6th Grade Science **Name: _____**

Investigation 2D, *Insect Collection*: Letter Date: _____

Insect Collection

Dear Incoming Sixth Grade Parents and Students,

I hope that your summer will be restful, meaningful, and full of quality family time. I am writing this letter to let you know that your sixth-grade student will have an insect collection due this fall. I am letting you know now so that you can collect insects while they are plentiful! One of God's amazing displays of His creative handiwork is found in the insect world. I hope that in this time both you and your children will get to dive into the fascinating and intricate world that God has made. This letter will detail how to make the collection and give you hints on some of the pinning procedures. Please read it carefully and take note of the details as these details matter!

I. **What is an insect?**

A. The basic definition of an insect is an animal with six legs and a segmented exoskeleton consisting of a head, thorax, and abdomen. This excludes spiders, ticks, millipedes, centipedes, pill bugs, etc.

II. **What are the insect collection requirements?**

A. The insects must be dead!

B. The insects must be in ONE box with a lid.

C. 25 specimens are required. Within the 25 insects in the collection, there must be a representative sampling of many different types of insects. (As we will be observing the differences between the different orders of insects, it is imperative that you make every effort to collect a variety of kinds. Please limit the number of moths and butterflies to no more than five. **Also, there are to be no duplicates of identical insects**.)

D. The insects **must be fairly well intact**. (The heads, wings, and at least three of the legs must be attached. You may want to collect and label extra insects just in case some fall apart between the time that you do your collection and the time that you hand it in.)

E. The insects must be pinned as described in the information that follows. Students must show an effort to mount in a precise and uniform way. This will enhance the beauty of the finished project.

F. An attempt must be made to make the collection ordered and attractive. (This requires symmetry of insect placement not necessarily artwork on the box.)

G. The insects must be labeled. On a small rectangular piece of cardstock, record the following information:

1. Collector's name (Family members and friends may help you collect your insects.)
2. Date collected
3. Location of collection (County and State)
4. Order (**Do not record the order of insect yet. We will do this in class. Please leave this part blank.**)

H. Pin this card ON THE SAME PIN AS THE INSECT and beneath the insect it describes. (Do not let unlabeled insects accumulate. You will forget their location. Make sure that you are diligently labeling your specimens.)

I. Example Card:

Matt Dykstra
4 Sept. 1999
Spokane County, WA
Order: (Leave blank)

J. No spiders, ticks, or other non-insect arthropods will be accepted.

K. Due: October

Once again, you are not required to identify/name the insects in your collection at home. We will use time in class to classify and name the insects. Although the collection is not due until October, it would be beneficial for you to start collecting insects right away. If you start now and slowly collect insects, you will easily have the 25 insects by the due date.

III. **How do you catch an insect?**

A. You can make an inexpensive insect net from a clothes hanger, thick dowel, and a pillowcase. Sweep it through tall weeds and you will find a world of insects that you have probably never noticed before. (See Figure 1)

B. Good places to hunt insects are:

1. at night around lights.
2. near water.
3. under rocks and dead leaf matter, on wood piles, and in forests.
4. in gardens.

IV. **What is the best way to kill an insect?**

A. One of the best ways to kill an insect for preservation is to catch the insect, put it in a jar, and place the jar in the freezer. The insect will stay pliable longer in the freezer, although don't wait too long to pin it!

B. If you would like a more portable killing jar, soak a few cotton balls with rubbing alcohol or nail polish remover and lay them at the bottom of a jar. Insert a screen or cardboard shield over the cotton to keep the insect from getting tangled in the cotton and marred by the chemicals. Seal the top with a lid.

V. **How do you pin an insect?** – Please read these instructions carefully and pin accurately.

A. Although special insect pins are normally used to pin insects for a collection, they are not required. You may use regular straight pins.

1. Identify the correct place to position the pin on the insect's body. (See Figure 15)
2. Making sure the insect is level both from side to side and front to back, push a pin through the insect's body. This may take a few attempts and a little practice, but it will become fairly easy to do.
3. Push the pin through the body. The insect should sit on the pin $1/3$ from the head of the pin and parallel to the pinning surface. This is important since the students will be handling their insects for study; they will need to hold onto the top of the pin.

B. ** Remember that insects dry quickly when dead; unless an insect is in the freezer, it should be pinned the same day it was collected! **

VI. **How do you store pinned insects?**

A. Insects can be stored in any box with a lid. Line the bottom with Styrofoam and store pinned insects inside. Copy paper boxes work really well. Cut the height of the box down to 8-10" and line the bottom with Styrofoam. Slide the cover over the top and you have a very functional insect collection storage box. A doughnut box also works very well. For a more attractive case, you can make one from wood or buy a display box at a store like Michael's Arts and Crafts. Grades will be based on the insect collection alone, not the case/box in which the insects are stored, although I expect there to be an effort to make an attractive collection.

B. ** All insects must be in only one box. **

VII. **What do you do if an insect is too small to pin?**

A. If you collect insects that are too small to be pinned through the body, there is a different method of pinning available called pointing. (See Figure 19) Make a small triangle from cardstock paper that measures about 1cm long and ½ cm wide. Place a small drop of clear nail polish on the tip of the triangle. Attach the side of the insect to the drop of nail polish. The nail polish will adhere the insect to the paper. When the nail polish is dry, insert the pin through the paper triangle to produce a nice display of a small insect.

