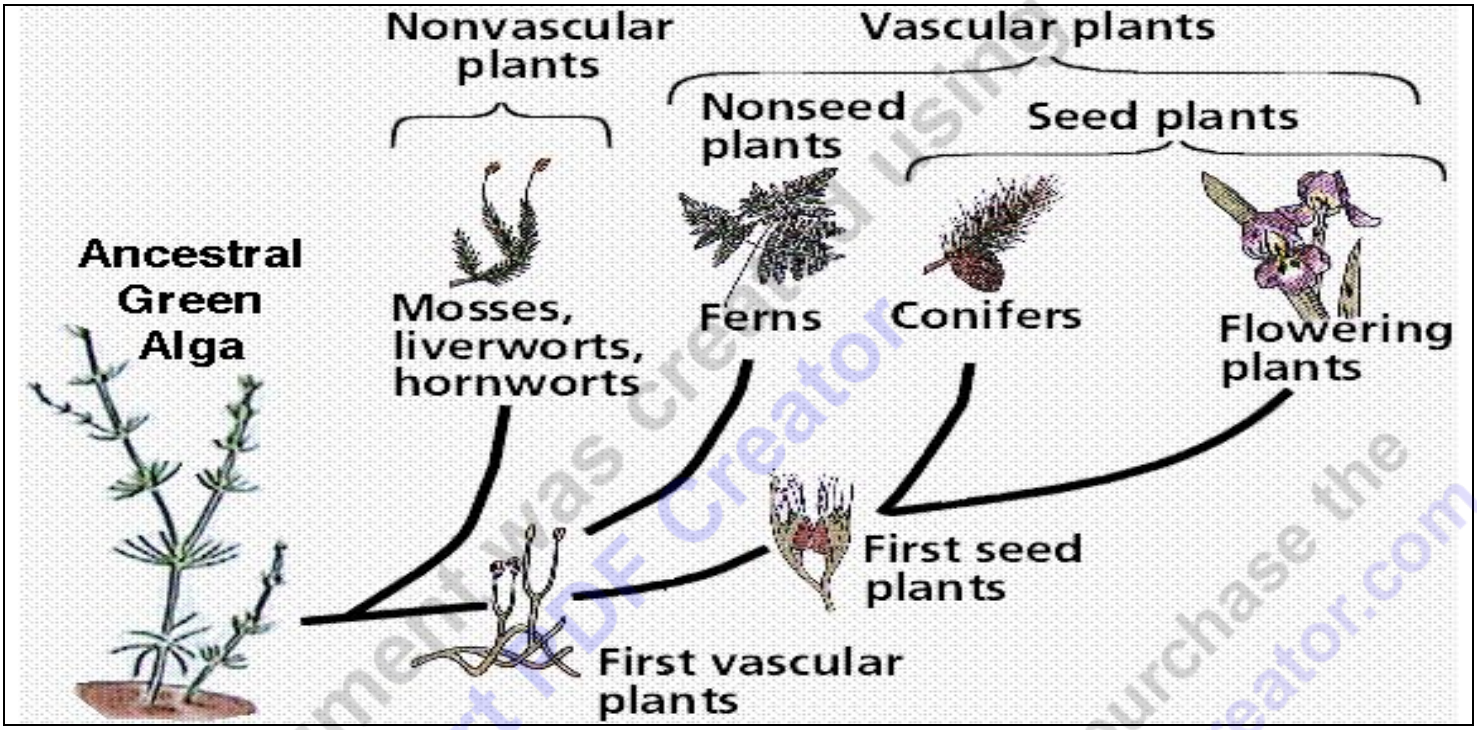
Botany UNIT NOTES

Name:_____

DO NOT LOSE!

New Area of Focus: Evolution of Plants.



New Area of Focus: Algae (Not Plant Kingdom)

Algae –Why they are important! They are food, and make_____.

- Some are photosynthetic. The make food from the sun.

New Area of Focus: Lichens (Not Plant Kingdom)

- It's a Fungi with some _____ (Protist) living in it.

Lichen: Algae and fungus growing _____in a symbiotic relationship.

- The fungi extract food from the environment, while the algae are photosynthetic. This is mutualistic _____.

The three types of lichens (Not Plant Kingdom –Fungi and Protist)

- _____: Forms a crust, difficult to remove without crumbling.
- _____: Leafy, can be peeled off rock with knife.
- _____: Forms shrubby branches. Easily removed by hand.

New Area of Focus: Bryophytes / Non-Vascular Plants. (Evolved from primitive Algae)

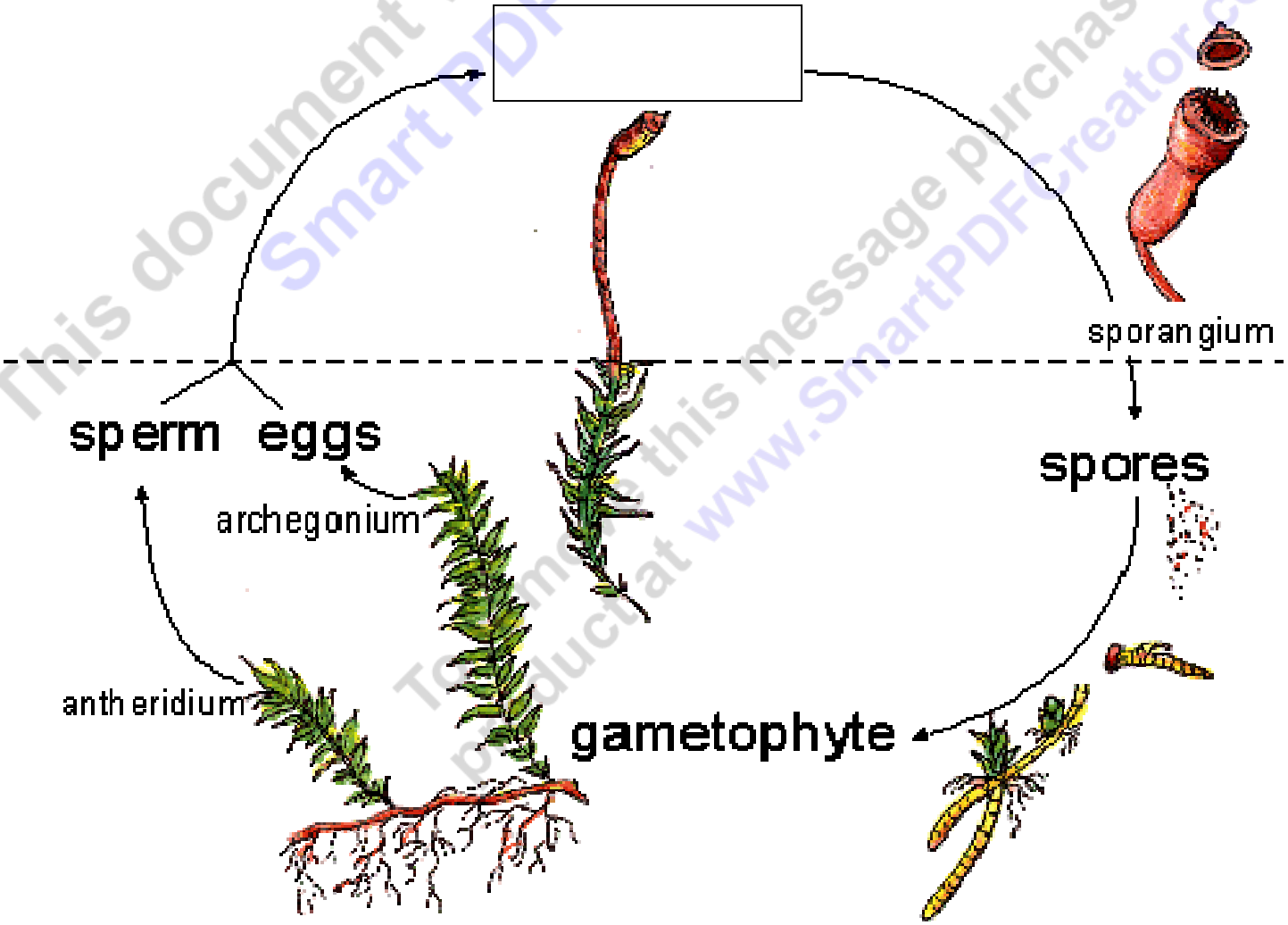
Non-vascular plants….

