TEACHER MATERIALS - Germination

CONCEPTS:

Math, Science, and Technology
-Standard 4.1, 4.4, 4.6- Living Environment
ELA
-Standard 1.1- Listening and Reading
Career Development
-Standard 3a.1- Basic Skills

OBJECTIVE: The students will sequence a pictorial of the growth of a bean plant.

BACKGROUND: Many of the plant foods we eat today are from seeds. Beans, corn, peas, peanuts, nuts, and wheat (bread) are examples. This lesson traces the life cycle of the bean from one seed to many seeds.

ACTIVITY:

1. Make copies of the **"Bean Plants"** worksheets for each student on pages K-140 and K-141.

2. Have the students cut the pictures apart and paste them onto the worksheet above the words describing the step.

3. Complete **"The Germinators"** bean and corn plant on pages K-142 through K-150. Compare how they grow.

4. Plant and grow bean and corn seeds.

5. A great comparison in the various ways plants germinate is to also grow corn. Popcorn would mesh with the mathematics lesson. Or, simply point how differently grass grows when completing the following lesson on grass.

6. Soak lima bean seeds for 24 hours. Have students remove seed coat. Separate seed halves (cotyledons) and search for tiny plant.

7. Have students list what foods we get from seeds and compare seed sizes. Sort seeds by size, color, shape, etc.

8. Using various seeds, make musical instruments following

instructions of **"Seed Sound"** on pages K- 151 through K-152.

9. Sing the **"Seed Song"** on page K-153.

10. Serve "seed snacks"—sunflower seeds, peanuts, pumpkin seeds, coconut, etc. When fruit is served for snack time, look for the seeds in it.

Suggested books: Krauss, Ruth. The Carrot Seed. New York: Harper & Row Publishers, Harper Trophy Edition, 1989.

Bolton, Fay and Diane Snowball. Growing Radishes and Carrots. New York: Scholastic Books.

Kuchalla, Susan. Now I Know All About Seeds. Mahwah, NJ: Troll Associates, 1982.

Any version of The Little Red Hen.

Name _____ Bean Plants

1. plant seed, seed sprouts

2. new leaves

3. plant grows and flowers

4. new beans

The Seed Song*

(All singing, shaking when shake is sung.)

Kindergarteners have some seeds,
shake, shake, shake, shake, shake!

We're making music with our seeds,
shake, shake, shake, shake, shake!

With a shake, shake here and a
shake, shake there
Here a shake, there a shake
Everywhere a shake, shake.

Kindergarteners have some seeds,
shake, shake, shake, shake, shake!

Repeat for each child and type of seed as follows:

(All) Child's name has some seeds,
shake, shake, shake, shake, shake.

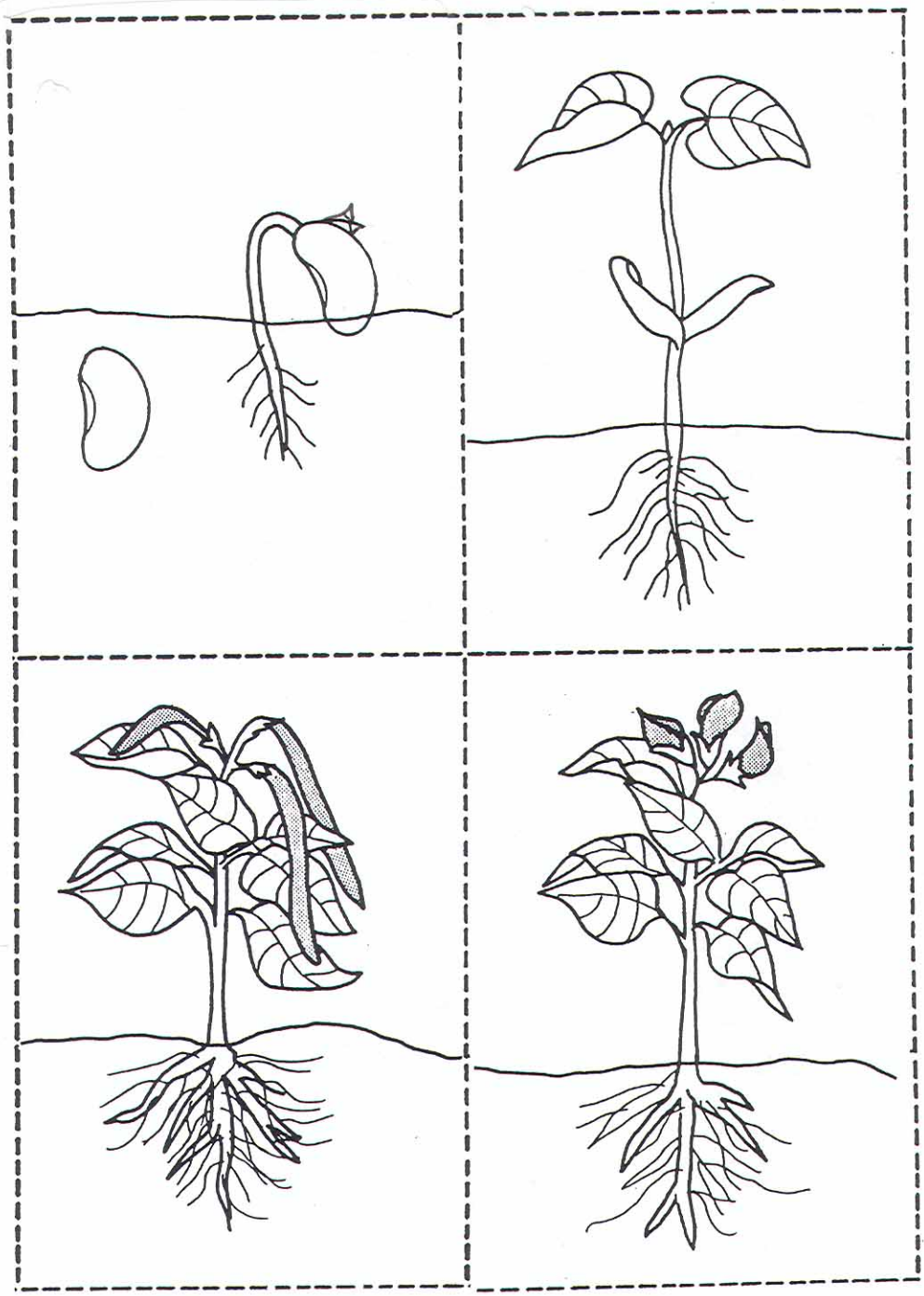
He/She's making music with his/her seeds,
(Child/children) shake, shake, shake, shake, shake!

