larger the surface area the greater the rate of transpiration.		
93	How can you tell if photosynthesis is occurring?	Sample answer: Oxygen gas is produced.		
93	How much gas will be collected in the test tubes?	About 1 cm of gas will be collected in the test tube containing the <i>Elodea</i> leaves placed in the light.		
93	What reactants are needed to produce oxygen in the light reaction	*Light, water, carbon dioxide.		
93	In order to work properly, what two compounds do the dark reaction need from the light reaction?	*ATP and NADPH		
93	What would happen to the plant if light reactions did not occur?	*Dark reactions would not have ATP and NADPH to break down and use the energy to make PGAL because ATP and NADPH are produced during the light reactions. As a result, the plant would not be able to survive.		
94	How do dark reactions compare to light reactions?	*Both reactions take part in the chloroplasts. The light reaction only happens during the day, the light energy is used to split water molecules into hydrogen and oxygen and releases oxygen into the air. The dark cycle then reduces the molecules to forms that are needed to accept light energy. The dark cycle does not use light, but can occur night or day.		
94	How important are the reactions to one another?	*Without one the other would not occur.		

94	Why is oxygen is sometime called a "waste product" of photosynthesis?	*The plant releases oxygen into the air. Because the plant is getting rid of the oxygen and not using the oxygen for itself, it is know as a waster product.		
95	How do photosynthesis and cell respiration compare?	Answers will vary. Sample answer: Photosynthesis uses light and carbon dioxide to produce sugar and oxygen, respiration uses oxygen and sugar to produce ATP, carbon dioxide, and water. Photosynthesis happens only in light, cell respiration does not require light. Photosynthesis happens in the chloroplasts, cell respiration happens in the mitochondria.		
95	How do photosynthesis and cell respiration work together?	The process of photosynthesis and cellular respiration work in a cycle with the products or one used as the reactants of the other.		
95	Why is the glucose produced during photosynthesis important to plants.	It is the source of energy for plant cells to function.		
95	Where do animals get the oxygen required for cell respiration?	From the plants as a by-product of photosynthesis.		
95	Where to plants get their carbon dioxide?	From animals as a by-product of cell respiration.		
95	What cellular activities are powered by cellular respiration.	All cell activities are powered by cell respiration.		
95	Is there ever a time when cellular respiration might stop?	No.		
95	How does this equation relate to the one for photosynthesis?	It is just the opposite. In photosynthesis water and carbon dioxide are used to produce sugar and oxygen.		
96	Why do plants need to transport materials?	Water from the roots must reach the leaves where photosynthesis occurs. Food must travel from the leaves to all parts of the plant to provide the energy cells need to live.		
96	What function might these dead cells have in the tree?	These cells give the tree stability and strength.		
96	Where other than the stem of the plant would you find xylem? Why?	In the leaves and roots. Xylem is need to transport materials in these parts of the tree.		
97	Why is it important for phloem to be able to move glucose up and down the plant?	*This allows the plant to move the energy to where it is needed most.		
97	When are stomata likely to be open?	*When water is plentiful.		
97	Is that good for the plant? Explain.	*Yes. When water is plentiful the plant can carry out photosynthesis.		
97	How does stoma function like a mouth?	It opens to let materials pass in and out; when it closes materials do not pass in or out.		
97	How are stomata and the process of photosynthesis related?	*Stomata allow the raw materials needed for photosynthesis to enter the plant and for the waste gas to leave the plant.		

97	Why is the cork important to the tree?	It acts as protection against harsh environmental conditions, weather, insect pests, animals, and fire.		
97	Do you think the tree can survive without its cork?	Yes. As long as not too much is lost.		
97	Why do some plants have this feature?	Because they need the stored food, when they loose their leaves or die off in winter.		
97	What are these gases?	Carbon dioxide, oxygen, and water vapor.		
98	Where are the meristems found on a plant?	*In the stem.		
98	What part of the term provides a clue as to what part of the plant this is?	*The word "stem" in the word meristem suggests the connection to the stem of the plant.		
98	What mechanisms allow plants to grow taller?	*Apical meristems at the tips of stems and intercalary meristems between the tips and bases of stems and roots.		
98	What mechanisms allow plants to grow wider?	Vascular cambium produces vascular tissue; cork cambium produces cork tissue.		
98	How does David describe growth of boys in Psalm 144:12?	*He wants his sons to grow up like plants.		
98	As you grow up which characteristics might be like the primary growth of plants and which might be like the secondary growth?	*Primary growth would be like physical height as in plants. Secondary growth might include muscular strength, increase in wisdom, spiritual growth, or emotional maturity.		
98	How can plants grow to be large?	Sample answer: Growth in plants is indeterminate because the cells in the meristem regions continue to divide. The vascular tissue allows plants to continue to grow because the nutrients can continue to be delivered to where it is needed in the plant.		
99	How is tree bark important to this plant?	*The bark protects the cambium layers from bumps and cuts and yet it is porous, allowing the tree to breathe. The thick bark of the sequoia protects the tree from extreme temperatures, insects, fire damage, and intense sunlight and slows the loss of water from the tree.		
99	Calculate the diameter of the tree at its base.	$C = 2 \times 3.14 \times r$ $31 = 6.28 \times r$ $31 \div 6.28 = r$ $r = 4.94$ $d = 4.94 \times 2$ $d = 9.88 \text{ m}$		
100	How is abscisic acid different from many of the other plant hormones	*It stops growth rather than encouraging growth in a plant.		
100	How are plant hormones similar to hormones in animals?	They control cell activities.		
100	When might there be an abundance of auxins in a plant?	When it first sprouts from the seed, at the beginning of the yearly growing season.		

100	How might a plant become stressed during its growing season?	If there is an inadequate water supply, if there is too much competition from other plants.		
100	How does ethylene affect fruit such as apples, bananas, or avocados?	It cause them to ripen quickly.		
100	Why might gardeners or farmers apply gibberellins and cytokinin to their plants?	When they want to plants to grow quickly.		
100	What would some advantages and disadvantages of adding these hormones to crops?	Advantages - they result in rapid growth. Disadvantages - they can result in improper development of flowers and fruit.		
100	How can it be that these organisms, anchored to one place, can be successful and survive in their environments?	Sample answer: They have the structures and processes built in that enable them to get the resources they need for growth and reproduction.		
101	How can we demonstrate the effect of a plant hormone?	*By placing two apples in a two bags and leaving one bag open and the other closed and comparing the speed at which the fruit ripen.		
101	Which pear ripened the fastest?	The one that was in with the apple and the other pear.		
101	What variable caused the differences in ripening time?	The amount of fruit in the bag.		
101	Why do you think this happened?	Sample answer: There was more ethylene in the bag with more fruit causing the fruit to ripen faster.		
101	If you did this activity without closing the bags would the outcome change? If so How?	If the bags had been left open, the ripening would have happened more slowly.		
* Means the answer is found in the TE.				