- Lacks tubes (_____) in the plant to bring _____and food up and down.
- Do not produce _____or flowers.
- Are very _____ because they lack the woody tissue necessary for support on land.
- _____: Division of non-vascular plants that have no roots, stems, or leaves and transport nutrients using diffusion.

Bryophytes include…

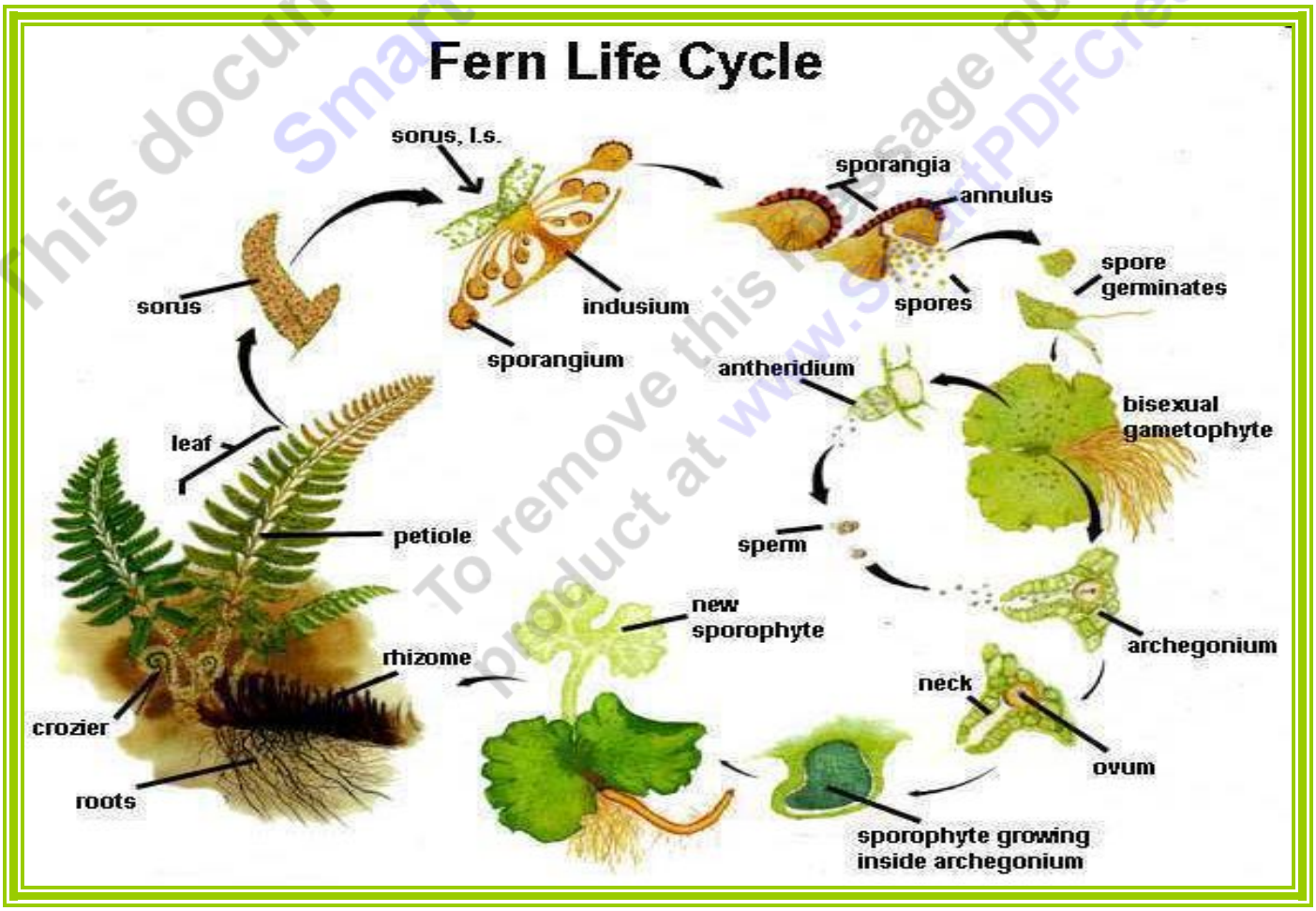
- Mosses.
- _____
- Hornworts

Bryophyte Life cycle (Alteration of Generations)



New Area of Focus: Seedless Vascular Plants.

Ferns: Flowerless and _____ vascular plant, having true roots from a rhizome, and fronds that uncurl upwards; and reproduces with bisexual spores.



Gymnosperm: _____-bearing vascular plants, such as cycads, ginkgo, and conifers.