(child) I'm making music with my (seed type)
shake, shake, shake, shake, shake!

With a (shake, shake) here
and a (shake, shake) there
here a (shake), there a (shake)
everywhere a (shake, shake).

(All) Kindergarteners have some seeds,
(shake, shake, shake, shake, shake)

* *Sung to the tune of Old MacDonald had a Farm.*



The Germinators

Lima Beans (dicot) and Popcorn (monocot) germinate in different manners. The starchy halves of the lima bean seed rise above the ground and separate into the first leaves which appear on the plant. These are not true leaves, they are cotyledons. The bean is a dicot because it has two (di) cotyledons (cot).

Popcorn's starchy seed remains underground and the first leaf pierces the ground rising out of the seed. Popcorn has only one (mono) cotyledon (cot) and is known as a monocot.

These "germinators" show the differences to the students.

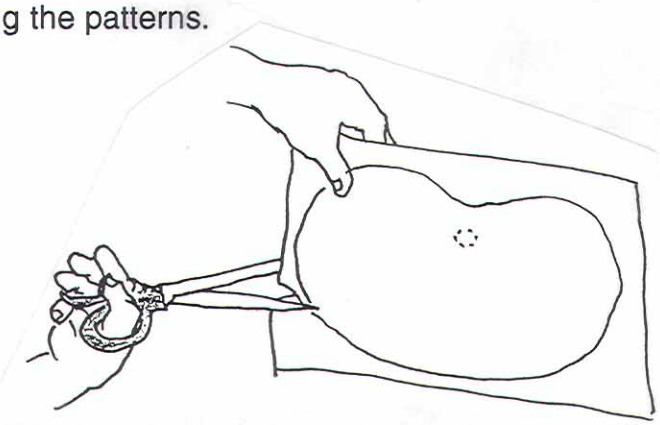
The Lima Bean Germinator

MATERIALS:
construction paper
scissors
crayons
2 brass clips per student

ACTIVITY:

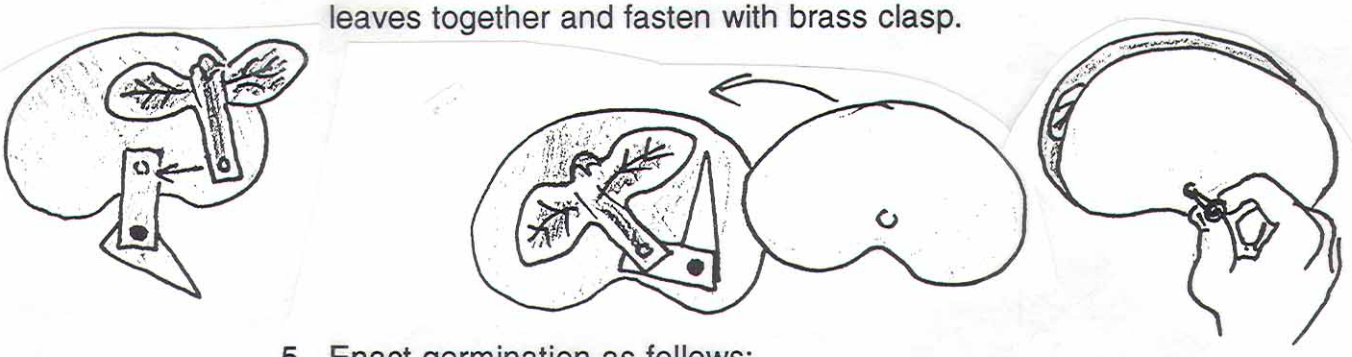
1. Make copies of the patterns on pages K- 144 through K-146. One for each student.

