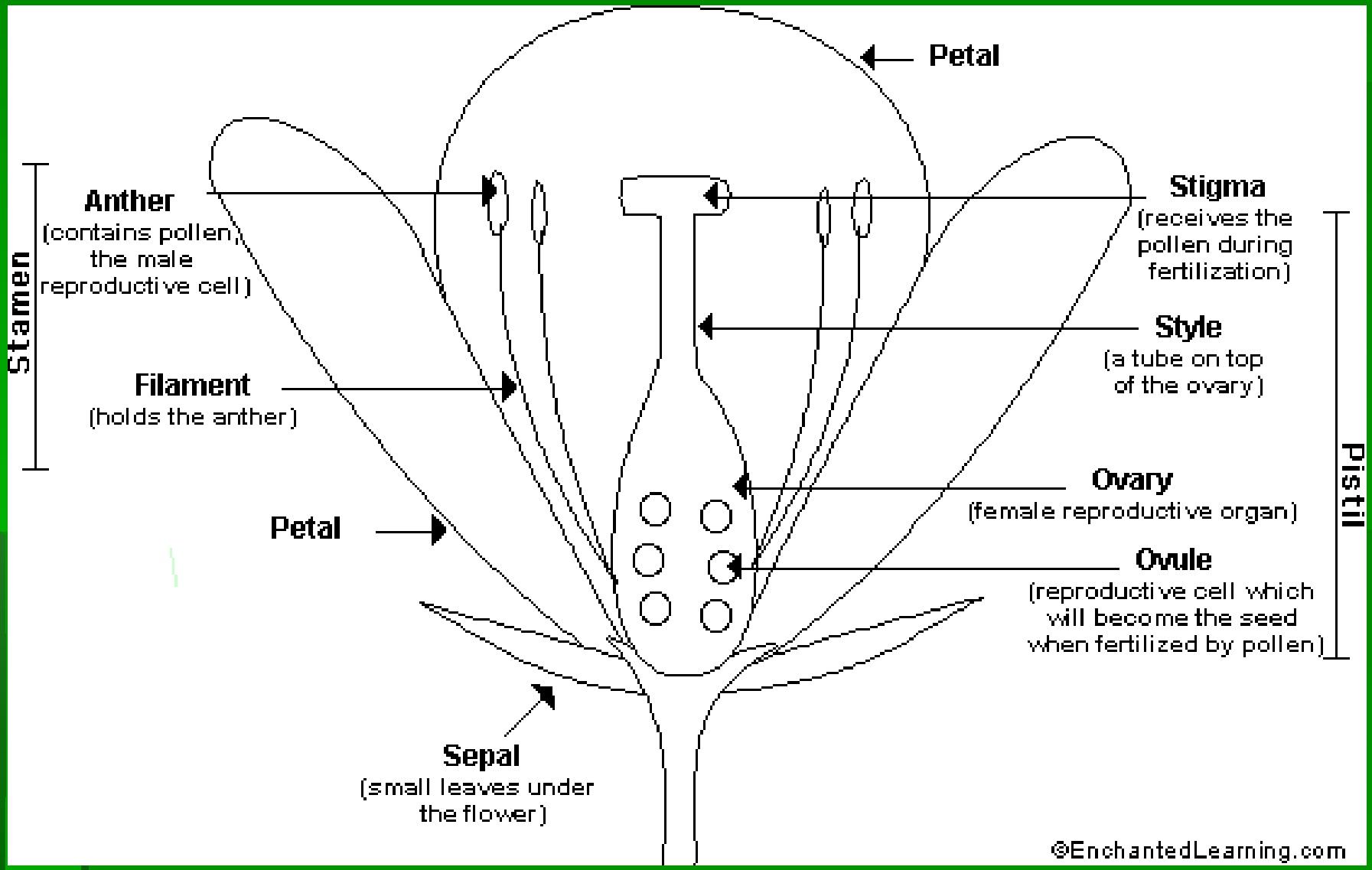
Parts of a flower



Reproductive parts

There are sex cells in

- pollen grains (male cells)
- ovules (female cells)

