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| Grade 6 | | | |
| Ch. 3 Lesson 3 | | | |
| Life Science | | | |
| Page # | Question | Answer(s) | Links/Sources |
| 99 | How do you think the different cells in a pine tree help it perform its life functions? | *Sample answer: The cells have different jobs, such as moving nutrients and water into the tree, removing wastes from the tree, protecting the tree from water loss, and supporting the tree in an upright position. | |
| 99 | When the construction is complete and the family move in, is there any work remaining to be done? | Sample answer: Small details may need to be finished up, but mainly it is the ongoing maintenance and repair that will be needed through the life of the house. | |
| 99 | What would happen if a tree fell on the house during a storm and damaged the kitchen? | Sample answer: The roof and any interior damage would need to be rebuilt or repaired. | |
| 99 | How well do you think your body would function if each cell had to perform all of its own tasks, such as obtaining its own food, repairing injuries, and protecting itself from invaders? | Sample answer: The body would not function well if each cell had to complete all the necessary tasks. | |
| 100 | How might the function of white blood cells and general wear and tear relate to the length of their life spans? | *Sample answer: White blood cells are "used up" more quickly than red blood cells because they are fighting invaders. | |
| 100 | When are chromosomes pulled to opposite ends of the cell? | *Anaphase. | |
| 100 | When are a cell's regular functions performed? | *Interphase. | |
| 100 | At which point does the cytoplasm pinch inward to form two new cells? | *Cytokinesis is when the two cells separate, telophase is identified by the "pinching" in of the cell membrane | |
| 100 | When are chromosomes duplicated? | *Interphase. | |
| 101 | In what phase of the cell cycle does the cell spend most of its time? | Interphase | |

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| 101 | How many cells are in each phase of the cell cycle? | Answers will vary depending on the slide that is viewed. Hint: One way of standardizing this lab is to make copies of photomicrographs of onion mitosis slides (from the internet) and have students make their counts off of these photos. If the photos are laminated they can be used year after year. This allows the teacher to confirm that students understand what they are looking at. | |
| 102 | Why is it important that the events of the cell cycle be carefully regulated? | *Regulation is important because there are so many parts to the system and the time of these events must be turned on or off at the correct time and in the correct order to make perfect new cells. This regulated, perfect timing is provides strong evidence of God's design. | |
| 102 | Why is it important to clean an injured area? | *Sample answer: Cleaning an injury keeps pathogens, such as bacteria, out of the body, which prevents infections and speeds healing. | |
| 102 | What do you think might happen to the cell if the cell cycle is blocked? | Sample answer: New cells will not be produced to replace dead cells or those cells that need to be repaired because of damage. | |
| 102 | How do you know when the injury is healed? | Sample answer: The injury no longer shows damage, i.e., scab, redness, weeping, and the tissue looks repaired. | |
| 102 | What is it about a cancer cell that is abnormal? | Sample answer: Their size, shape, color look atypical. | |
| 102 | What happens if the path for the protein is blocked at one of these steps? | Sample answer: The protein does not form, or forms improperly and is useless to the cell. | |
| 103 | Why does a cell secrete protein? | *Proteins are needed in different parts of the body for various reasons. They are formed in a cell but must leave the cell in order to perform their specific functions. | |
| 103 | How are target cells identified? | *Explain that target cells contain receptors at their surface. | |
| 103 | How does a hormone know which cells are its target? | *The hormone is capable of binding with the receptor. | |

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| 104 | Why is keeping your body stable considered a balancing act? | Sample answer: In order to achieve stability, the cells of the body must constantly monitor for changes in conditions elsewhere in the body and readjust to bring things back to normal levels again. | |
| 104 | How does the skin help the body respond to changes in temperature? | *The skin reacts to heat and cold. In cold weather, shivering occurs and hairs stand on end. In warmer weather, evaporation of sweat from the skin helps cool the body. Changes in blood vessels in the skin either bring heat to the surface or keep heat inside the center of the body. | |
| 104 | What does this tell us about God? | *The fact that God designed our bodies with the ability to adjust to change is evidence of His wisdom and care. He anticipated our need for these abilities and provided for our needs. | |
| 104 | What does Malachi 3:6 say about change? | *Malachi 3:6 says, "For the Lord does not change." Whatever changes students may experience, they can be confident that God will remain unchanged? | |
| 104 | What is one thing your body does to increase its temperature? | *Sample answer: Shiver. | |
| 104 | Why is it more difficult to cool the body by sweating in humid weather? | *Higher humidity levels reduce evaporation rates. | |
| 104 | Why is it important for the body that both the outside and inside temperatures be monitored? | *Internal organs are affected by extreme temperatures, so it is important for the body to monitor internal and external temperatures to stay in a state of homeostasis and keep internal organs safe. | |
| 104 | Why is it important for your body to maintain a state of homeostasis? | *How does your body respond to internal and external changes? | |
| 104 | When was the last time you remember shivering? | Possible answer: When I was outside without a jacket on a cold day. | |
| 104 | Did you shiver for a long time? | Possible answer: Not very long, once I went inside I warmed up and my shivering stopped. | |

