



**Science Virtual Learning**

**LEP Science**

**Growth and Development**

**April 20, 2020**



LEP Science  
Lesson: April 20, 2020

**Objective/Learning Target: I can explain how organisms grow and develop.**



Let's get started with a couple of brain stimulating questions.

1. What do you think “Growth” means in terms of biological science?
  
2. What do you think “Development” means in terms of biological science?



## Answers

**“Growth”** simply means “an increase in size and mass of a particular organism over a period of time.”

**“Development”** is defined as “a process wherein a particular organism transforms itself from a single cell into a more complicated multicellular organism.”



## Practice and learning

Go to the attached link and read about growth and development. As you read, you may want to jot down some notes (this does not mean copy word for word). Notes of importance would include:

1. Types of Growth
2. Characteristics of Growth
3. Growth Factors

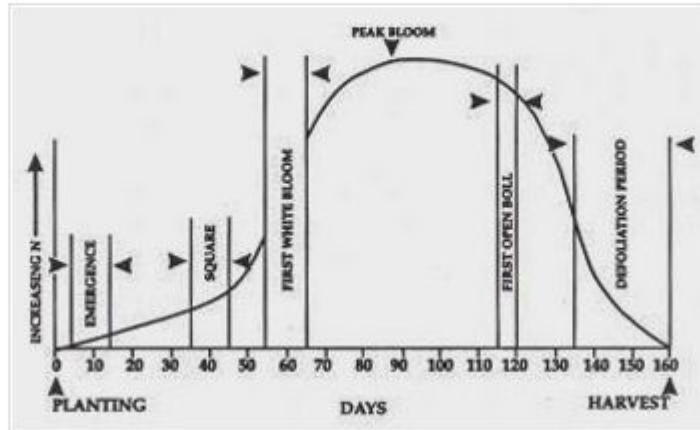
[Growth and Development web page](#)

## Practice and learning

Here are a few more notes worth jotting down.

**Growth** - permanent increase in **size** and **dry mass**, by an increase in cell number or cell size or both.

**Development** - increase in **complexity**



# Practice and learning

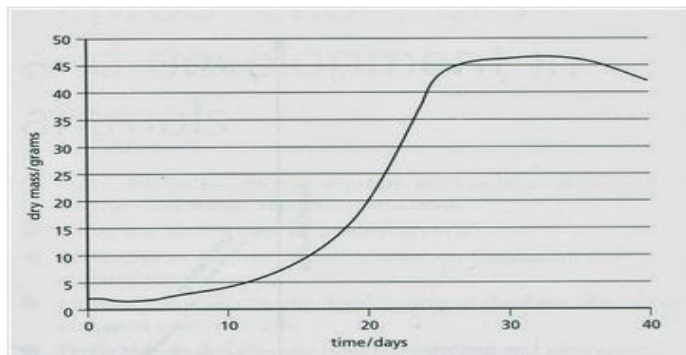
## 1. Growth

- due to an increase in cells, produced by mitosis.
- controlled by hormones (in animals) and growth substance like auxins (in plants).

### Dry mass

- Often used as a measure of growth, because wet mass varies from day to day (e.g. plant will take up more water on a wet day than on a dry day, but the water does not all become part of the biomass – living material of the plant).
- Obtained by drying out the organism in an oven (killing it).
- Many individual have to be germinated at the same time and grown in the same conditions.
- Samples are dried at various times during the growth period.

Example: Changes of dry mass during the growth of a plant from a seed.



## 2. Development

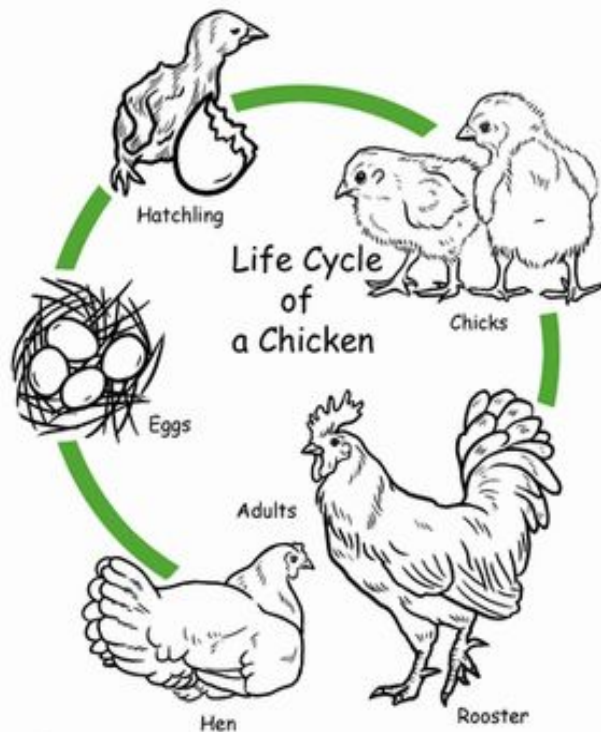
- increase in complexity of an organism as it grows. As the number of cells increases, they become differentiated (specialized for different tasks).
- change in shape to adapt for a specific function.