2. Have each student cut out the parts from construction paper using the patterns.



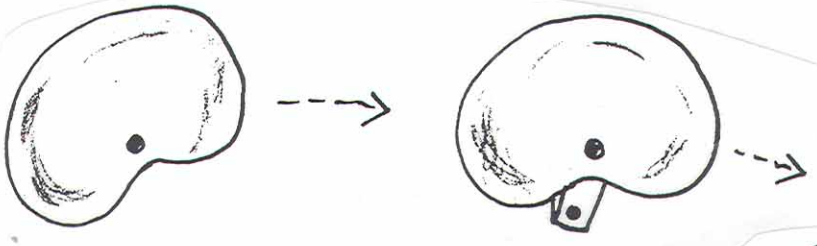
3. Insert a clasp in the center of the root.

4. Place two halves of beans (centers together), root, and first leaves together and fasten with brass clasp.

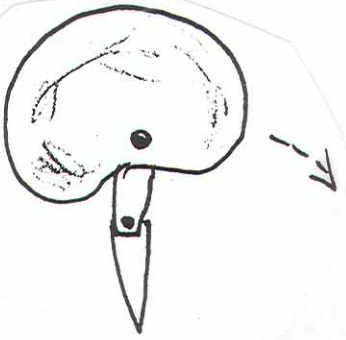


5. Enact germination as follows:

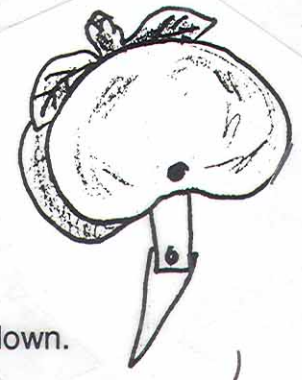
A. First the root emerges—this is technically called the "radicle."



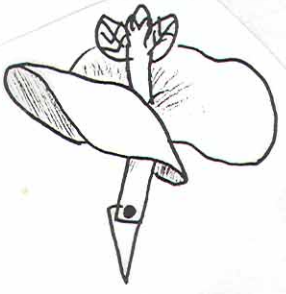
B. The root grows longer.