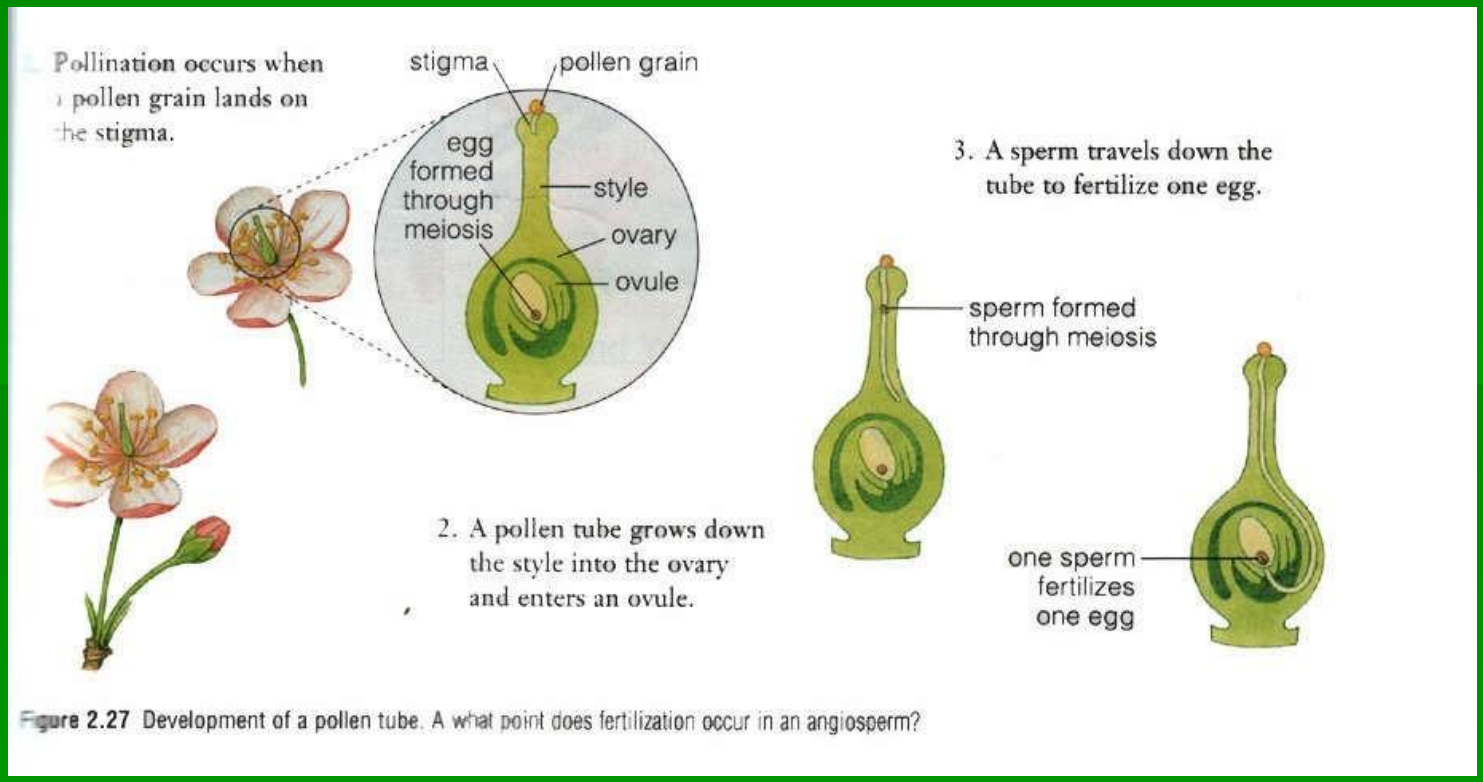


Figure 2.27 Development of a pollen tube. At what point does fertilization occur in an angiosperm?