B. ** Please note – when pointing an insect the insect will actually hang off the end of the paper. No insect should be glued to the middle of the paper. The idea is by hanging the insect off the end of the paper more characteristics are available to see. **

VIII. **How do you pin butterflies and moths so that their wings lay open?**

A. Butterflies and moths require the most work to pin. The trick is to get the wings to dry in an open position without destroying the beauty of this delicate insect. The wings are covered with scales that come off when we touch the wings. The steps that follow describe a very simple and basic way of opening the wings to dry. Please pin the moths and butterflies with wings open. Use either this technique or the advanced pinning technique. I do not want moths and butterflies just lying over on their sides.

1. Extra materials needed:
   a. flat piece of Styrofoam
   b. 3x5 index cards
2. Identify the correct place to position the pin on the insect's body.
3. Hold the butterfly or moth by its body with as little touching of the wings as possible. Push the pin through the insect. Remember to make sure the butterfly or moth is level on the pin. This may take a few attempts and a little practice, but it will become fairly easy to do.
4. Push the pin into the Styrofoam until the butterfly or moth's body comes to rest on the Styrofoam.
5. The goal of the following steps is to get a butterfly or a moth to dry with their wings horizontal. For butterflies that have wings together, carefully slide a 3x5 card between the two pairs of wings. Gently push one pair of wings down to the Styrofoam and pin the card down over the wings. Place a second card on the other pair of wings, and gently push those down to the Styrofoam and pin the card in place. Allow the butterfly to dry this way; it will take about a week. Once the wings have dried, remove the cards and you should have a beautiful butterfly to add to your collection!

B. Advanced Butterfly and Moth Instructions:

1. If you are feeling brave and want to attempt the standard way to pin a butterfly or moth then read on. This is not expected as it is a little more difficult, but you may certainly try as it dramatically improves the look of your pinned moths and butterflies. The key to the standard pinning method is getting the bottom edge of the front wing perpendicular to the body of the butterfly. (See Figure 21) To do this, you will pin through the

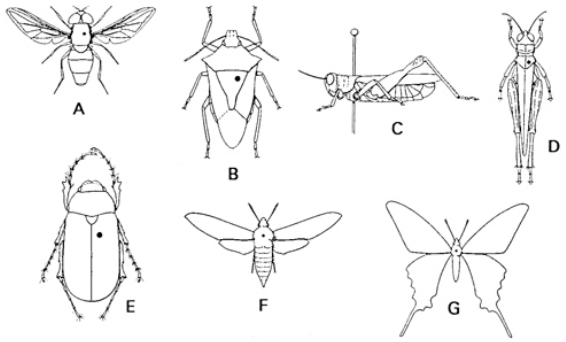
body of the butterfly, remembering to keep the insect level. Push the pin into a piece of Styrofoam until the body touches the Styrofoam. Then, using a pin, you must move one front wing up until the bottom edge is perpendicular to the body. Pin the wing to the Styrofoam. Do the same thing to the other front wing. At this point, both wings should be pinned so that the bottom edges are perpendicular to the body. Now, move the hind wings up so that they are slightly overlapped by the front wings. Pin each hind wing in place. The insect should look symmetrical at this point.

2. There are a couple of hints to this advanced method of butterfly pinning.
    a. Before you begin, make sure that you locate the thick veins at the base of each wing. These veins are tougher than the delicate membranes that surround them, thus, use these veins as a brace for moving the wing. The wings will rip if the force is applied in any other location. Gently move the wing with a sharp pin placed just behind these veins.
    b. A second hint about the advanced pinning method is to reduce holes in the wings. After you move the wing into the correct position, instead of pinning directly into the wing a strip of paper can be laid over the wing and pinned down. The pressure of the pinned paper will keep the wing in place. Remember, you are not required to get the butterflies and moths pinned to perfection, but if you want a beautiful, scientifically accurate collection, this advanced method will help.

Please trust that these details are important for the final product to be excellent. I hope this summer will be a blessing to you. Happy hunting and pinning!

Figure 15

Figure 1



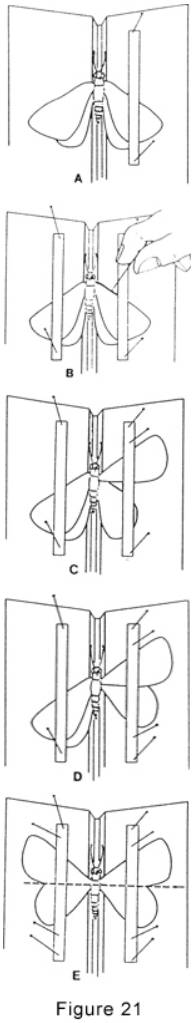
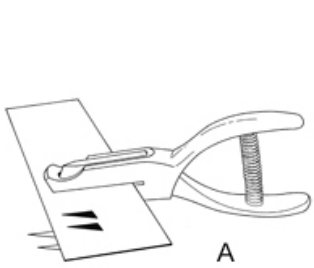
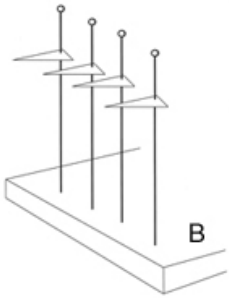


Figure 21





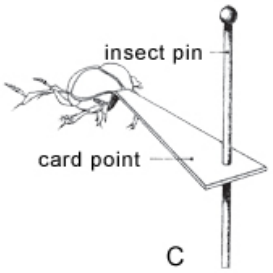


Figure 19