

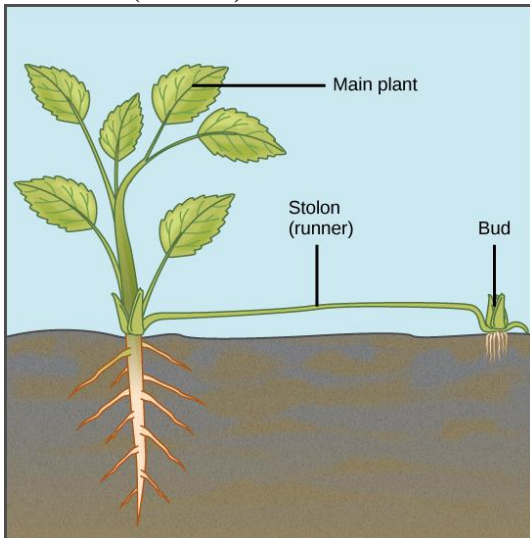
Plant Reproduction

YOU MAY WORK WITH A PARTNER ON THIS ACTIVITY.

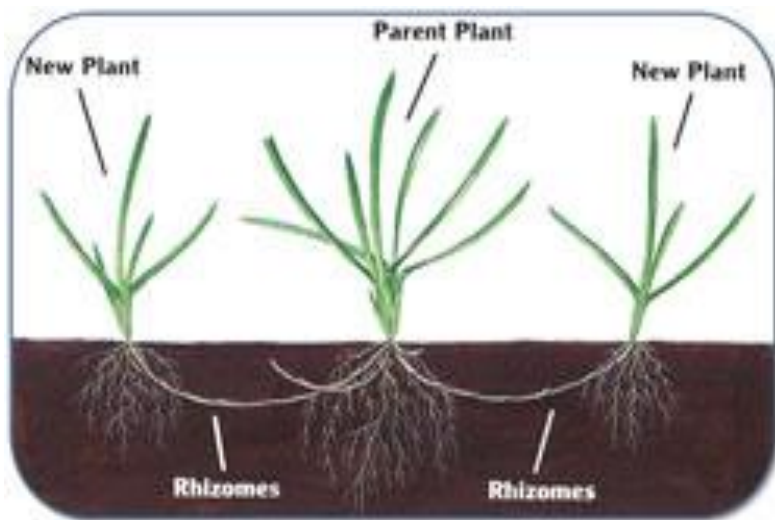
Although some plants reproduce asexually, most plants reproduce sexually. This means two different gametes unite to form one offspring. Study the images below.

Here are some examples of asexual reproduction, producing clones of the parents:

Runners (stolons):

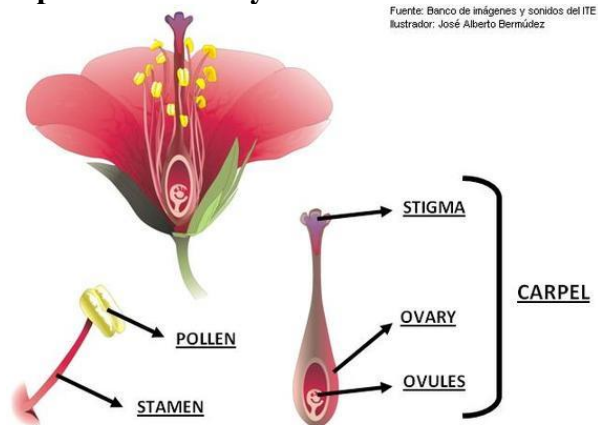
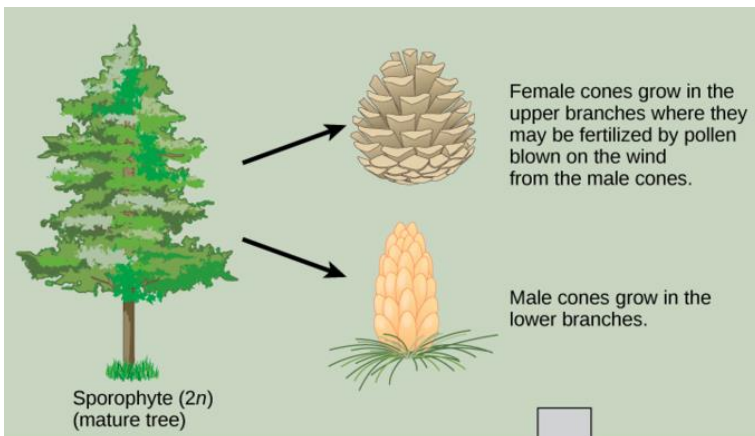


Rhizomes:



Here are some examples of sexual reproduction, leads to genetic diversity:

Gymnosperms (cone bearing trees) reproduce sexually: **Angiosperms (flower bearing plants) reproduce sexually:**



Purpose: This lab will help familiarize you with the reproductive parts of flowers.

