The Little Seed that could

|  |  |
| --- | --- |
| **Illustrate the changes you observe in your seed from day to day.** | |
| Day 1 | Day 5 |
| Day 2 | Day 6 |
| Day 3 | Day 7 |
| Day 4 | Day 8 |

During which day did germination take place? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

When you reach the section of the Great Plant Escape on “Seeds” go back and label the parts of the seed using the vocabulary terms.

The Great Plant Escape

**Day 1**

* Use the [article](http://www.ck12.org/book/CK-12-Life-Science-For-Middle-School/r8/section/4.2/) to answer the questions below.

|  |
| --- |
| **Reactants:**  Things **Needed** for Photosynthesis |
| 1. |
| 2. |
| 3. |

|  |
| --- |
| **Products:**  Things **Produced** for Photosynthesis |
| 1. |
| 2. |

* What is photosynthesis? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Where does photosynthesis take place? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* What is the formula for photosynthesis? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Case 1-**

Enter Here: <http://www.urbanext.uiuc.edu/gpe/gpe.html>   (or type “The Great Plant Escape” into Google)

* Start with plant structure and read through the rest of the case. Answer the following questions and define key vocabulary terms as you find them.
* What are the two types of roots? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_\_\_.
* What is the purpose of a root? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

**Define the following terms:**

|  |  |
| --- | --- |
| Pistil |  |
| Stigma |  |
| Style |  |
| Ovary |  |
| Ovules |  |
| Stamen |  |
| Filament |  |
| Anther |  |
| Fertilization |  |
| Sepals |  |
| Fruit |  |
|  |  |

* Play the [game](http://www.esolhelp.com/parts-of-a-flower-diagram.html) to test your vocabulary and record your score here: **\_\_\_\_\_\_/10**

**Complete the Mysteries in Case 1. Record your scores below.**

* What are the parts of a plant? \_\_\_\_\_\_\_/6
* What is the life cycle of a plant? \_\_\_\_\_\_\_/3
* Go back to the vocabulary section and add a word from Case 1 that you think should have been included. Define it.
* What is the purpose of a flower? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

* See your teacher’s website for a link to questions on the vocabulary covered in this section. Complete this independently. You may use your notes.

**Day 2- Case 3**

* Watch the Brain Pop [Video](https://www.brainpop.com/science/cellularlifeandgenetics/photosynthesis/) on photosynthesis (UN: apexmid; PW: apexmid) and record your score here: \_\_\_\_\_/10
* Complete the virtual flower dissection [here](http://www.sciencekids.co.nz/gamesactivities/lifecycles.html).

**Define the following terms:**

|  |  |
| --- | --- |
| Seed |  |
| Germinate |  |
| Dormant |  |
|  |  |

**Complete the Mysteries in Case 3. Record your scores below.**

* What is a seed? \_\_\_\_\_\_\_/4
* What are the parts of a seed? \_\_\_\_\_\_\_/1
* Go back to the vocabulary section and a word from Case 3 that you think should have been included. Define it.
* Watch the following videos:

[Seedling Time Lapse](http://www.neok12.com/video/Plants/zX000e665066767b7b72457b.htm)

[Plants Growing](http://www.neok12.com/video/Plants/zX6515707a0f466267725159.htm)

[Radish Seeds](http://www.neok12.com/video/Plants/zX560a00745f517353705577.htm)

**Watch the following video on germination:** [**Discovery Ed Video**](https://app.discoveryeducation.com/learn/videos/0b6bb594-293b-48fb-ac54-ec83dd8b799d?hasLocalHost=false)**. (UN: WCP+student ID, PW: Student ID)**

* Using the information from the video answer the following questions:

What is germination? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

What is needed for germination to occur?

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

* Complete the [Produce Botany](http://www.mbgnet.net/bioplants/supermkt.html) quiz and record your score here: \_\_\_\_\_/15
* *Raise your hand and get a HARD COPY of a flower diagram. Color and label it using the above information. Turn this in per classroom directions.*
* Watch this [video](http://www.tv411.org/science/tv411-whats-cooking/video-photosynthesis?gclid=CKy12e-Bib4CFXIF7AodY0YAcA) on Photosynthesis.
* *Get a copy of the transpiration diagram from your teacher. Watch the following* [*video*](http://youtu.be/mc9gUm1mMzc) *on Transpiration. Complete the diagram based on the video. Rewatch the video as needed.*

**Day 3- Case 4**

* Review of [Photosynthesis Quiz](http://www.mcwdn.org/Plants/PhotosynthesisQuiz.html)- Record your score here:\_\_\_\_\_\_\_/7

**Define the following terms:**

|  |  |
| --- | --- |
| Petal |  |
| Receptacle |  |
| Pollination |  |
| Pollinators |  |
|  |  |

**Complete the Mysteries in Case 4. Record your scores below.**

* Parts of a Plant? \_\_\_\_\_\_\_/12
* Do all plants use seeds? \_\_\_\_\_\_\_/6
* Go back to the vocabulary section and a word from Case 4 that you think should have been included. Define it.

**Watch the following** [**video**](https://www.youtube.com/watch?v=h3ychzika4U) **on Autotrophs and Heterotrophs.**

Define the following terms:

|  |  |
| --- | --- |
| Autotrophs |  |
| Heterotrophs |  |

*Complete a Double Bubble to compare and contrast autotrophs and heterotrophs. See your teacher for a copy*.

