**Guided Notes: Plant Processes**

**Big Idea:** Photosynthesis, cellular respiration, and transpiration are interconnected processes that allow plants to meet their energy and nutritional needs.

**Key Concepts:**

• Photosynthesis is the process where plants use \_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_, and \_\_\_\_\_\_\_\_ to produce \_\_\_\_\_\_\_\_ (food) and \_\_\_\_\_\_\_\_ (waste).

• \_\_\_\_\_\_\_\_ is the green pigment in plants that absorbs light energy for photosynthesis.

• \_\_\_\_\_\_\_\_ are tiny pores on leaves that allow for gas exchange during photosynthesis.

• After photosynthesis, plants convert excess \_\_\_\_\_\_\_\_ into starches for storage.

• Cellular respiration is the process where plants break down \_\_\_\_\_\_\_\_ using \_\_\_\_\_\_\_\_ to release energy.

• The equation for cellular respiration is the \_\_\_\_\_\_\_\_ of the photosynthesis equation.

• Transpiration is the process of \_\_\_\_\_\_\_\_ release through the \_\_\_\_\_\_\_\_.

• \_\_\_\_\_\_\_\_ are cells that regulate the opening and closing of stomata to control transpiration rate.

**Real World Examples:**

1) Wilting Plants: When a plant loses too much water through transpiration, it wilts. This is because the plant cells lose their rigid structure without enough water pressure.

2) Sweating in Humans: Like transpiration in plants, humans release water vapor through their skin pores (sweating) to cool down their bodies.

**Guided Notes: Plant Structure**

**Big Idea:** Plants have specialized structures that allow them to transport nutrients, water, and food throughout the plant for survival.

**Key Concepts:**

• Vascular plants have \_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_ tissues to transport water and food.

• Xylem tissue moves \_\_\_\_\_\_\_\_ and dissolved nutrients upwards from the roots.

• Phloem tissue transports \_\_\_\_\_\_\_\_\_ made during photosynthesis downwards from the leaves.

• \_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_ are microscopic openings that allow carbon dioxide in and oxygen out for photosynthesis.

• Nonvascular plants do not have true roots, stems or leaves, instead passing substances \_\_\_\_\_\_\_\_ to \_\_\_\_\_\_\_\_.

**Real World Examples:**

1. Just like pipes transport water throughout your home, \_\_\_\_\_\_ tissue transports water from the roots to the leaves of a plant.

2. After eating a candy bar, the sugars get transported through your \_\_\_\_\_\_\_, similar to how \_\_\_\_\_\_ tissue moves sugars throughout a plant.

**Guided Notes: Plant Response**

**Big Idea:** Plants have specialized adaptations and responses that allow them to survive and thrive in their environments.

**Key Concepts:**

• Dormancy occurs when plants stop growing for a period of time due to \_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_.

• \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_is a growth response in plants towards light.

• \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_is a plant's response to the force of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

• \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_is when plants respond to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ by folding leaves, curling, etc.

• Plants open/close tiny pores called \_\_\_\_\_\_\_\_\_\_\_\_ on their leaves to regulate \_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_ in response to water availability.

• Plants cannot move locations, so their \_\_\_\_\_\_\_\_\_\_\_\_\_ to external stimuli are critical for survival.

**Real World Examples:**

1) \_\_\_\_\_\_\_\_\_\_\_\_ plants like tulips become dormant underground during winter, conserving energy until warmer temperatures return for growth.

2) The \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ folds its leaves inward as a defense mechanism when touched.

**Guided Notes: Environmental Factors**

**Big Idea:** Plants have specific needs and respond to changes in environmental factors like air, water, light, minerals and space in order to survive and thrive.

**Key Concepts:**

• The \_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_ is the step-by-step process scientists use to investigate questions and test hypotheses.

• A \_\_\_\_\_\_\_\_\_\_\_\_\_ is a possible explanation for an observed event that can be tested.

• The \_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_ is the factor being changed or controlled by the investigator.

• The \_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_ is what is being studied and measured in response to the independent variable.

• \_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_ are factors that must be kept constant so they don't influence the results.

**Real World Examples:**

1) A student wants to see if adding fertilizer helps a plant grow bigger flowers. The fertilizer would be the \_\_\_\_\_\_\_\_\_\_ variable, and the flower size would be the \_\_\_\_\_\_\_\_\_\_ variable.

2) You notice one of your house plants is not growing well near a window. You move it to a different spot with more sunlight to see if the \_\_\_\_\_\_\_\_\_\_ affects its growth.