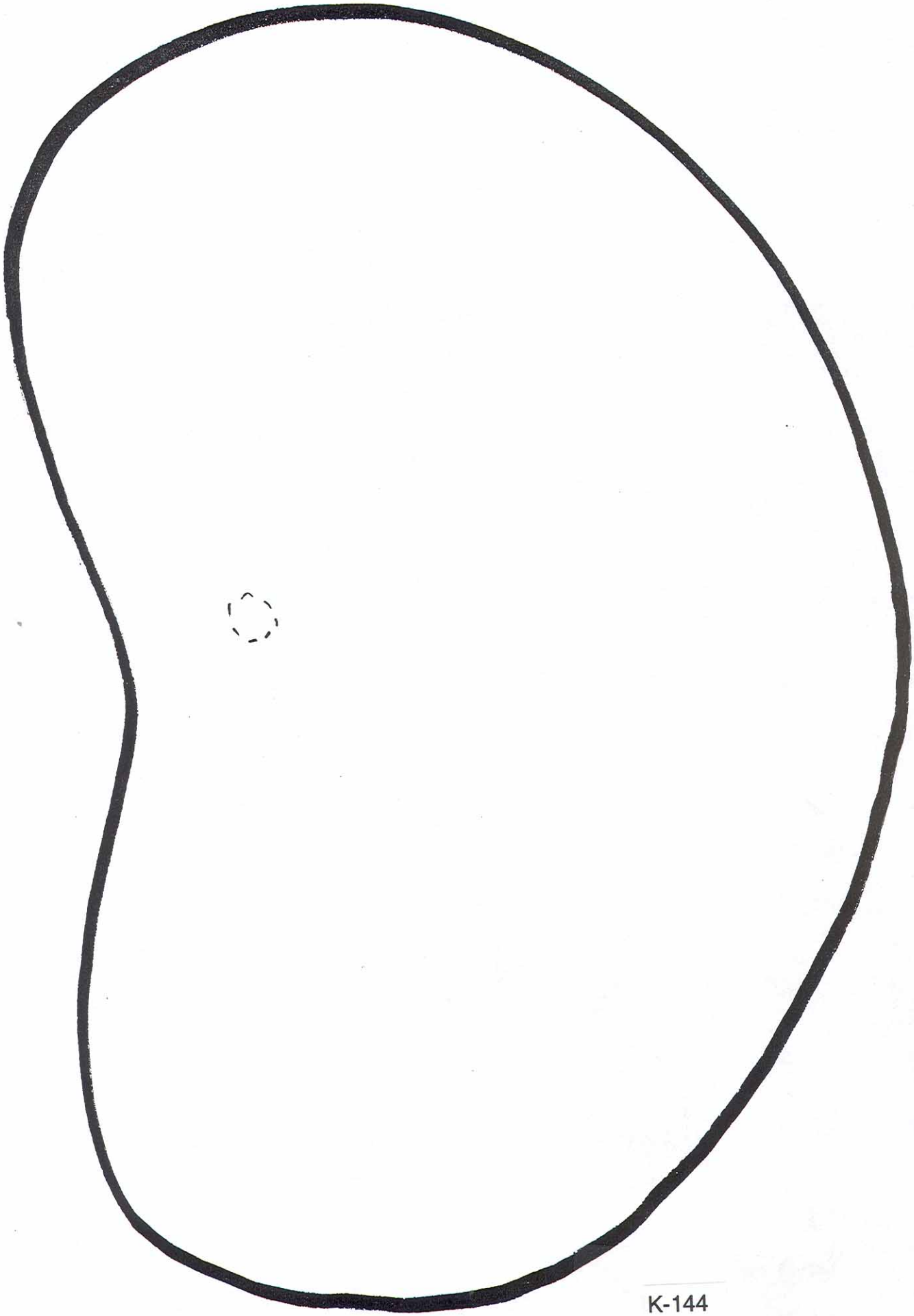