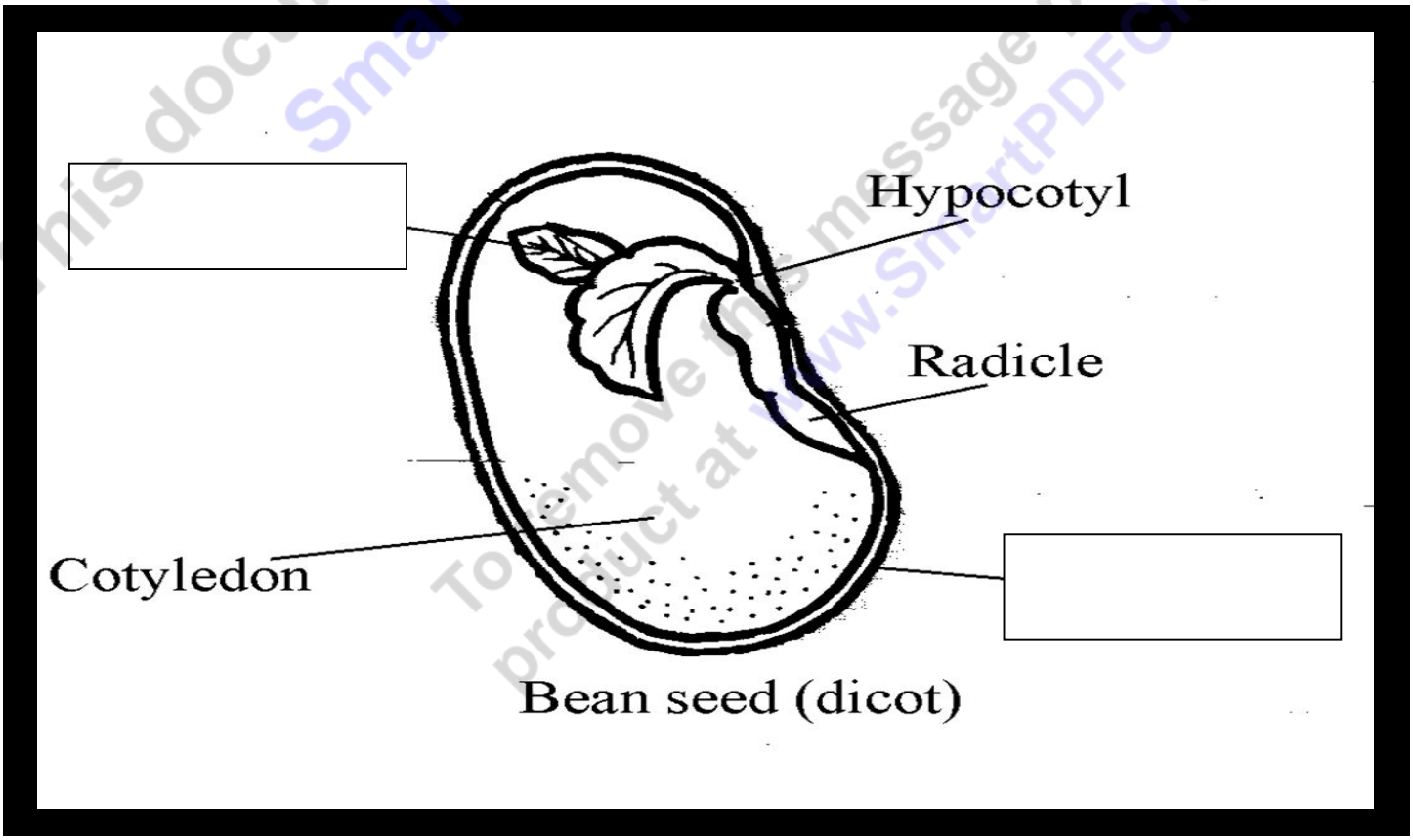
- The ovules or seeds are not enclosed in an _____.

_____: Flowering, covered seed, produce seeds enclosed in a fruit /ovary.

New Area of Focus: Seeds

Seed: (Easy) A baby Plant.

Seed Coat: Protects seed from drying out, aids in seed _____, open's when conditions are right.



Seed Dormancy: A period when the seed doesn't _____.

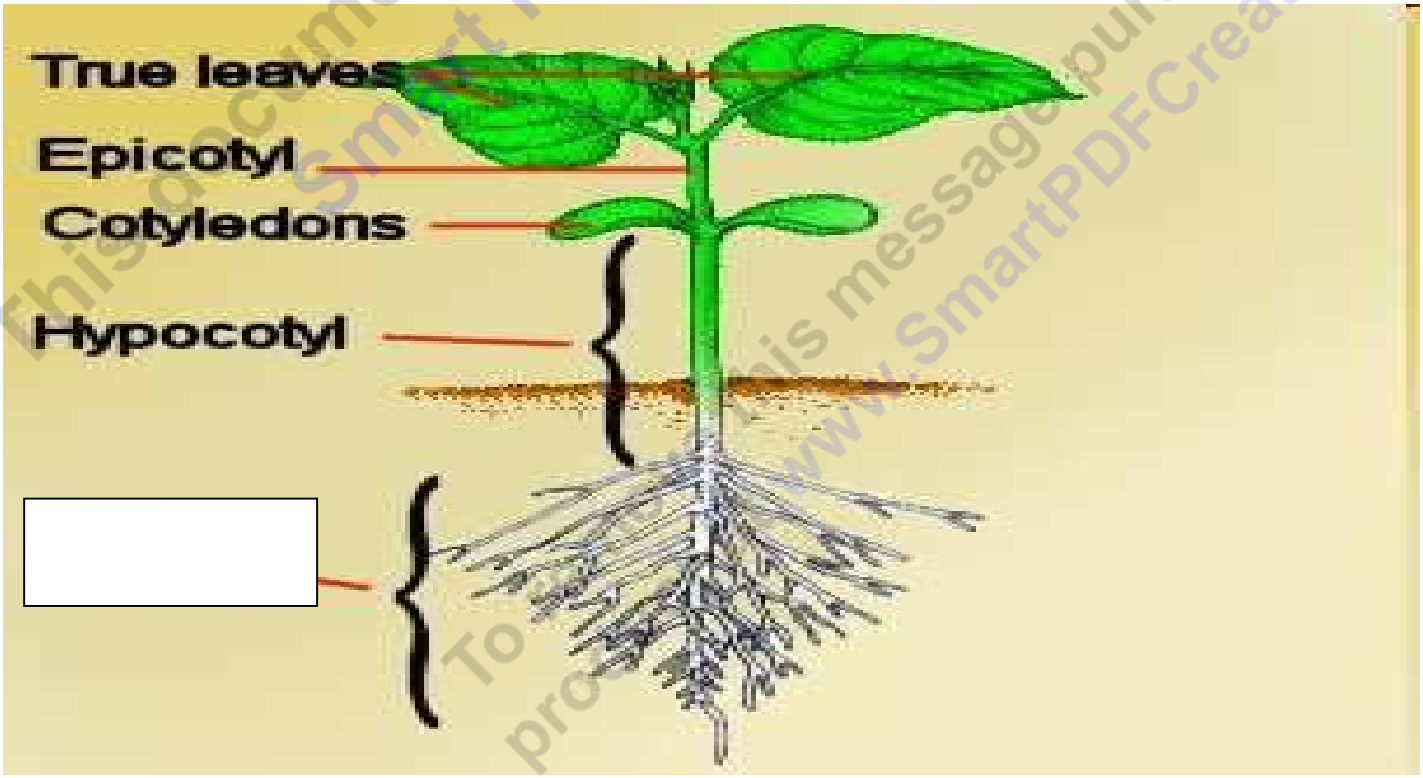
Factors that break seed dormancy.

