



Name: _____

Date: _____

Student Exploration: Flower Pollination

Vocabulary: anther, cross-pollination, filament, fruit, ovary, ovules, petal, pistil, pollen, pollen tube, pollination, self-pollination, sepal, stamen, stigma, style

Prior Knowledge Questions (Do these BEFORE using the Gizmo.)

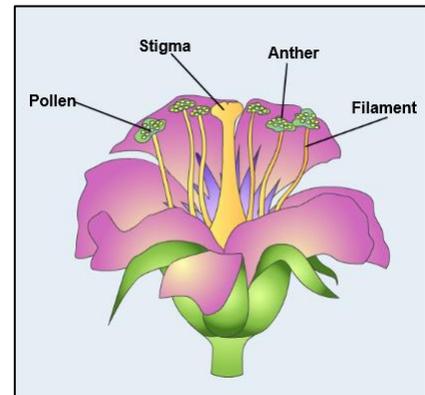
1. How do insects help a plant to reproduce? _____

2. Apples, oranges, and watermelons are all examples of **fruits**. How are they all alike? _____

3. Based on your answer to question 2, do you think that a pumpkin is a fruit? How about broccoli? _____

Gizmo Warm-up

Pollination is the transfer of **pollen** grains from the male part of a flower, called the **stamen**, to the female part of a flower, which is called the **pistil**. This fertilizes the female flower and enables it to produce seeds and fruit. In the *Flower Pollination Gizmo*, you will explore how this process works.



1. On the POLLINATION tab, check that **Self-pollination** is selected. How many flowers do you see? _____

Notice the different parts of the flower. The **stigma** is a sticky surface at the top of the female pistil. The male **stamen** consists of a long filament and a pollen-producing **anther**.

2. Select **Cross-pollination**. How many flowers do you see now? _____
3. How do you think **cross-pollination** may be different from **self-pollination**? _____



Activity A: Pollination	<u>Get the Gizmo ready:</u> <ul style="list-style-type: none"> • Select the POLLINATION tab. • Click Self-pollination. • Click Start over. 	
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Question: How are self-pollination and cross-pollination the same and how are they different?

1. Observe: Follow the directions in the Gizmo to observe the steps of self-pollination. In your own words describe what happens in each step.

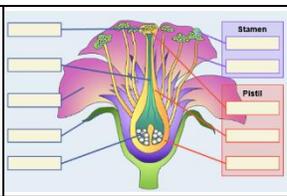
1	
2	
3	
4	
5	

2. Think about it: Read the description of the last step carefully. Why do you think plants surround the seeds with a yummy fruit?

3. Observe: Click **Start over**, then click **Cross-pollination**. Follow the directions to observe the steps of cross-pollination. How is cross-pollination different from self-pollination?

4. Extend your thinking: In cross-pollination, pollen grains must get from one flower to another. What are some ways that this might happen? Discuss your answer with your teacher and classmates.



<p>Activity B:</p> <p>Flower parts and pollination</p>	<p>Get the Gizmo ready:</p> <ul style="list-style-type: none"> • Select the IDENTIFICATION tab. • Click Start over. • Check Show information. 	
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Goals: Identify the parts of the flower and describe the function of each.

1. Complete the diagram: Drag the ten listed flower parts to the blanks in the diagram. When a part is labeled correctly, information about the part appears below.

When your diagram is complete, click the camera icon at upper right to take a snapshot. You can then paste the snapshot into a blank word-processing document.

2. Test yourself: Uncheck **Show information**. For each flower part below, write the letter of the correct description. Use the Gizmo to check your answers.

- | | |
|--------------------------|--|
| _____ Anther | A. A small leaf that protects the flower before it blooms |
| _____ Filament | B. They contain pollen |
| _____ Ovary | C. Tiny grains that contain sperm cells |
| _____ Ovules | D. The male part of the flower |
| _____ Petal | E. The part of the pistil between the stigma and the ovary |
| _____ Pistil | F. They grow from a pollen grain to an ovule |
| _____ Pollen | G. The female part of the flower |
| _____ Pollen tube | H. They contain the egg cells and develop into seeds |
| _____ Sepal | I. A part of the plant that attracts insects |
| _____ Stamen | J. A stalk that supports the anther |
| _____ Stigma | K. The sticky top of the pistil |
| _____ Style | L. The part of the pistil that contains the ovules |

3. Make connections: How might having the anther atop a tall filament make it more likely that plants will be pollinated?

4. Think and discuss: In some plants, the pistils don't form until a few days after the stamens do. How might this keep a plant from self-pollinating?