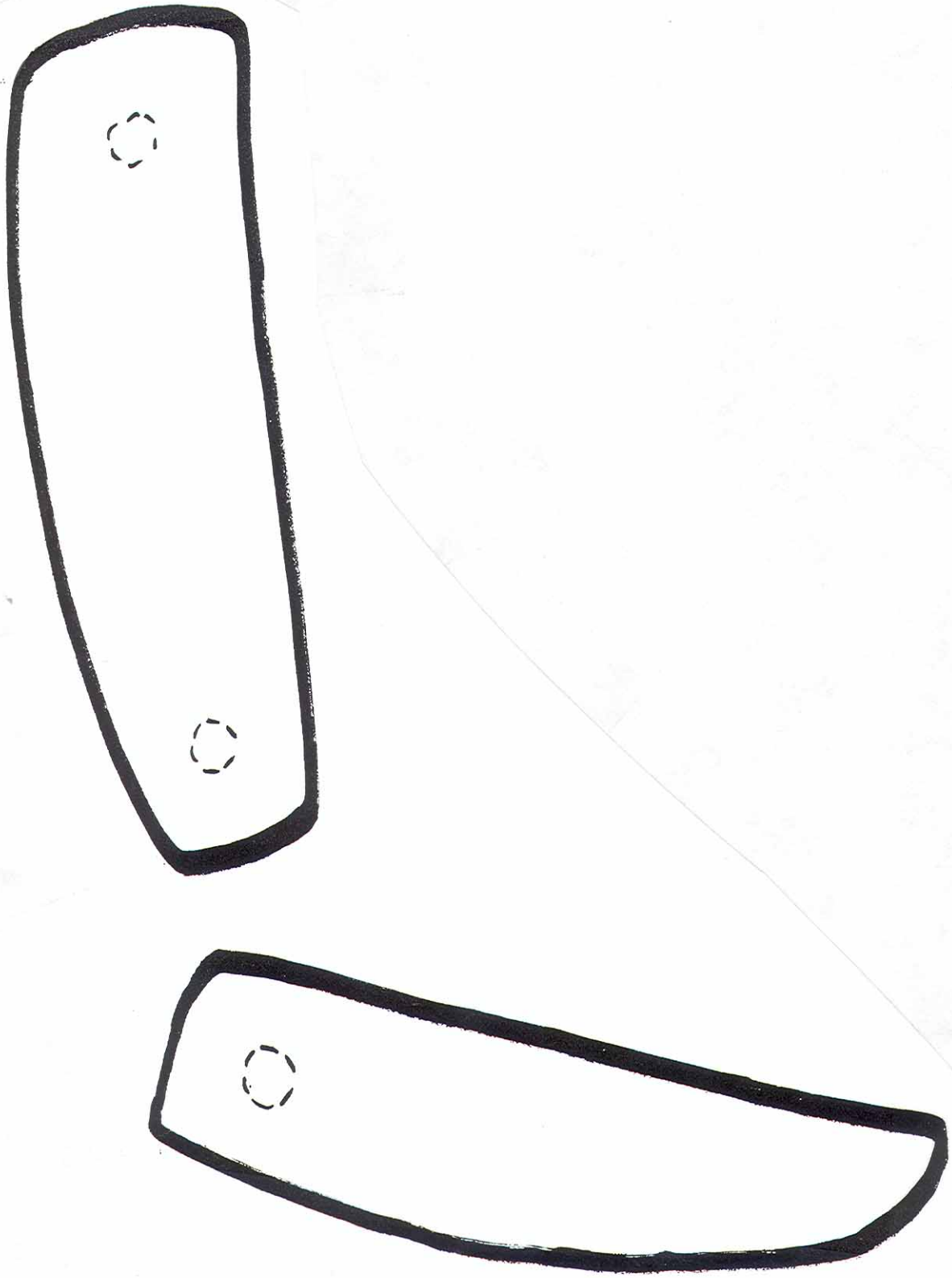
C. The cotyledons grow out of the soil.

