

Focused Learning Lesson
Science
Grades 9-12
LS-H-F3

Overview:

This lesson is designed to review how behavior is the response to stimuli by an organism. The teacher will review the definitions of stimuli, response, and behavior; give examples of stimuli, responses, and behaviors; and then provide exercises for the student to practice recognition of stimuli, responses, and behaviors. The worksheets are provided along with answers to the worksheets.

Approximate Duration: 45 minutes.

Benchmark:

LS-H-F3 recognizing that behavior is the response of an organism to internal changes and/or external stimuli.

Biology GLE: 35. Explain how selected organisms respond to a variety of stimuli.

Benchmark:

SI-H-A2 designing and conducting scientific investigations

SI GLE: 2. Describe how investigations can be observation, description, literature survey, classification, or experimentation.

Objectives:

1. The student will define stimuli, response, and behavior.
2. The student will identify and give examples of stimuli and responses.

Teacher Preparation:

1. The teacher should review Attachment 2: Key.
2. The teacher should make a copy of the worksheets (Attachment 1) for each student. (Optional: Teacher can make transparencies to project)
3. Divide the class into groups of two to four for group work and presentation.

Materials:

- Worksheets for each student (recommended)
- Pencil or pen
- Scissors (optional)
- Glue or tape or stapler (optional)

Lesson Procedures:

Set or Opener:

Ask the students “Why do most dogs chase cats?” List students’ answers on the board. Allow about 5 minutes or until there are no more answers. If available, the teacher might show a short video clip of unusual animal behavior and ask students to analyze the behavior for cause and effect.

Body of the Lesson:

1. Write on the board or a transparency, “Behaviors of living organisms are

responses to some internal or external stimuli.”

2. Have students give their definitions of the terms stimuli, response, and behavior. List the different answers of the board or a transparency.
3. When an agreement is reached, give each student the first page of the worksheets, Attachment 1, and have the students copy the basic principle from the board and their answers to the definitions in the space provided in Part 1 of the worksheet.
4. Have the students read the examples of the descriptions in the list in part two and have them provide their own examples in the space provided.
5. Have students classify the list of events in part three as stimuli or response individually.
6. Give each student pages two and three of Attachment 1, worksheets. Read and explain the directions. The students may write in the answers or may cut out the appropriate answers and paste, staple, or glue the matching events in the proper place according to the choice of the teacher. Allow each group to work about 15 minutes.
7. Go over the answers either using a transparency or allowing one student from each group to present an answer, going from one group to another. Discuss any disagreements.

Closure:

Repeat the basic principles again. Give the students an example of a stimulus (not mentioned in the exercise) and have them give possible responses or behaviors to that stimulus. Optional: Give a short three-question quiz.

Attachments:

Attachment 1: Student Worksheets (three pages)

Attachment 2: Key

Sample Assessment Items:

Page two of the student worksheets may be used as an assessment.

Reference Links: *N/A*

Attachment 1: Stimuli, Response, and Behavior Worksheet Page 1

PART 1: Fill in the following blanks.

1. Basic Principle _____

2. A *stimulus* is _____

3. A *response* is _____

4. A *behavior* is _____

5. A behavior can be *innate*, which means it appears _____
_____ or a behavior can be *learned*, which means
it _____ .

PART 2: Following is a list of common stimuli and responses. Give 3 more examples of each.

<u>Stimuli</u>	<u>Response</u>
Bright light in eyes of person (external)	Put on sunglasses
Hunger pains in stomach (internal)	Eats food
Strange person enters yard of dog (external)	Barks or growls
_____	_____
_____	_____
_____	_____

PART 3: Label the following events as *Stimulus* or *Response*.

1. Shark swims toward the direction of the smell of blood. _____
2. Plant grows toward the direction of the sunlight. _____
3. A bat hears the flapping wings of an insect. _____
4. A person feels the heat of a hot stove. _____
5. A dog chases a running rabbit. _____

Stimuli, Response, Behavior Worksheet Page 2

DIRECTIONS: For each of the following organisms, cut out the correct stimulus or response listed on page three and glue/staple/tape the missing stimuli or response in the correct space on page two.