**Watch the following** [**video**](https://www.youtube.com/watch?v=TQRWHKvSop8) **on chloroplast and chlorophyll.**

Define the following terms:

|  |  |
| --- | --- |
| Chloroplast |  |
| Chlorophyll |  |

* Photosynthesis takes place in the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of the leaf.
* If you were a plant what type of plant defense would you choose to protect yourself and why?

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

* Read the [article](http://www.scienceforkidsclub.com/plant-defenses.html) on plant defenses.

**Watch the following video on plant defenses:** [**Discovery Ed Video**](https://app.discoveryeducation.com/learn/videos/080d1d17-cdf2-466e-b599-594fefefb26c?hasLocalHost=false)**. (UN: WCP+student ID, PW: Student ID)**

* After reading the article and watching the video would you still choose the same plant defense? Why or why not?

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Day 4**

* See your teacher’s website for a link to questions on the vocabulary from Days 2 and 3. Complete this independently. You may use your notes.
* **Pollination Fill in the Blank**: *Get a copy of the Pollination Checklist. You must have it checked for accuracy before you may move on.* [*https://www.youtube.com/watch?v=LiczM-w3V-U*](https://www.youtube.com/watch?v=LiczM-w3V-U)[*https://www.youtube.com/watch?v=aXT1DZEHsMk*](https://www.youtube.com/watch?v=aXT1DZEHsMk)

Use the [article](http://www.ck12.org/book/CK-12-Life-Science-For-Middle-School/r8/section/4.3/) and watch the [video](https://www.youtube.com/watch?v=M1iRxCaFjoo) to answer the questions below.

|  |
| --- |
| **Reactants:**  Things **Needed** for Respiration |
| 1. |
| 2. |

|  |
| --- |
| **Products:**  Things **Produced** by Respiration |
| 1. |
| 2. |
| 3. |

* What is respiration? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Where does respiration take place? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* What is the formula for respiration? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Watch this [video](https://www.youtube.com/watch?v=QMgCziQgrus).
* What is the relationship between photosynthesis and respiration?

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

* See your teacher’s website for a link to questions on Photosynthesis Vs. Respiration. Complete this independently. You may use your notes.

**Watch the following TEDed Video.**[**https://www.youtube.com/watch?v=eo5XndJaz-Y**](https://www.youtube.com/watch?v=eo5XndJaz-Y)[**http://ed.ted.com/lessons/the-simple-but-fascinating-story-of-photosynthesis-and-food-amanda-ooten**](http://ed.ted.com/lessons/the-simple-but-fascinating-story-of-photosynthesis-and-food-amanda-ooten)

* Click on “Think” and take the quiz. Record your score: \_\_\_\_\_\_\_\_/5
* Read the “Dig Deeper” section.
* Global warming, or climate change, is the result of a buildup of man-made carbon emissions or greenhouse gasses. These gasses gather in the atmosphere and keep the heat from escaping. This makes the planet much warmer.

[**Knowing what you know about photosynthesis, explain how the process may help reduce global warming.**](http://ed.ted.com/lessons/the-simple-but-fascinating-story-of-photosynthesis-and-food-amanda-ooten/discussions/knowing-what-you-know-about-photosynthesis-explain-how-the-process-may-help-reduce-global-warming)

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

The following [PowerPoint](https://drive.google.com/file/d/0B8gTd4zJIJx4NDgxa2theUhhZkU/view) may be used as a resource to complete any missing components of this assignment.

*See your teacher for extension activities to complete. You may use any of the notes completed in this research to help answer the questions.*

**Extend Yourself**

**Watch the** [**video**](https://www.youtube.com/watch?v=co0JdqUlycg)**.**

* See your teacher for a handout on the structure of a leaf. Re-watch the video if needed to answer the questions.

Use this [link](http://www.sciencemag.org/site/feature/misc/webfeat/vis2005/show/transpiration.swf) for extra help on transpiration.

Extension Activity options:

Select one of the following and then see your teacher for the specific directions and Rubric.

**Option 1: The Lorax**  
You will embark on an adventure with The Lorax as your guide. You will be watching the video to discover aspects of ecosystems and conservation. Then you will write a sequel about how The Lorax saves the world…or not!

**Option 2: Create - A - Plant**  
You are a botanist who has stumbled upon a mythical, perhaps dangerous, plant! How awesome! As this plant’s designer (yes, I know you supposedly found the plant) you must design and illustrate every aspect of this angiosperm. If this sounds like your type of challenge see your teacher for a rubric, and a few examples from previous explorations.

**Option 3: POW TOONE or online presentation tool of your choice (teacher approved of course)**  
Create a POW TOONE on…

**pollination / fertilization / germination**

\_\_\_\_\_You must include a step by step process that explains pollination / fertilization / germination  
\_\_\_\_\_You must include all male and female parts of the flower. You do not have to define them just use them   
 in the proper order.  
\_\_\_\_\_You must also include the terms: seed, embryo, fruit, water, pollinators (your choice of pollinators).

**or**

**photosynthesis / respiration / transpiration**  
\_\_\_\_ You must creatively display how respiration, fertilization, and transpiration work together to keep plants   
 (and the rest of us) alive.  
\_\_\_\_ Obviously you must include all products and reactants.

<https://www.echalk.co.uk/Science/biology/photosynthesis/leafSection/leafSection.pdf>

<https://drive.google.com/file/d/0ByVSK9pUdCiqUWc4V3JCUzFPYjQ/view>