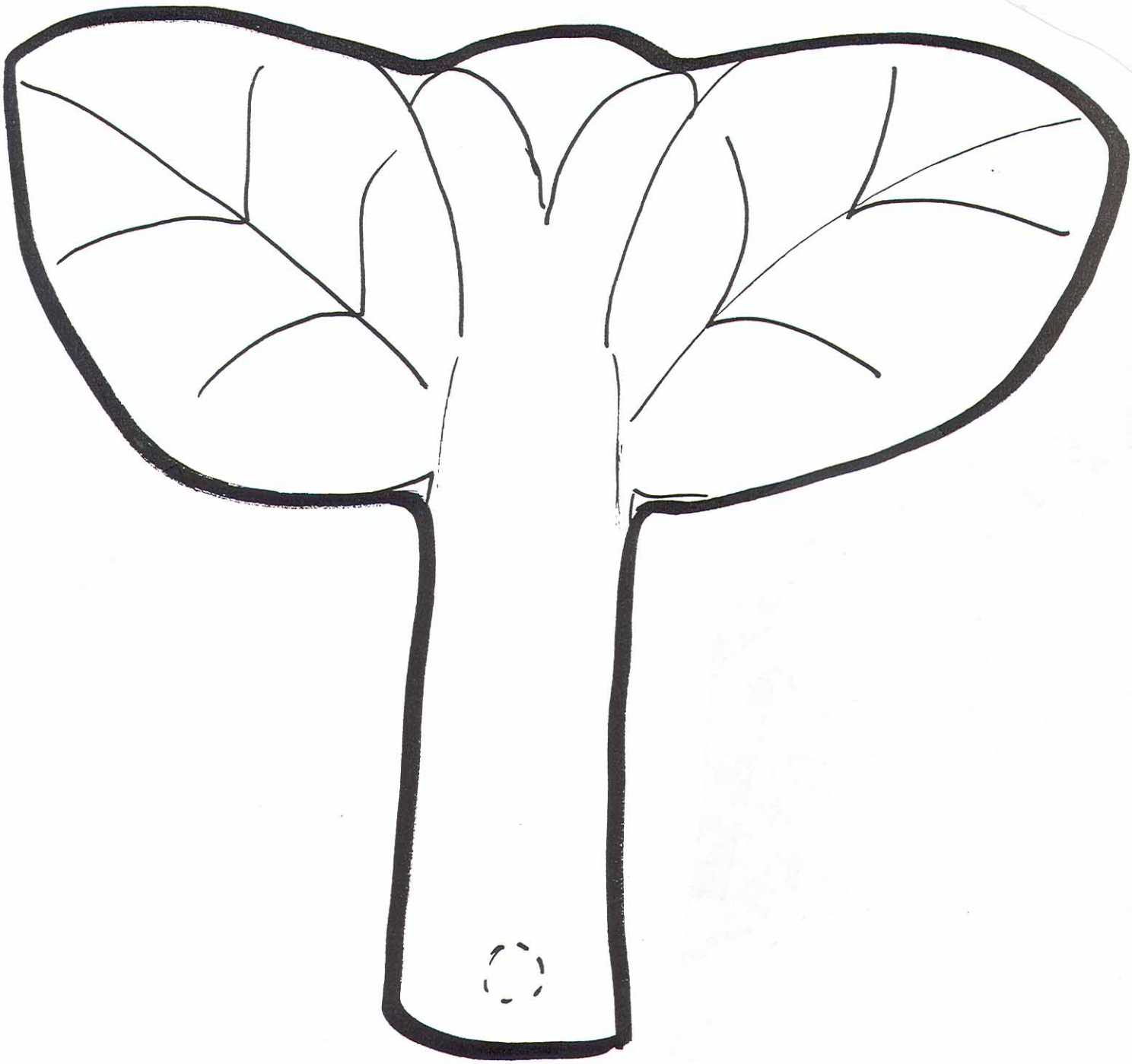


D. First leaves appear—cotyledons fold down.









The Corn Germinator

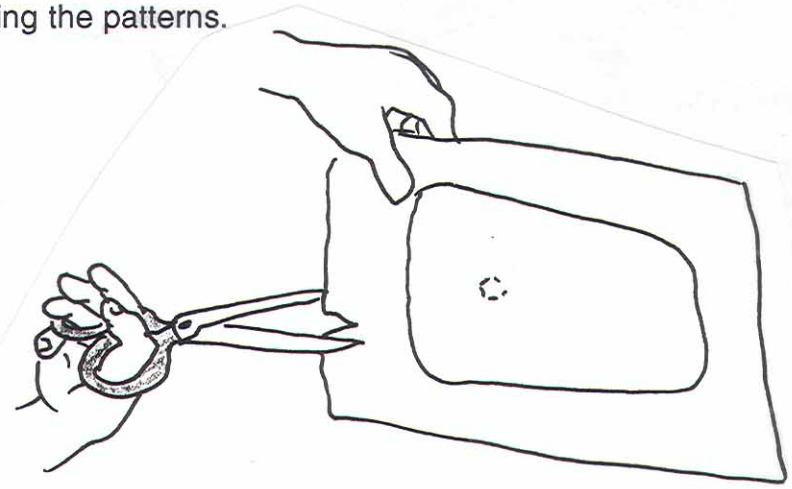
MATERIALS:

construction paper
scissors
crayons
2 brass clips per student

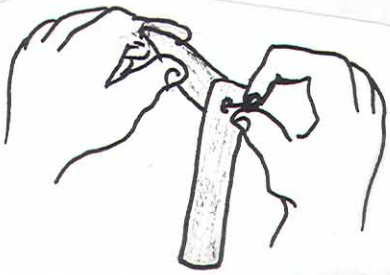
ACTIVITY:

1. Make copies of the patterns on pages K-149 through K-150. One for each student.

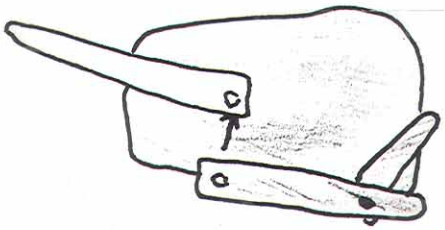
2. Have each student cut out the parts from construction paper using the patterns.

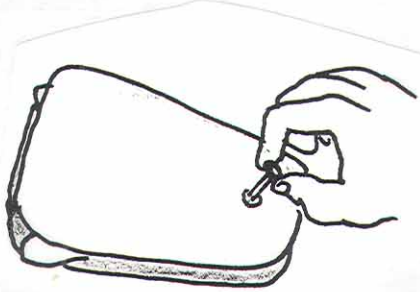


3. Insert a clasp in the center of the root.



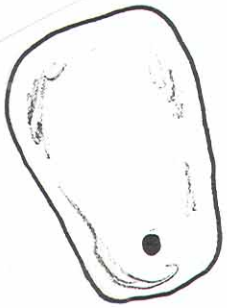
4. Place corn seed, root, and first leaf together and fasten with brass clasp.



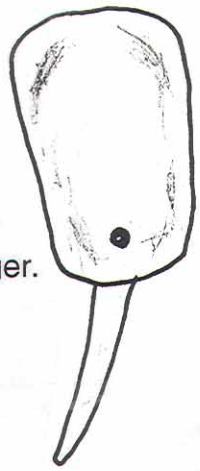


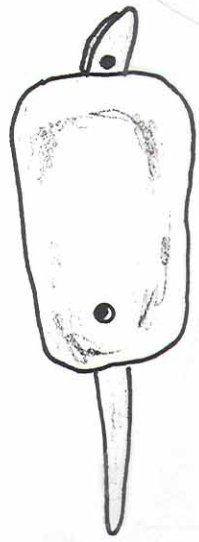
5. Enact germination as follows:

   A. First the root emerges—this is technically called the "radicle."

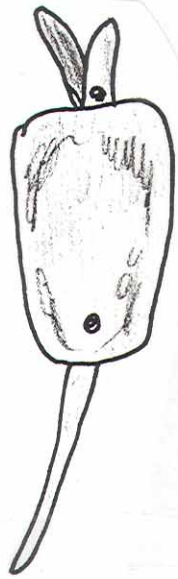


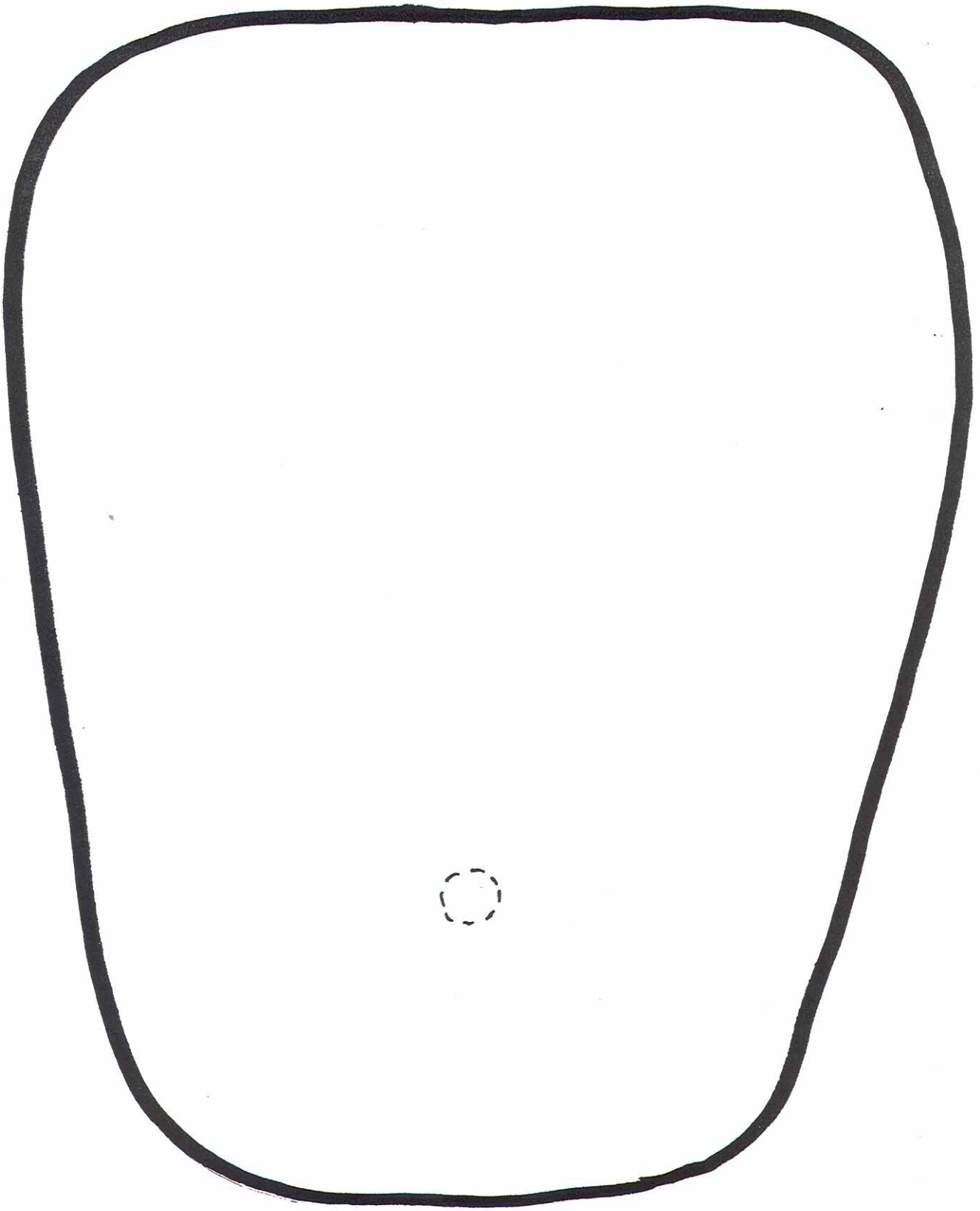
   B. The root grows longer.