Organism	Stimuli	Response
Human	Hearing an embarrassing comment	
Dog		Barking and running
Cat	Seeing a wounded bird on the ground	
Deer	Hearing the steps of a hunter	
Grass	Sunlight in the right amount	
Fish		Swimming away
Human	Hearing a lunch bell	
Hawk	Seeing a mouse on the ground	
Butterfly		Fluttering from flower to flower to feed
Human		Clapping hands over ears
Owl	Sunset and darkness growing	
Frog		Catches insect with tongue
Bacteria	Sudden change in temperature	
Ducks		Dives under water to feed
Tree	Sunlight getting less and days colder	

Stimuli, Response, Behavior Worksheet Page 3

DIRECTIONS:

1. Cut out the blocks.
2. Select the correct missing blocks to match the stimuli or response on page two.
3. Glue, tape, or staple the correct block in the missing spaces on page two.

Cat gets to close.
Hearing a high pitch whistle
Joining others ducks on a lake
Temperature gets very hot
Feels the heat on concrete on a hot day
A loud noise from the surface of a lake
Drinks too much water
Runs when a whistle blows
Bright flowers releasing odors
Loud explosion
Chases a running man
Sees an insect buzzing near
Turns white in winter
Smells seeds below water
Feels tired
Sunlight getting less and days colder

Blushing in the face
Kissing a boy on the cheek
Creeping along slowly along the ground
Running in the opposite direction of a sound
Growing towards light
Eats too much candy
Running to cafeteria
Diving down to earth's surface with talons open
Falls asleep
Moves hand from a hot iron
Flying off to hunt
Comes out of hole in ground
Forms spores to survive
Smells a skunk nearby
Crawls into a hole
Leaves turn brown

Attachment 2: Stimuli, Response, and Behavior Worksheet Page 1: KEY

PART 1: Fill in the following blanks.

1. Basic Principle The behavior of living organisms are responses to some internal or external stimuli.
2. A stimulus is any kind of detectable signal external or internal that carries information that requires a response.
3. A response is any single, specific reaction to a stimulus of an organism.
4. A behavior is the way an organism reacts to changes or needs in its internal condition or external environment.
5. A behavior can be innate which means it appears in a fully functional form from the first time it is performed, instinct or a behavior can be learned which means it is acquired from experience.

PART 2: Following is a list of common stimuli and responses. Give 3 more examples of each.

<u>Stimuli</u>	<u>Response</u>
Bright Light in eyes of person (external)	Put on sunglasses
Hunger pains in stomach (internal)	Eat food
Strange person enters yard of dog (external)	Dog barks or growls
_____	_____
_____	_____
_____	_____

Answer will vary.

PART 3: Label the following events as Stimulus or Response.

- | | |
|--|-----------------|
| 1. Shark swims toward the direction he smells blood. | <u>Response</u> |
| 2. Plant grows toward the direction of the sunlight. | <u>Response</u> |
| 3. A bat hears the flapping wings of an insect. | <u>Stimulus</u> |
| 4. A person feels the heat of a hot stove. | <u>Stimulus</u> |
| 5. A dog chases a running rabbit. | <u>Response</u> |

Stimuli, Response, Behavior
Page 2: KEY

DIRECTIONS: For each of the following organisms, cut out the correct stimulus or response listed on page 3 and glue/staple/tape the missing stimuli or response in the correct space on page 2.

Organism	Stimuli	Response
Human	Hearing an embarrassing comment	<i>Blushing in the face</i>
Dog	<i>Hearing a high pitch whistle</i>	Barking and running
Cat	Seeing a wounded bird on the ground	<i>Creeping along slowly along the ground</i>
Deer	Hearing the steps of a hunter	<i>Running in the opposite direction of a sound</i>
Grass	Sunlight in the right amount	<i>Growing towards light</i>
Fish	<i>A loud noise from the surface of a lake</i>	Swimming away
Human	Hearing a lunch bell	<i>Running to cafeteria</i>
Hawk	Seeing a mouse on the ground	<i>Diving down to earth's surface with talons open</i>
Butterfly	<i>Bright flowers releasing odors</i>	Fluttering from flower to flower to feed
Human	<i>Loud explosion</i>	Clapping hands over ears
Owl	Sunset and darkness growing	<i>Flying off to hunt</i>
Frog	<i>Sees an insect buzzing near</i>	Catches insect with tongue
Bacteria	Sudden change in temperature	<i>Forms spores to survive</i>
Ducks	<i>Smells seeds below water</i>	Dives under water to feed
Tree	Sunlight getting less and days colder	<i>Leaves turn brown</i>