Examples:

- nerve cells are very elongated and can transmit electrical impulses
- xylem cells are elongated and lose their cell contents, with the cell walls becoming lignified so the cells conduct water efficiently.

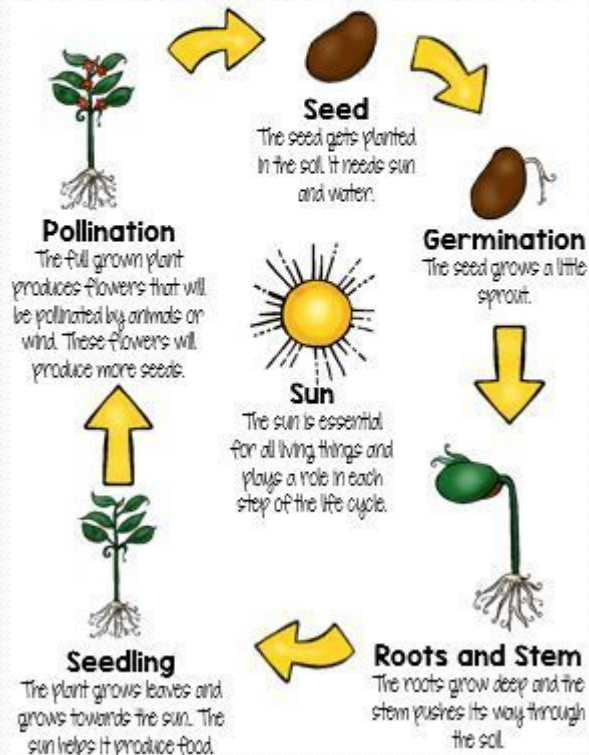


All organisms go through several stages in their life. Make a note of the similarities and differences in the two organism life cycles shown.



## Plant Life Cycle

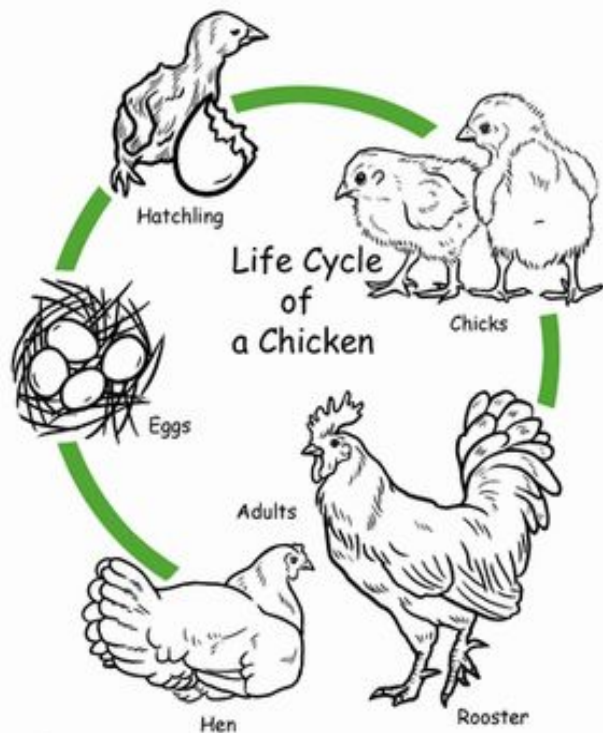
All living things have a life cycle. A life cycle is the stages of development and growth living things go through. This is a life cycle of a plant.



# Practice and learning

Similarities: different stages, start small and get bigger and more developed

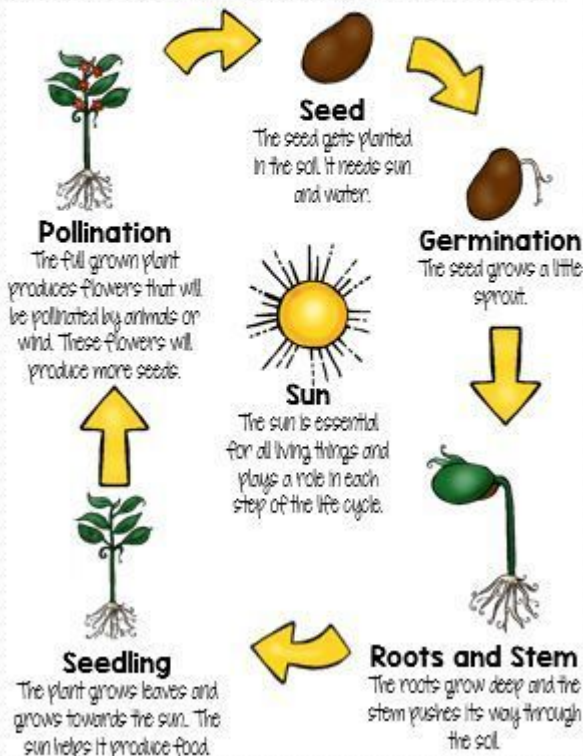
Differences: one is a plant the other is an animal, others?