- Mechanical _____.
- _____ processes of animals.
- Temperatures – Warm and Cold + Fire.
- _____

_____: The process whereby growth emerges from a period of dormancy.

New Area of Focus: Parts of a young plant / seed.

Cotyledon: First _____ (Full of energy).

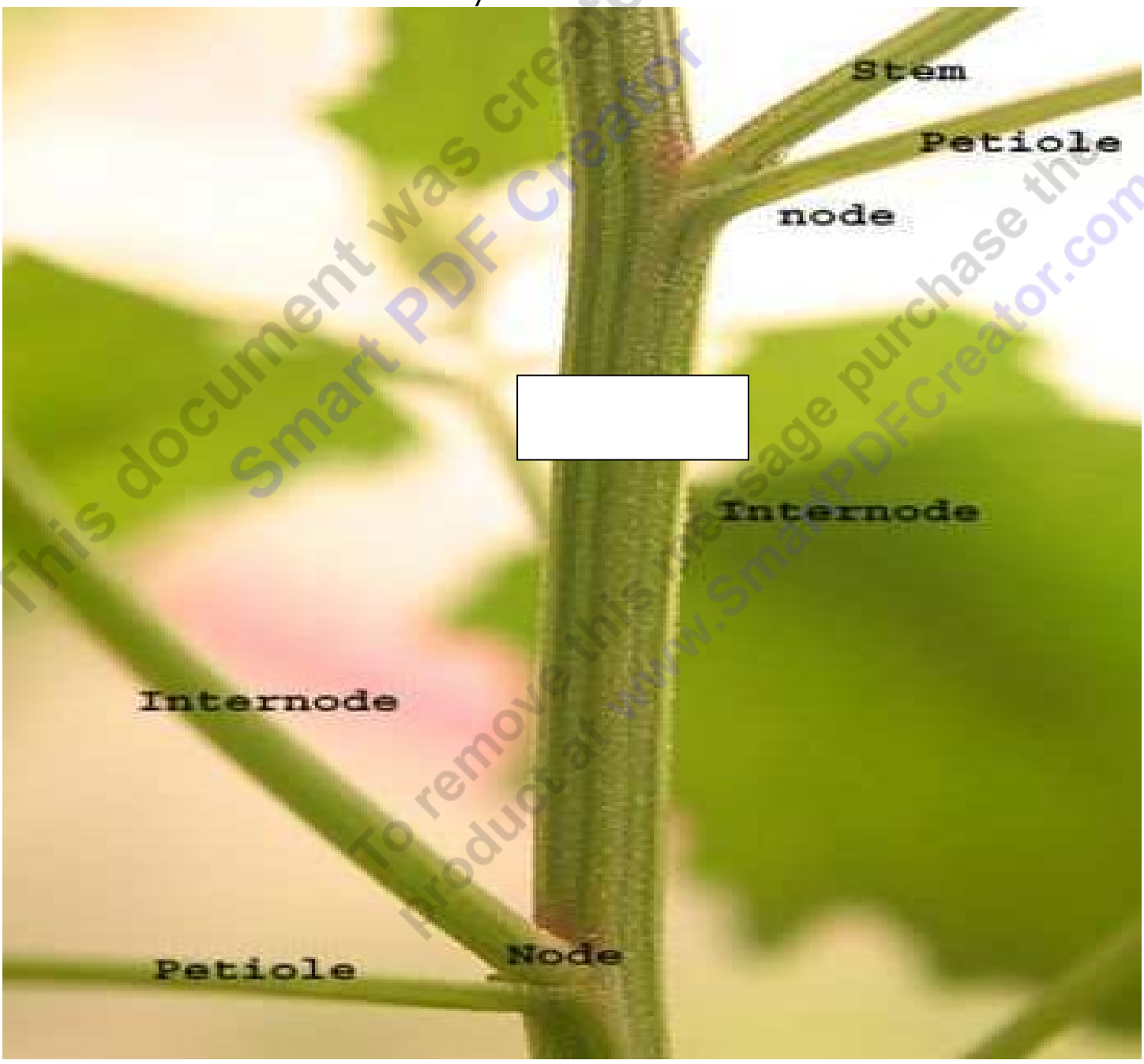


Radicle: Lower embryo and root.

Gravitropism: Response of a plant in relation to _____. Roots go down, shoots go up.

Hypocotyl: Part of the plant between the radicle and _____.

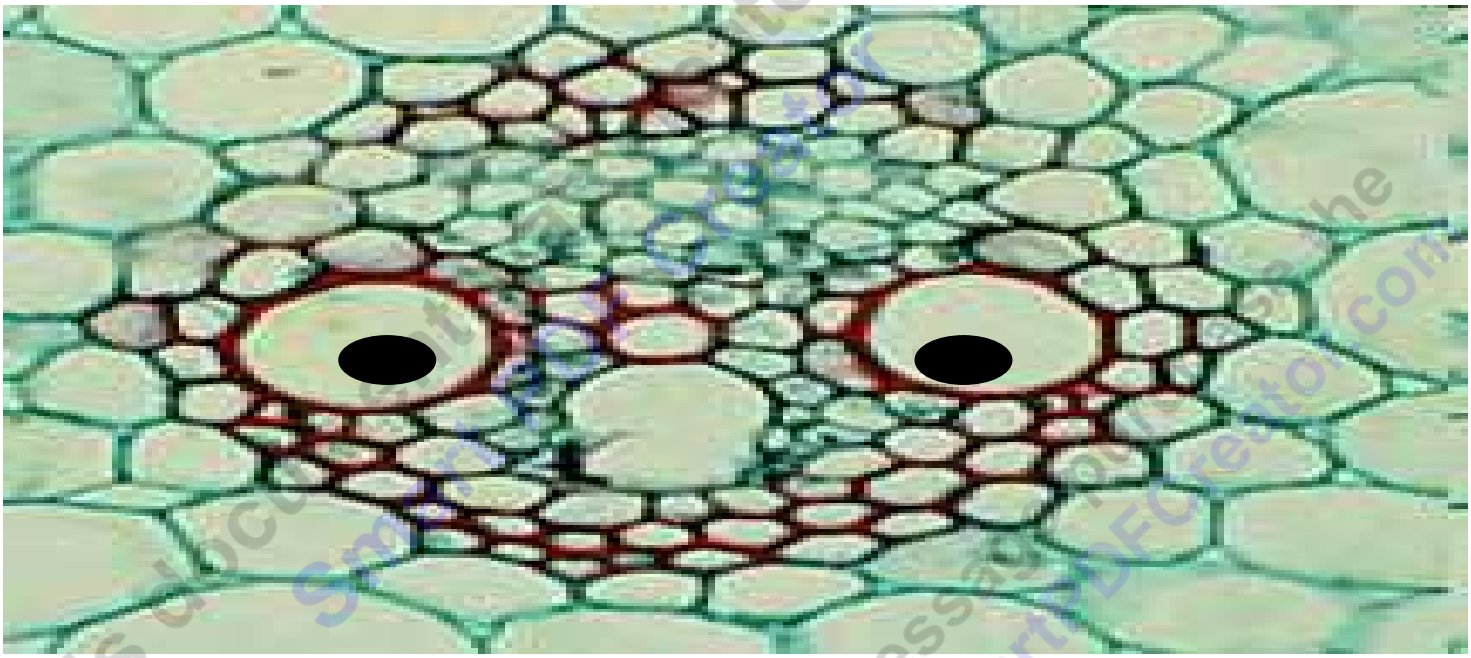
_____: The stem of a seedling or embryo located between the cotyledons and the first true leaves.