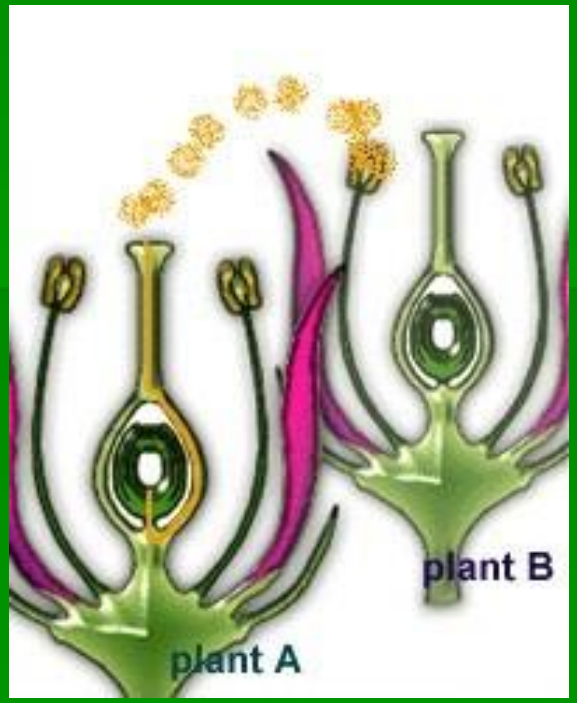
By fertilization

- For fruits and seeds to form, male and female sex cells must **meet** and **fuse**.
- Since male and female sex cells are involved, this is called "**sexual reproduction**".
- When the male cells meet with the female cell, they join together…this is called **fertilization**.

Pollination

Definition:

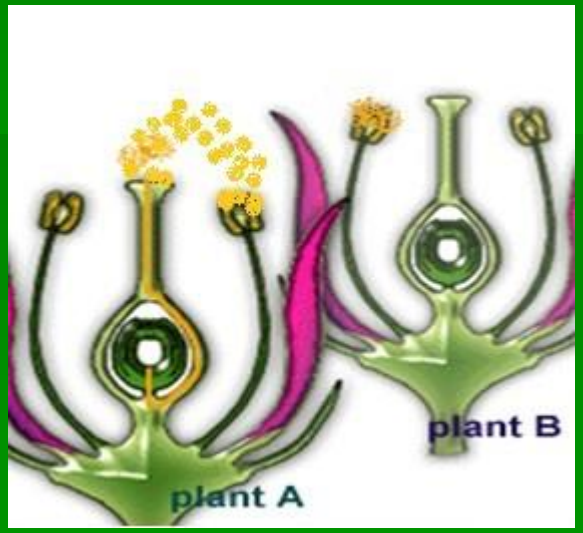
The transfer of pollen grains from the anther to the stigma of a flower.



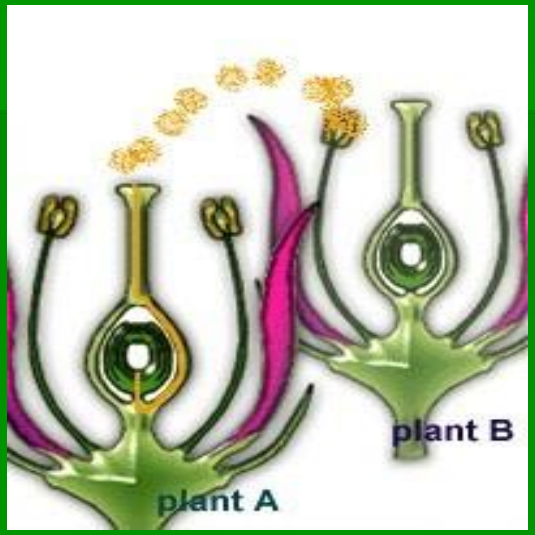
Pollination

Two types of pollination

- Self-pollination



- Cross-pollination



Pollination

Self-pollination

Transfer of pollen grains within one flower:

- One flower.
- Pollen grains from the anther are transferred onto the stigma.

Pollination

Cross-pollination

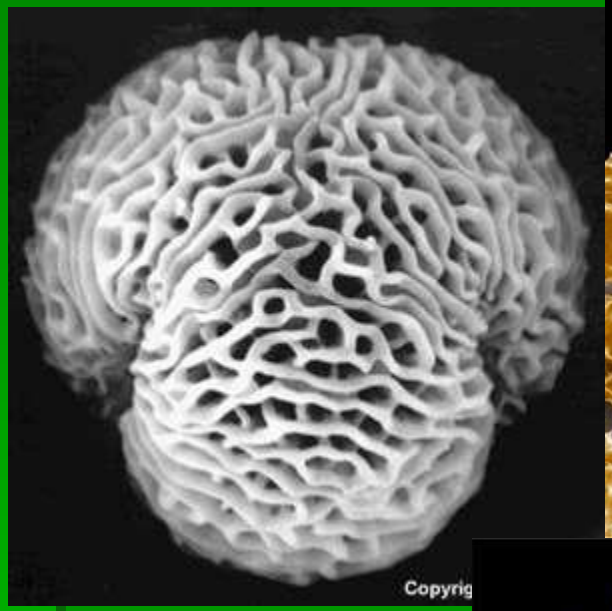
Transfer of pollen grains from one flower to another:

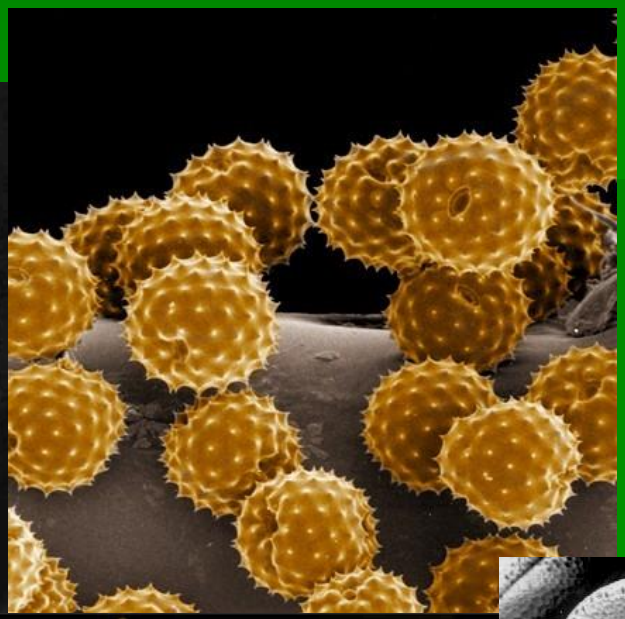
- Two similar flowers.
- Pollen grains from the anther of one flower are transferred onto the stigma of the other flower.

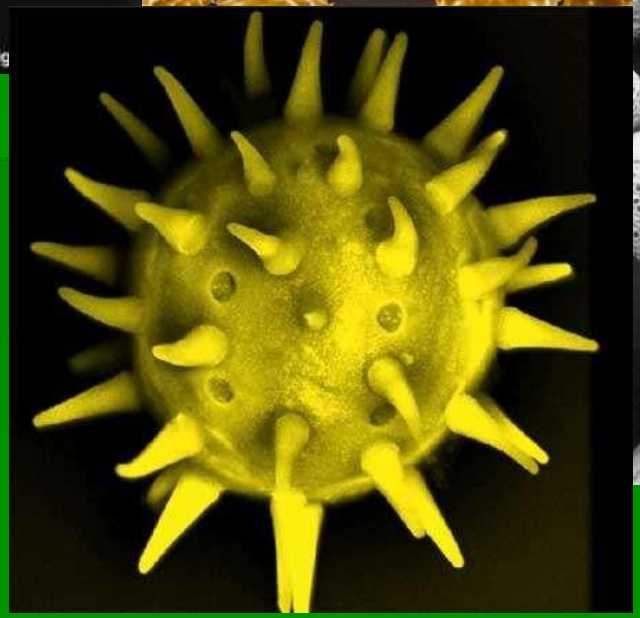
Pollen

- Pollen of different plants have different shapes and sizes.
- Pollen are small and light so that they can be carried by the **agents of pollination.**

Pollen







Agents of pollination

- Plants generally do not transfer the pollen from one flower to another by themselves.
- Although a few plants do have self-pollination – pollen from flower's anther pollinating its own stigma.
- These plants need **agents of pollination** to help them.

Agents of pollination

- Insects (bees)
- Other animals (birds and bats)
- Wind

Agents of pollination

Insects

- pollen will stick to parts of insects' bodies, e.g. pollen "bags" situated on the legs of bees.