My Mini Anchor Chart

## Plant Life Cycle

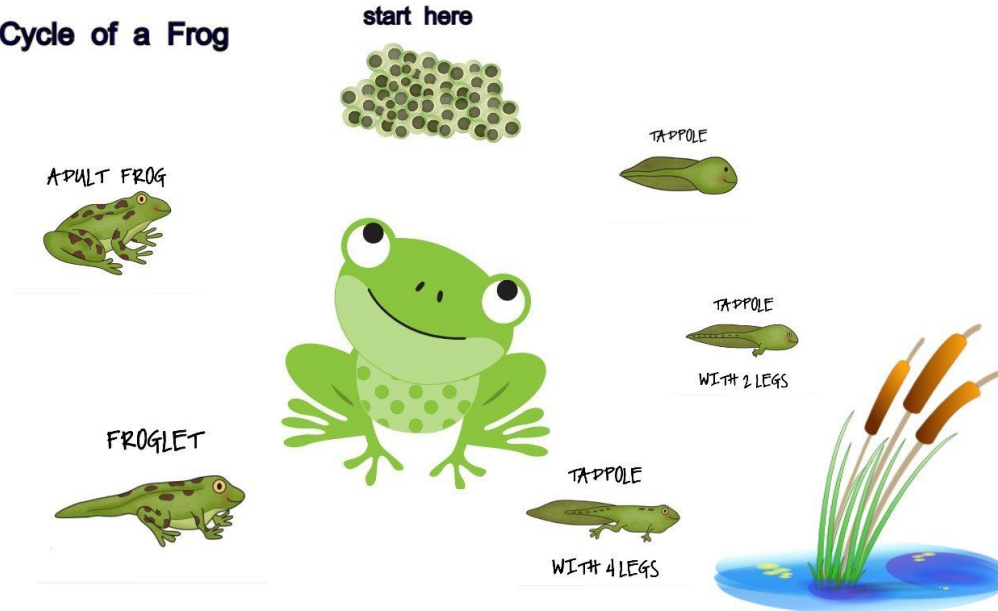
All living things have a life cycle. A life cycle is the stages of development and growth living things go through. This is a life cycle of a plant.



How about a little practice over the concepts of what you just read?

Draw arrows to show the correct order of growth and development in the Frog.

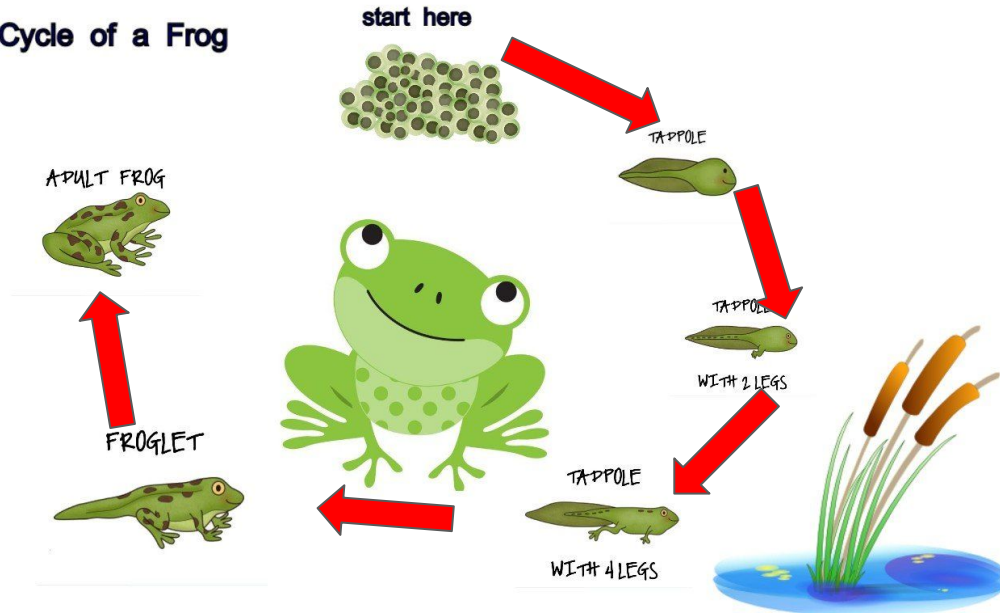
Life Cycle of a Frog



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Life Cycle of a Frog





## Additional Resources and Practice

A Newsela article about growth and development with the quiz and answers. [Article on Growth and Development](#)

A great website to further your knowledge of growth and development. [Britannica](#)