

3-D Performance Assessment

Performance Expectation: **MS-LS1-3**

Grade Level: **Middle School**

Title	Scaredy Cat		
Designed by		Course(s)	Life Science 7

Performance Expectation	MS-LS1-3: Use argument supported by evidence for how the body is a system of interacting subsystems composed of groups of cells. Clarification Statement: Emphasis is on the conceptual understanding that cells form tissues and tissues form organs specialized for particular body functions. Examples could include the interaction of subsystems within a system and the normal functioning of those systems. Assessment Boundary: Assessment does not include the mechanism of one body system independent of others. Assessment is limited to the circulatory, excretory, digestive, respiratory, muscular, and nervous systems.
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Science and Engineering Practice	Engaging in Argument from Evidence • Use an oral and written argument supported by evidence to support or refute an explanation or a model for a phenomenon.
Disciplinary Core Ideas	LS1.A: Structure and Function • In multicellular organisms, the body is a system of multiple interacting subsystems. These subsystems are groups of cells that work together to form tissues and organs that are specialized for particular body functions.
Crosscutting Concept	Systems and System Models • Systems may interact with other systems; they may have sub-systems and be a part of larger complex systems.

Student Performance	1. Supporting claims 2. Identifying scientific evidence 3. Evaluating and critiquing the evidence 4. Reasoning and synthesis
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Performance Assessment

Phenomenon

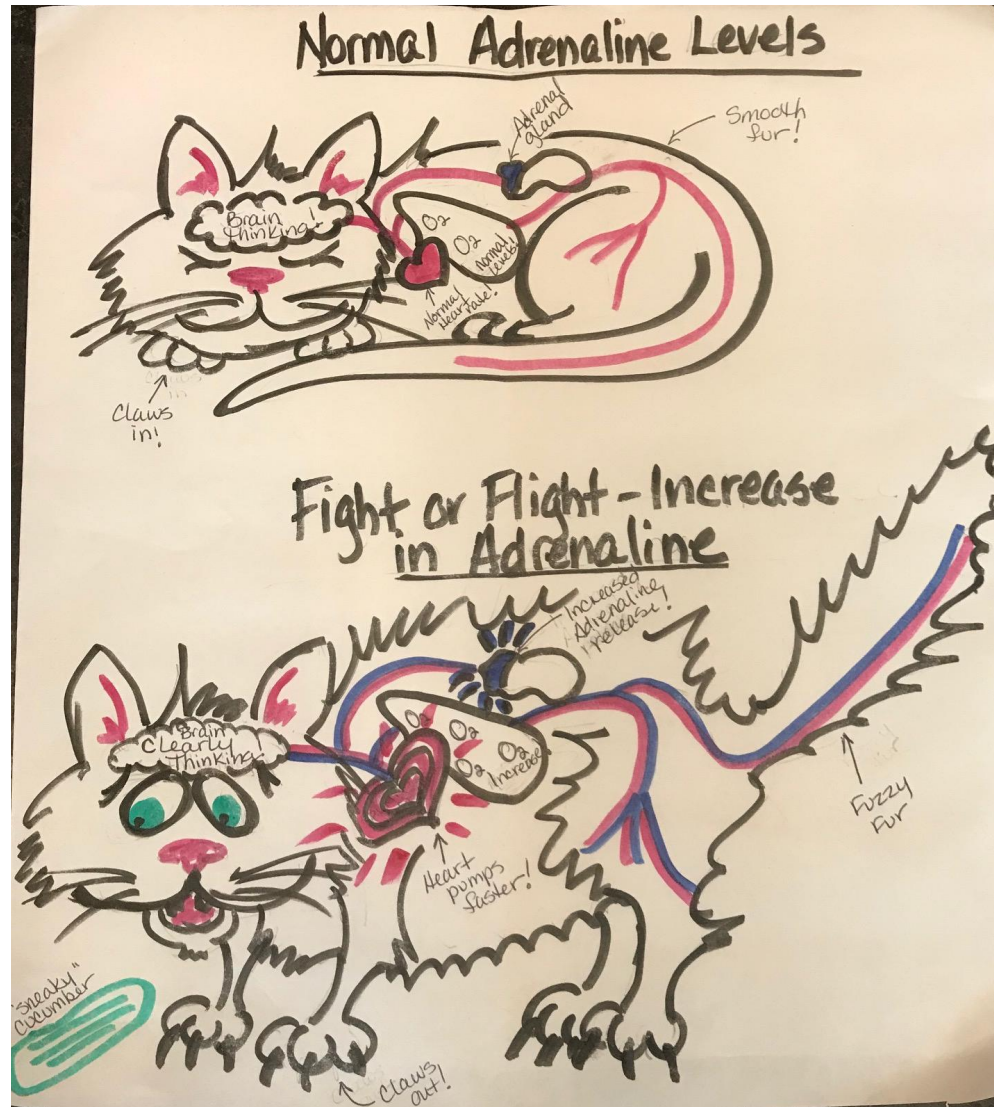
It has been observed that cats show a “fear” of cucumbers. When cucumbers are “sneaky” and scare the cat the cat’s body systems react.



Stimulus

When mammals are afraid they elicit a **FIGHT** or **FLIGHT** response and a hormone (chemical messenger), **Adrenaline**, is released from the endocrine glands into the bloodstream. The bloodstream will then distribute **Adrenaline** to cells throughout the body. A classmate claims that the increase in **Adrenaline** to the body cells allows the mammal to stay and fight or run away more easily than under normal circumstances because of changes to their body systems.

The image below shows some of the changes in the body systems of a cat before and after being scared.



Below is a data table that shows the cat's response to being scared.

Time to run 10 meters before being scared	Time to run 10 meters after being scared
5 seconds	3 seconds

Prompt

- Create an argument to support or refute the students claim. Be sure to include evidence from the diagrams and data table to support or refute the student's claim.
The claim that adrenaline allows the cat to escape is correct based on the following changes to the body systems. The adrenaline goes into the bloodstream and causes the heart to pump faster which increases oxygen delivery throughout the body including the brain which allows the cat to think more clearly.
- Starting with the cells, describe what would happen in the respiratory system as adrenaline is increased.

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Assessment Rubric* - Question 1

	Emerging	Developing	Approaching Proficiency	Excelling
Description of performance				The claim that adrenaline allows the cat to escape is correct based on the following changes to the body systems. The adrenaline goes into the bloodstream and causes the heart to pump faster which increases oxygen delivery throughout the body including the brain which allows the cat to think more clearly.
Sample student responses				

Assessment Rubric* - Question 2

	Emerging	Developing	Approaching Proficiency	Excelling
Description of performance				
Sample student responses				

*Assessment rubric adapted from the Stanford NGSS Assessment Project <http://snapgse.stanford.edu/>

¹Wiggins, G. P. (1993). Assessing student performance. San Francisco: Jossey-Bass Publishers.