Agents of pollination

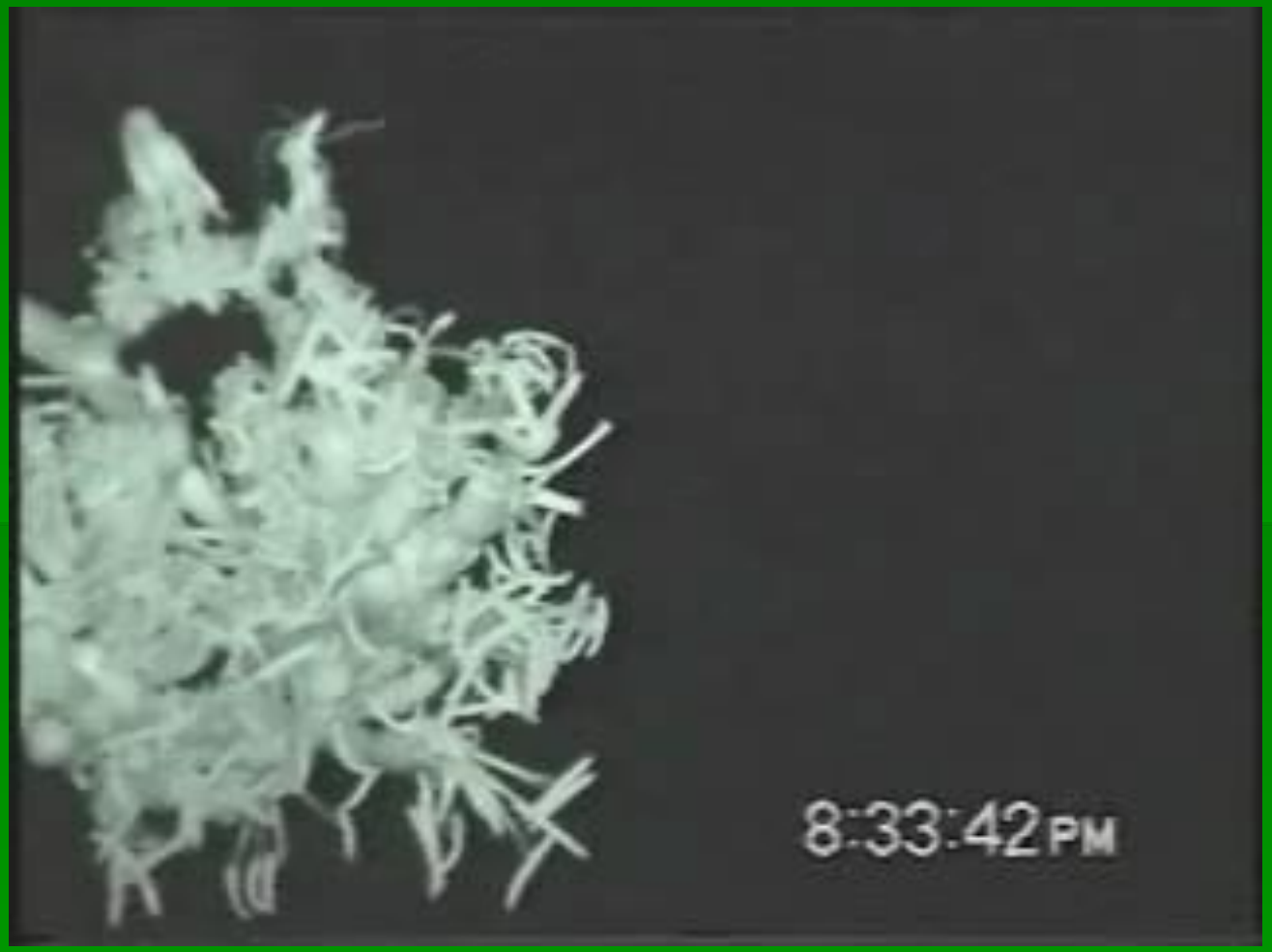
Other animals (birds)

- these animals are usually nectar-drinking animals like sunbirds.

Agents of pollination

Other animals (bats)

- these animals are usually nectar-drinking animals like nectar-feeding bats.



Agents of pollination

Wind

- pollen tend to be smaller and lighter in order to be carried by the wind.

