LAB #_____ Flower

Lab Instructor_____ Name_____
Date _____ Period_____

Objective: To study the parts of a flower (Flower Dissection)
******Use full sentences when answering all questions.******

Background

The reproduction of non-flowering plants is clearly linked to the availability of water. Such plants cannot survive in arid climates since their reproduction depends upon a moist environment. Water is not necessary for the reproduction of flowering plants. The male reproductive cells are carried by the wind or by insects. Plants thus freed from much of their dependence upon water could survive almost anywhere upon the earth. Today the flowering plants are the most widespread and most diverse of all plants.

Flowers contain two essential organs for reproduction: the pollen-making *anther* and the ovule-making *ovary*. The anther is atop a *stamen*; the ovary lies in the base of the *pistil*. The fertilization of the egg cell in the ovule begins the process of seed and fruit formation. The growth of the seed into a new plant completes the reproductive cycle.

Pre-Lab

Read the entire lab description and, if needed, the textbook (*Tiger* p. 552, 556) to answer the following questions.

1. Describe how some plants reproduce asexually.

2. What are the gametes (sex cells) in flowering plants and where are they found? What process is involved in their production?

3. Define pollination.

LAB_____

Materials

Gladiolus, paper towels, scalpel, hand lens, microscope slide, coverslip, microscope, lens paper, dissection sheet, tape or glue

Procedures

1. With a partner, perform the dissection and microscope investigation according to the directions below.
2. Fill in *Table 1* with observations as you come across the various parts.
3. Affix these parts to the dissection sheet and label neatly.

Dissection and microscope investigation

Before cutting, draw and label the external view of the flower as *Figure 1*.

A) The Auxiliary Organs

1. Examine a flower and identify the *receptacle*, *calyx* and *corolla*. Find the green leaves at the bottom of the flower. These are called *sepals*. Remove sepals without damaging flower.
2. Remove the petals.

B) The Essential Organs

The two organs essential for reproduction are the *stamen* and the *pistil*.

1. The top of the stamen is called the anther. Touch it with your finger to feel the texture.
2. Remove each stamen carefully, so its *filament* remains intact.
3. Remove one of the anthers from the flower. Shake a small amount of pollen from it into a drop of water on a slide. Cover with a cover slip and examine under LOW power. Draw the shape of the pollen grain as *Figure 2*.
4. Find the pistil. Touch the top (stigma) with your finger to feel the texture.
5. Locate the ovary in the base of the pistil. Cut a thin cross section (slice) of the middle of the ovary. Cut at right angles to the axis of the style. Examine with a hand lens to see the ovules.

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Observations

FIGURE 1. External view of flower.

FIGURE 2. Pollen grain

Magnification _____X

FLOWER PART		DESCRIPTION	FUNCTION
SEPALS			
PETALS			
STAMEN	FILAMENT		
	ANTHER		
PISTIL	STYLE		
	STIGMA		
	OVARY		

TABLE 1. Observations of the flower

Name_____

Period_____

Post-Lab

1. Which is the male part of the flower? Which is the female part of the flower?

2. *How is the stigma adapted for pollination?*

3. The number of stamens in a flower exceeds the number of pistils. Explain the value of having more stamens than pistils.

4. How are pollen grains adapted for survival in a *terrestrial* environment?

5. How is this flower pollinated? Make a hypothesis and explain using observations and/or prior knowledge.

6. a. Explain the role that the petals <u>and</u> sepals have in reproduction.

   b. Why are the petals and sepals considered *auxiliary* (accessory) organs in contrast with the stamen and pistil, which are essential?

7. If an unexpected frost kills the blossoms of a peach tree, the tree may bear no fruit that summer. Explain.

8. Completion:

a. The two essential parts of the flower are the _____ and _____.

b. The top of the stamen is the _____. It produces a powdery substance called _____.

c. The bottom of the pistil is known as the _____ in which numerous _____ may be found.

d. The purpose of the petals is to _____ and they are suited to perform this job because they possess _____ and _____ and _____.

e. If we were to excessively destroy the insects with pesticide sprays, this would seriously destroy our balance of nature by _____

f. After fertilization, the ovules mature into _____ and the ovary ripens into a _____.