Sexual Reproduction in Flowering Plants

Introduction

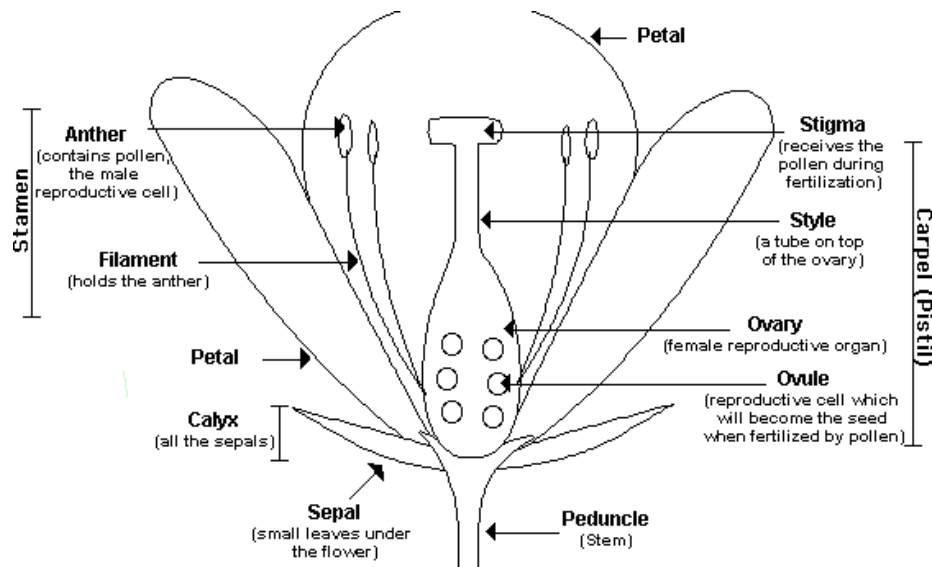
The **angiosperms** are seed-bearing plants that produce flowers. The seeds, which contain the plant embryo, are produced in the flower. All the parts of a flower are actually modified leaves that are specialized for their roles in the reproductive process.

Flower structures can be divided into two groups: the essential organs and the accessory organs. The **essential organs** are the reproductive structures, which include the **stamens** (male) and the **pistils** (female). The **accessory organs** are the **sepals** and **petals**, which surround and protect the essential organs.

The **stamen** is the male reproductive organ and consists of two parts: the anther and the filament. The **anther** is the enlarged structure at the top of the stamen. Inside the anther are **pollen sacs**. Special cells within the pollen sacs undergo meiosis to form **pollen grains**.

When the pollen grains mature, the pollen sacs split open to release the dust-like **pollen**. The **filament** is a thin stalk that supports the anther.

The **pistil** is the female reproductive organ and consists of three parts: the stigma, style, and ovary. The **stigma** is an enlarged portion at the top of the pistil that becomes moist and sticky when mature. The **style** is the middle portion of the pistil. It can be long and slender, short, or even absent, depending upon the species. The **ovary** is the enlarged structure at the bottom of the pistil. The ovary contains one or more **ovules**. Special cells within the ovule undergo meiosis to form **ova** (eggs).



Pollination occurs when pollen grains land on the sticky surface of the stigma and are trapped there.

The pollen tube grows down through the style to the ovary and enters the ovule, making a continuous passageway for the sperm to enter the ovum.

Fertilization occurs when the sperm nuclei join the egg nuclei.

Sexual Reproduction in Flowering Plants

Procedure

1. **Choose one of the flower images.**

As you examine your flower, you will be identifying parts beginning with the outer whorl and working your way in towards the pistil. Use the image and descriptors on the handout to help you identify the structures. Answer the questions as you move through this procedure.

3. The **sepals** form the outermost whorl of the flower. The sepals are leaf-like structures that are usually green in color. Sometimes, the sepals are the same color as the petals, or appear to be another set of petals of a different color. The function of the sepals is to protect the inner part of the flower before it blossoms.
4. The petals are found directly under (when flower is open they are above them) the sepals. The color and odor of the petals help to attract birds and insects to the flower for pollination.
5. The stalk-like structures inside the petals are the **stamens**, the male reproductive organs. Depending on the species, the stamens may be attached to the receptacle, to the petals, or to the pistil. The enlarged portion at the top of the stamen is the **anther**. The filament is the thin structure that supports the anther.
6. The central structure of the flower is the female reproductive organ, the **pistil**. The top of the pistil is the **stigma**. The **style** is the middle portion of the pistil. It supports the stigma. Some flowers lack a style. The **ovary** is the enlarged structure at the bottom of the pistil (also called carpel).

Name(s): _____ Date: _____

Plant Reproduction – Option 2

YOU MAY WORK WITH A PARTNER ON THIS ACTIVITY, BUT YOU ARE BOTH RESPONSIBLE FOR KNOWING ALL THE INFORMATION.

After completely reading the introduction answer the following questions.

1. Which flower are you using?
2. How many petals does your flower have?
4. Describe the appearance of the petals (color, markings, etc.).
5. How many stamens does your flower have? Draw and label one here.
6. To which structure(s) were the filaments attached?
7. Describe the appearance of the pistil. Draw and label it here.
8. What are some adaptations of flower petals to help attract pollinators?
9. How is the stigma of your flower adapted to capture and hold pollen?
10. Describe where pollination and fertilization occur.
11. Explain the differences between pollination and fertilization.
12. In which part of the male reproductive organ are the pollen grain made?
13. In which part of the female reproductive organ are the egg cells made?
14. By which nuclear process are these gametes formed?
15. Which part of the flower becomes the seed?
16. Which part becomes the fruit?

Two empty rectangular boxes for drawing and labeling. An arrow points from question 5 to the top box, and an arrow points from question 7 to the bottom box.