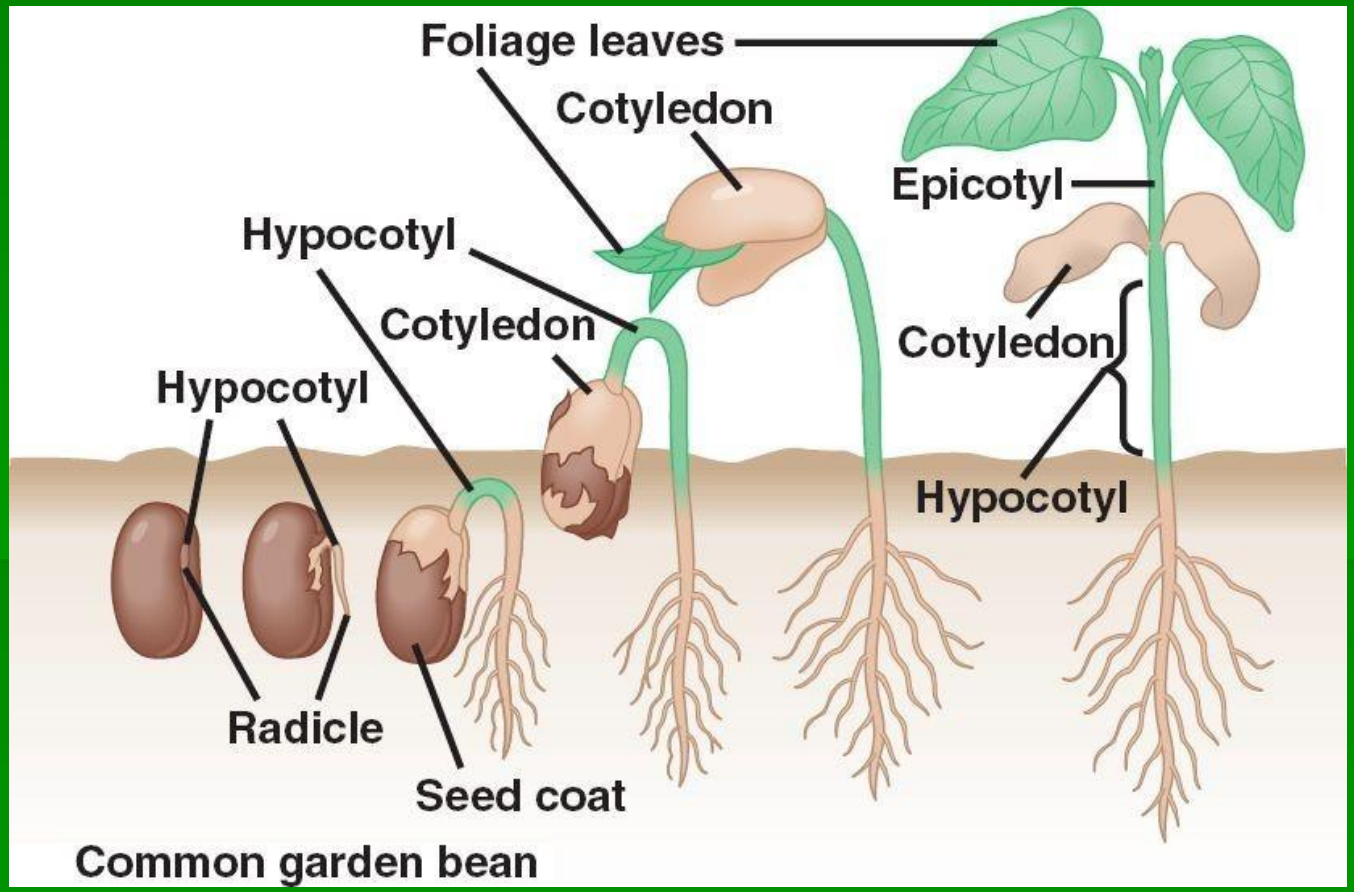
Fertilisation

- When the male sex cells join with the female sex cells within the ovule.
- The resulting embryo then develops into a seed.
- Unfertilised ovules cannot become seeds.
- Fertilised ovules become seeds.

Germination

The growth of the root through the seed coat.

Germination



Steps in germination:

- When a seed lands on a place with **sufficient warmth, water** and **air**, it starts to germinate.

- Sunlight is not necessary for germination.
- 1. The root of the baby plant grows out of the seed to form a seedling. The seed coat falls on the ground.
- 2. The shoot appears and breaks through the soil and the first leaves show. The cotyledons fall on the ground.
- 3. The young plant now can make its own food with the sunlight by photosynthesis.

Germination

- When a seed lands on a place with **sufficient warmth, water** and **air**, it starts to germinate.
- Sunlight is not necessary for germination.
- First, the root of the baby plant grows out of the seed to form a seedling.
- During this stage, the seedling cannot make its own food.
- It gets its energy from the food stored in its seed leaves.

Germination

- Seed leaves are the parts of a seed that protect the baby plant.
- Next, the shoot appears and breaks through the soil and the first leaves unfold.
- The young plant is now able to make its own food as the green leaves makes food in the sunlight (photosynthesis).
- Note: seed leaves are the parts of a seed that protect the baby plant, leaves are the part of the plant that manufactures food.

Remember these info:

- **Pollination**

  - the transfer of pollen grains from the anther to the stigma of a flower.

- **Agents of pollination**

  - animals that help plants transfer the pollen from one flower to another (insects, animals, water, wind)

- **Fertilisation**

  - when the male sex cells join with the female sex cells within the ovule.

- **Germination**

  - the growth of the root through the seed coat.