ANSWER KEY.

ZornScience
zornscience.org

Stimulus and Response

Biology | ANSWER KEY

Answer in complete sentences. Show your work for calculations.

1. Name the type of response in each example.

Stimulus and response	Type of response (phototropism, gravitropism, thigmotropism, or behavior)
A shoot grows toward a window	**Phototropism**
A root grows downward in the soil	**Gravitropism**
A vine coils around a fence post	**Thigmotropism**
A lizard moves into the shade when it gets too warm	**Behavior (negative feedback)**

2. In a choice chamber, 20 pill bugs were placed in the middle, and the number on the damp side was counted after 10 minutes in five trials: 16, 14, 17, 15, 18.

(a) Find the mean number of pill bugs on the damp side.

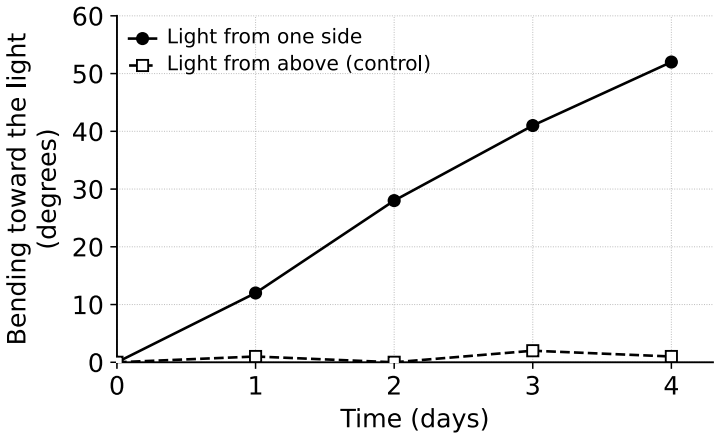
(b) What percent of the pill bugs were on the damp side, on average?

(a) (16 + 14 + 17 + 15 + 18) / 5 = 80 / 5 = **16.0 pill bugs**

(b) 16.0 / 20 x 100 = **80%**

CC BY-NC-SA 4.0 | zornscience.org

3. Seedlings were grown with light from one side or from above, and the bending was measured (sample data).



Write a claim, evidence, and reasoning about the effect of one-sided light.

Claim: seedlings bend toward a light that comes from one side. **Evidence:** the bending reached 52 degrees after 4 days with light from one side, but stayed at about 1 degree with light from above. **Reasoning:** the only difference was the direction of the light, so the light direction caused the bending. This response helps a shoot capture more light.

4. Stomata close when a plant is short of water. Explain how this helps the plant and one cost of this response.

Closing the stomata reduces water loss, which helps the plant keep its water balance. **The cost is that less carbon dioxide can enter,** so photosynthesis slows.

5. Plan an investigation to test whether crickets prefer light or dark. Name the independent variable, the dependent variable, and one variable you would keep the same.

Independent variable: light or dark side of the chamber. **Dependent variable:** number of crickets on each side after a set time. **Controlled (any one):** temperature, humidity, number of crickets, time, or chamber size.

CC BY-NC-SA 4.0 | zornscience.org