

## Observations (collecting data)

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### Objectives:

To observe and gather data concerning the earthworm.  
To determine the effects of light and incline on the behavior of the earthworm.

### Apparatus needed:

Earthworms, live (3 or more)  
Dissecting pan  
Black paper  
Paper towels  
Scissors  
Light source  
Watch, with second hand  
Book

### Recommend strategy:

1. Place moistened paper towel in dissecting pan.
2. Cover one half of the top of dissecting pan with black paper.
3. Place three earthworms in the pan so that the anterior half of the worms are in the light and the posterior half of the worms are in the dark, under the paper.
4. Shine light on the boundary between the black paper and the uncovered area above the pan for three minutes.
5. Record reaction in table you have made. (Table A)
6. Repeat procedure with earthworms reversed from original positions. (Record in table A)
7. Remove the black paper from the dissecting pan.
8. Place one end of dissecting pan on a book to create an incline.
9. Place three earthworms in the dissecting pan so that the center of the worm is in the middle of the pan with the anterior end toward the raised end of the pan.
10. Wait three minutes and record the number of worms that move toward the raised end of the pan or toward the lower end of the pan. (Record in table B)
11. Repeat procedure with worms in reversed position. (Record in table B)

**Analyses:**

1. Do the anterior and posterior ends respond equally to light? Explain.
2. Which stimulus seems to be stronger in forcing a response in the earthworms, light or gravity?
3. How is the earthworms response to light and gravity beneficial to the preservation of its species?
4. After a few weeks of drought, the ground may be dug up and no earthworms will be found. After a few days of rain the earthworms are seen on the road and sidewalk surface, even during daylight. Suggest a reason to explain this behavior.

**Note:** The four previous questions should be discussed and answered after lab. Students should make two tables (A and B) to record the earthworms behavior. Table A should show the earthworms reaction to light. Table B should show the earthworms response to gravity.

Table A Reaction to light after three minutes

Anterior half in light	Movement toward light
Posterior half in light	Movement toward dark
Anterior half in dark	Movement toward light
Posterior half in dark	Movement toward dark

Table B Response to gravity after three minutes

Anterior end facing upward	Movement downward
Posterior end facing upward	Movement upward
Anterior end facing downward	Movement downward
Posterior end facing downward	Movement upward