New Area of Focus: Monocots and Dicots.

Monocotyledons

- Seedling has one _____
- Veins in leaf are _____.
- Flower petals are in 3's.
- Never _____.
- Vascular bundles are scattered.



Monocot Man

Dicotyledons

- Veins on leaf are _____.
- Flower parts are groups of ____ to _____.
- Secondary growth can be _____.
- Vascular bundles are in a _____.

New Area of Focus: Roots and Water.

Roots: The usually _____ portion of a plant that lacks buds, leaves, or nodes and serves as _____, draws minerals and _____ from the surrounding soil, and sometimes stores food.

There are two types main types of roots.

- _____: (Draw) Main root with roots that branch off.
- _____root: (Draw) Many branches.

Other roots can be _____. (Tubers)

Root Hairs – Hairlike extensions of root to absorb water and nutrients. Very delicate (damaged when transplanted).

Water uptake is necessary for plants because…

- Water is needed for _____.
- Keeps plants _____and not wilted. Water fills cells and creates _____ pressure.
- Water cools the plant down during warm weather.
- Water carries dissolved _____and minerals throughout plant.

New Area of Focus: Plant Hormones.

Plant _____are chemicals that affect aspects of the plants life.

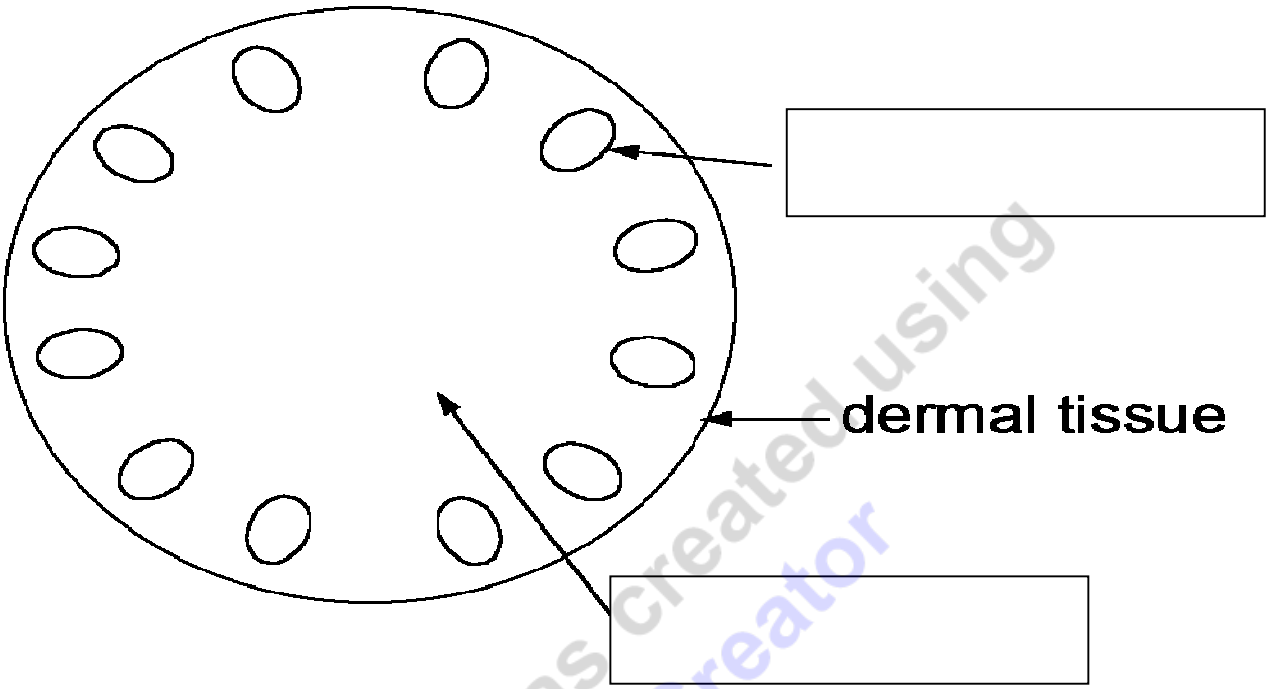
Some plant hormones.

- _____: Promotes stem elongation and bud dormancy.
  - Phototropism: When plants grow toward a light source.
- Gibberellins: Make stems _____.
- Cytokinins: Promotes cell _____. They are produced in growing areas like the tips.
- Abscisic Acid: Opens and closes _____, has role in seed dormancy.
- Ethelyene: A gas that promotes fruit _____.

New Area of Focus: Plant Tissues and Vascular Systems.

3 types of plant tissues.

- _____tissue: Outside layer of plant, protects, interacts with outside.
- _____Tissue: Below dermal tissue, stores energy, photosynthesis occurs here.
- _____Tissue: Xylem and Phloem.