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| 104 | How do goose bumps help your body? | Possible answer: The muscle movement that causes goose bumps to form help to warm the body. Point out to students that the hair standing on end in humans does not help to warm the body as it does with other animals that have denser hair or fur. In this case the erect hairs help to trap air that warms due to the increased blood flow in the skin. | https://www.nih.gov/news-events/nih-research-matters/what-goosebumps-are |
| 104 | Besides when you are cold, when else might you get goose bumps? | Possible answer: Because you get frightened, or because you are nervous, or stressed. | |
| 105 | How well do different body covering help cold-climate animals' bodies maintain homeostasis? | *Hair (or fur) and feathers are insulators. They help trap air against the body. The air warms up helping to regulate the animals' temperature. A layer of fat (or blubber) acts as an insulator too. The layer of fat helps trap heat near the animals body. | |
| 105 | How would you describe your breathing right now? | Sample answer: Slow and regular. | |
| 105 | How would your breathing change if you were running? | Sample answer: Breathing rate would be faster. | |
| 105 | As you run, why do your heart rate and breathing increase? | Sample answer: When you run, your muscles need more oxygen to have the energy needed to work. The heart beats faster to bring more blood to the muscle cells, the increased breathing rate makes sure that the blood has a greater supply of oxygen to provide to the muscle cells. | |
| 105 | How do your heart rate and breathing respond when you stop running? | Sample answer: Both the breathing rate and heart rate slow. | |
| 105 | How do these changes maintain homeostasis? | Sample answer: These changes make sure that the cells have the oxygen and other materials needed to function properly without any interruption. | |
| 105 | How do these changes maintain homeostasis? | Sample answer: These changes make sure that the cells have the | |
| 105 | How do you think your body would feel after overcoming a dangerous or scary situation? | Sample answer: These changes make sure that the cells have the oxygen and other materials needed to function properly without any interruption. | |

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| 105 | What might happen in the body if these situations occur too frequently? | Sample answer: Your body would be stressed. This stress could affect your overall health and well-being. | |
| 105 | How do the different types of insulation compare? | Sample answer: The bubble wrap provided the best insulation, the shortening provided the next best insulation, the two bags by themselves provided the least insulation, but more than putting your bare hand into the ice water. | |
| 105 | How does this relate to how cold-climate animals maintain homeostasis? | Sample answer: Animal that live in cold climates have adaptations in the form of insulation layers that help keep them warm such as feathers, fur, layers of fat under their skin. | |
| 106 | What are some foods that people may be allergic to? | *Sample answer: peanuts, milk, eggs, shellfish, and wheat. | |
| 106 | How are Proverbs 15:13 and 15 like the verse you already read about a cheerful heart? | *They both talk about the benefits of a cheerful or merry, heart. Proverbs 15:14 says, "A merry heart makes a cheerful countenance." Verse 15 says, "He who is of a merry heart has a continual feast." | |
| 106 | How do you think a cheerful heart helps the immune system work better? | Sample answer: Cheerfulness and happiness cause the body and brain to secrete chemicals that enhance the overall health of the body and the immune system. | https://greatergood.berkeley.edu/article/item/six_ways_happiness_is_good_for_your_health |
| 106 | What might happen to your body if your immune system did not function properly? | Sample answer: You would be much more susceptible to infection and disease and your health would suffer. | |
| 106 | What are some allergic reactions that might be fatal? | Sample answer: Any kind of allergic reaction that can cause anaphylaxis. A serious condition that can include inability to breathe, rapid heart rate, drop in blood pressure as well as other symptoms. Peanut allergies, allergies to insect stings or bites, allergies to seafood, are just some of the allergies that can result in anaphylaxis. | |
| 107 | What are some foreign particles that a white blood cell would "swallow" upon identification? | *Sample answers: Bacteria cells, viruses, splinters, dying cells, and cancer cells. | |

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| 109 | Why is the skill of experimentation important to an immunologist? | Students should point out that by doing experiments, immunologists learn more about the immune system and can develop new treatments and medications to help people with immunological diseases or allergies. | |
| | * Means the answer is found in the TE. | | |