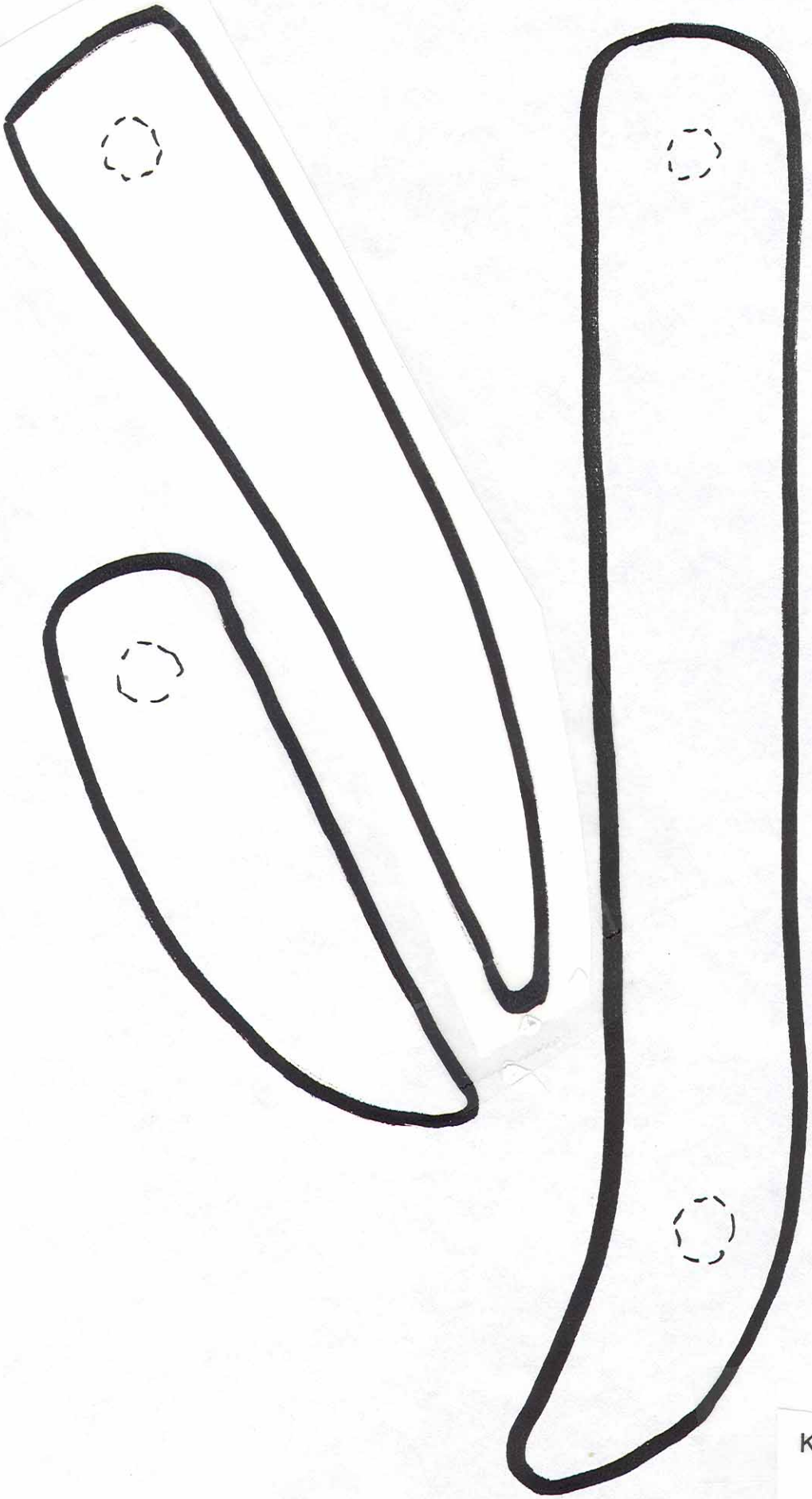




   C. First leaf appears. This is the leaf one sees emerging from the soil.







K-150

Seed Sound

MATERIALS:

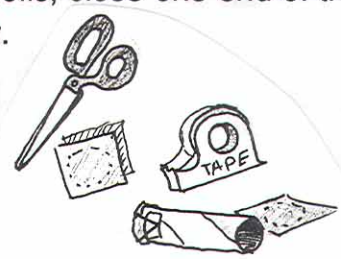
seeds of all types
containers with lids
- potato chip cans
- coffee cans
- plastic containers

toilet paper or paper towel rolls
construction paper
paint, crayons, or markers
tape or glue

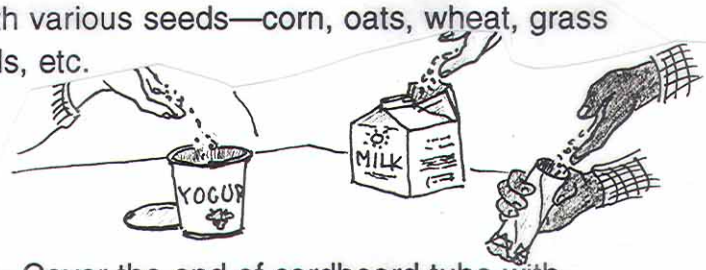
ACTIVITY:

Have the students:

1. Cover the containers or cardboard roll with construction paper and decorate.
   If using the cardboard rolls, close one end of the cardboard rolls with construction paper.



2. Fill the containers with various seeds—corn, oats, wheat, grass seed, sunflower seeds, etc.



3. Close the containers. Cover the end of cardboard tube with construction paper, tape or glue. Let dry if needed.

4. Listen to the different sounds of each seed. Can the children tell which seeds make what sounds?

5. Have a rhythm concert.

6. Sing and shake to **"The Seed Song"** to the tune of "Old MacDonald."