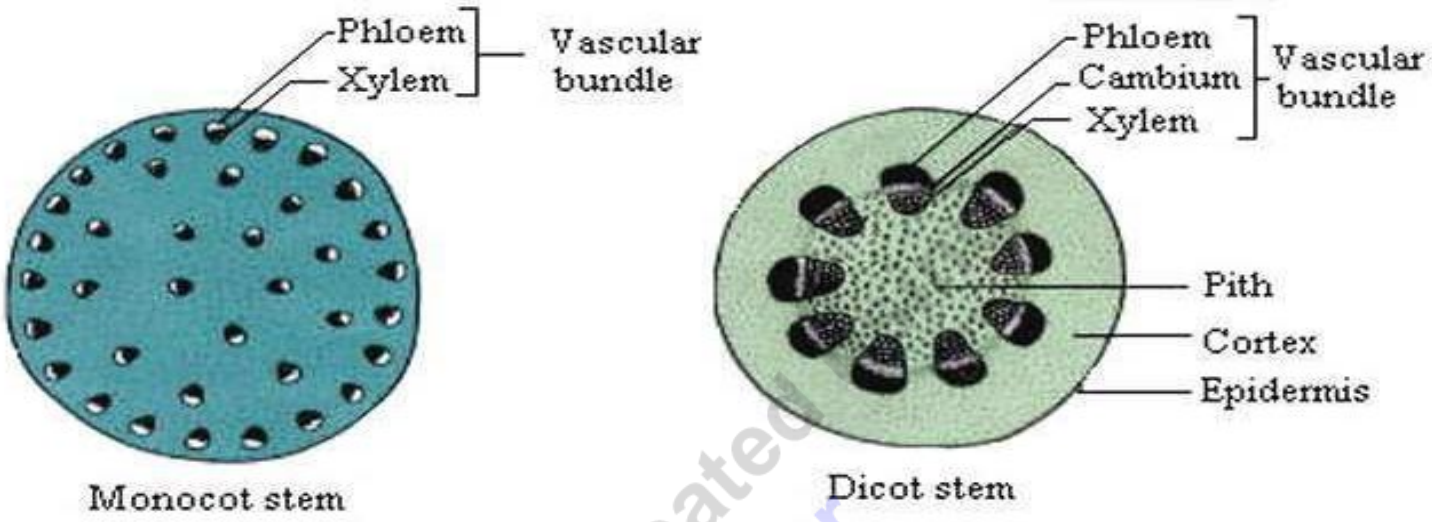
Vascular system: The vessels and tissue that carry or circulate fluids such as blood or lymph or sap through the body of a animal or plant.

Xylem: (Zi-lem).

- Tubes that _____ and minerals move through.
- Water travels up the tree from roots to _____.
- Old xylem doesn't transport water but _____ plant. (Xylem is wood).

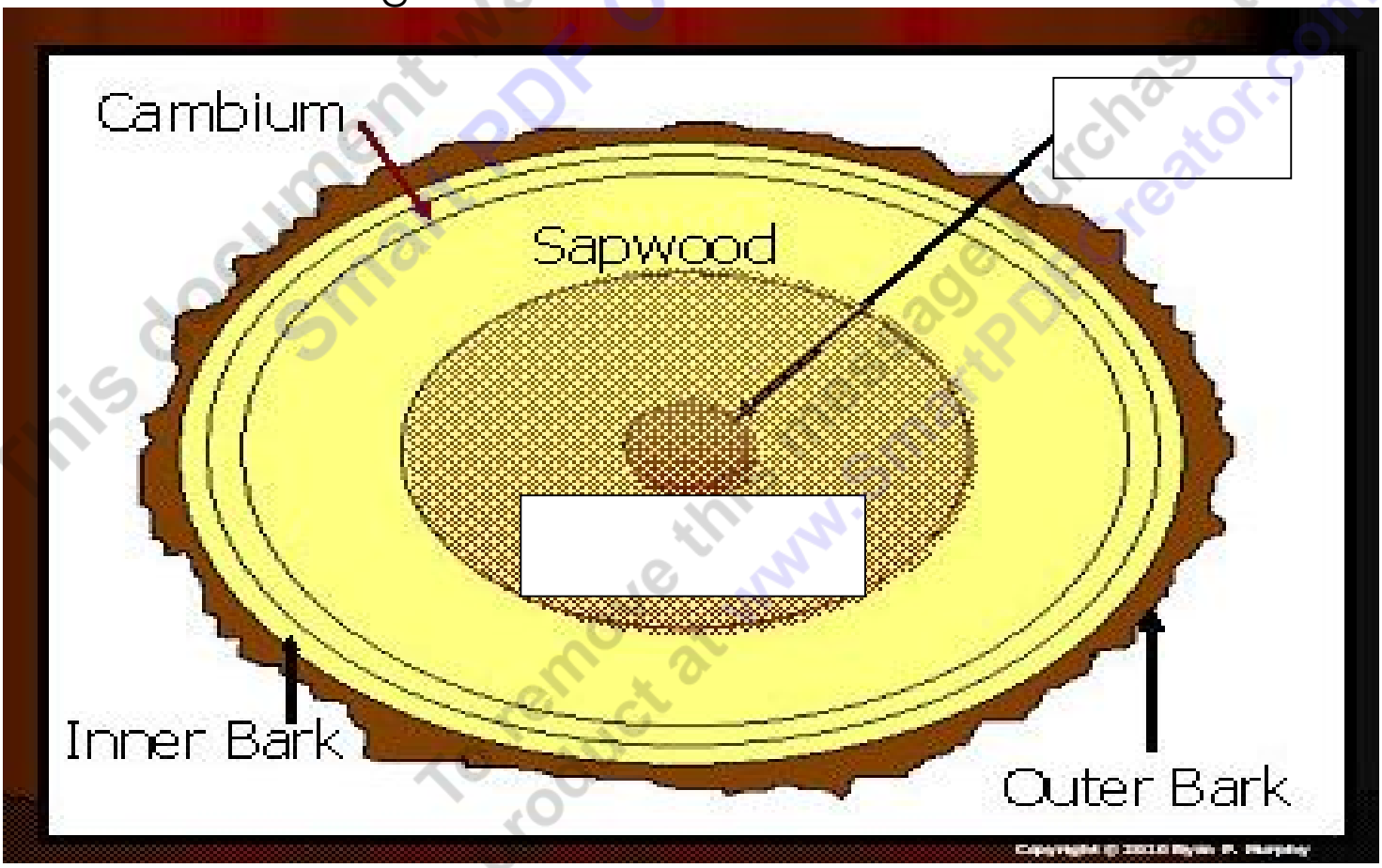
Phloem: (Flow-em).

- Tubes in the plant that _____ (sugar) moves through.



New Area of Focus: Woody Plants.

Draw the following



Pith: The soft spongy substance in the center of the stems of many plants and trees. _____ formation begins here.

Heartwood: Older, Darker, and harder _____ central portion of the tree.

Sapwood: _____wood, lighter in color, conducts water with xylem.

Cambium: Area just inside bark that makes _____ tissues. Adds girth which allows the plant to grow tall.

Dendrochronology: The _____of past events through study of tree ring growth.

Inner Bark: Area just inside the bark, made of living tissue and contains the _____.

Outer bark: Outside of tree, provides _____.

New Area of Focus: Leaves and Processes

A leaf is a plant organ that is _____, contains chloroplasts, and is usually thin so light can penetrate.

The big three aspects of light and plants.

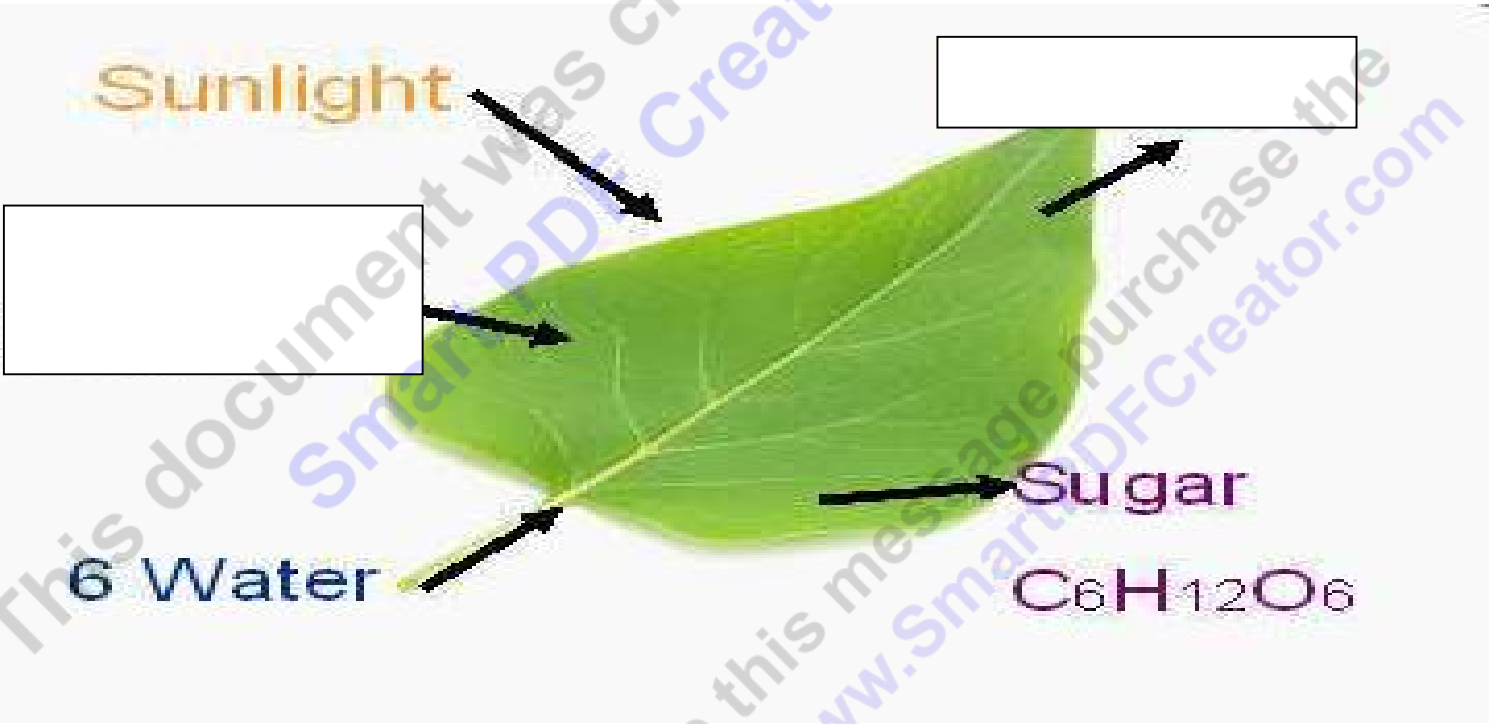
- Quality (how good)
- Quantity (how much)
- Duration (how long)

- Photosynthesis: Plants make _____ from sunlight.

- Light energy is turned into _____(sugars are carbon based).

Photosynthesis

- Produces _____ from energy.
- Occurs only in cells with _____.
- _____is produced.
- _____ is used.
- Carbon_____ is used.
- Occurs in _____.



- **6CO2 + 6_____ + light energy = C6H12O6 + 6_____**

Transpiration: The evaporation of _____ from plants.

- It occurs during _____.
- Helps pull _____ up the xylem from roots.
- Cools the leaf.

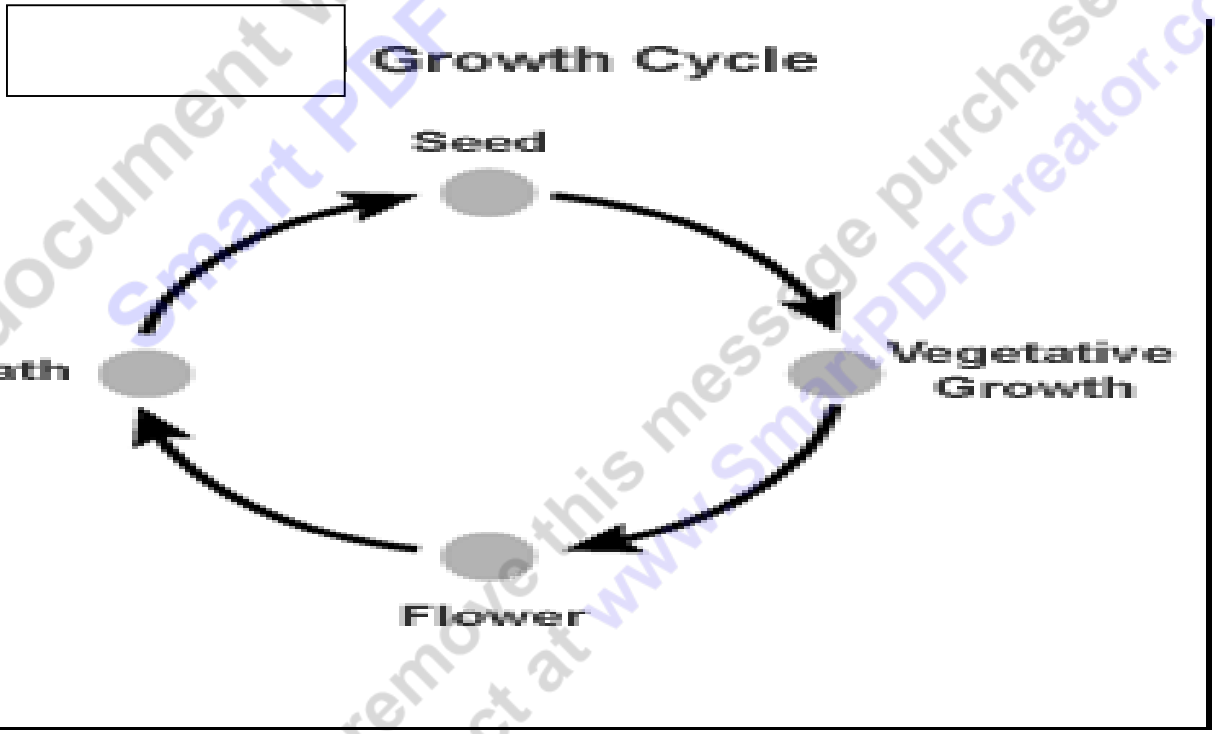
Guard Cell and Stoma: _____ in leaf (stoma) controlled by guard cells that allow gases in and out of leaf.

New Area of Focus: Leaf Identification.

No notes for this section. Do leaf rubbings.

New Area of Focus: Plant Life Cycles.

Annuals: Seed _____, grows, and produces new seed, before dying.



_____: Plant lives through first winter and produces seed before dying.

Perennials: Plants that live for many _____ producing seeds each year.

Deciduous: Plants and shrubs that _____ leaves in fall and grow them back in spring.

Seed Plant Life Cycles.

- All plants undergo sexual _____ (two partners). When the sperm and egg come together you get a _____ / baby plant.
- Gymnosperm: Non-_____, seeds usually arranged on a cone.
- Angiosperm: _____, covered seed, produce seeds enclosed in a fruit /ovary.

Vegetable: _____ part of a plant that is not a sweet fruit or seed. Stalk, leaves, root, etc.

Flower: The _____ organ of a plant that makes the seed.

Area of Focus: Parts of a Flower.

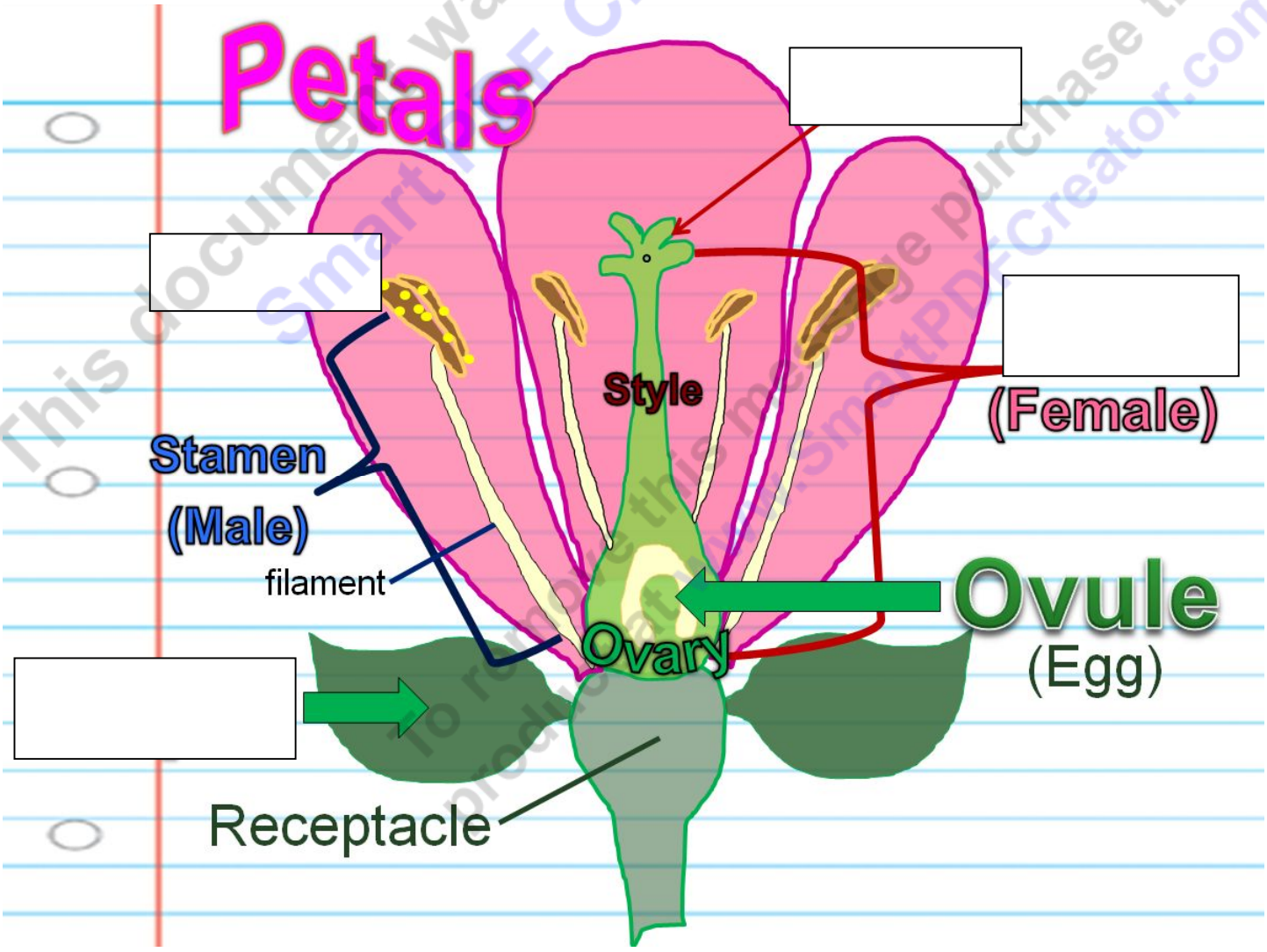
Stamen – _____ part of flower (sperm).

- Filament: Supports the _____.
- Anther: Part of the stamen that holds the _____.

Pistil: _____ part of flower (egg).

- Stigma: Sticky bulb in the center of the flower. Receives the _____ grains.
- Style: Long stalk that the stigma sits on top of.

- Ovary: On bottom of the flower, has the _____ inside and turns into the fruit. Contains the ovules.
- Ovule: The part of the _____ that becomes the seeds.
- Petal: The colorful, often bright part of the _____. They attract pollinators and are pretty .
- Sepal: Green leaves that cover the outside of a flower bud to _____ the flower before it opens.



New Area of Focus: Matured Ovaries (Fruits)

Fruit: The matured _____ in the pistil. Contains the seed.

Parts of a fruit.

- Exocarp / Epicarp: Outer covering of the fruit. "_____"
- Mesocarp: Middle covering. "_____"
- Endocarp: Inner covering, the stiff area around the seed. "_____" or "_____"

Types of fruit
Fleshy Fruits

- Berry: A fleshy fruit that contains one to many _____ (No stony layer)
  - Tomato, Grape
- Drupe is a type of fleshy fruit that has a _____ inner layer surrounding a single seed.
  - Plum, Peach
- _____: This fruit has a core as the true fleshy fruit, and it's surrounded by a fleshy good accessory layer.
  - Apple, Pear
- Fleshy Aggregate Fruits: Develop from _____ with many pistils.
  - Strawberry, Blackberry
- Fleshy Multiple Fruits: Form from a _____ of several flowers.
  - Pineapple, Fig

Dehiscent Dry Fruits: A _____ fruit that splits at maturity releasing the seeds.

- Legume (Dry Fruit): An elongated pod splitting along _____ seams. (Beans)

Indehiscent Dry Fruits: Pericarp does not split open. These fruits usually contain only _____ seed (Nuts)

Save these notes! DO NOT LOSE!!!