

LIZARD DASH!

Arizona Academic Science Standards: SC03-S1C1-02, SC04-S1C1-03, SC03-S1C2-01, SC04-S1C2-01,02,03&04, SC03-S1C3-02&03, SC06-S4C3-01, SC03-S4C4-01&03, SC04-S4C4-01

BACKGROUND INFO

Animals need body heat! Not too much and not too little. Think about us as mammals, are body works hard to keep a constant temperature of 37 degrees Celsius (98.6 degrees Fahrenheit.) If our temperature raises a few degrees, we feel sick and may even die! All other animals must also maintain a certain body temperature to stay alive.

Animals can be divided into two groups according to the methods used to maintain body temperature:

Endotherms (Meaning "inside heat") Sometimes called warm-blooded. Produce heat within their own bodies to stay constant. Includes: mammals (like us!) and birds.

Ectotherms: (Meaning "outside heat") Sometimes called cold-blooded. Must obtain heat from the outside environment. Their body temperatures are raised and lowered by the temperature outside. These animals have numerous ways to warm up or cool down. To raise body temperature, they often bask in the sun or show the board side of their

body to the sun. If they are too warm, they will dash into the shade or burrow into the ground.



MATERIALS NEEDED

- ❖ 1 Celsius thermometer for each team. (best with metal back)
- ❖ Masking tape
- ❖ Stop watch
- ❖ Set of 8 arthropods for each team (See copy page. Make a different color for each team to avoid confusion)
- ❖ Rope to mark boundaries (optional)

OTHER REQUIREMENTS

- ❖ 45 - 60 minutes for activity duration
- ❖ Must be done on a warm, sunny day with a variety of areas providing full sun, partial shade and full shade.

WITH YOUR STUDENTS

❖ INTRODUCTION

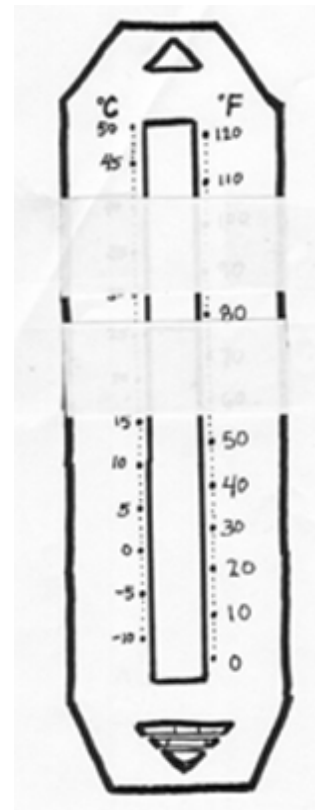
- **Discuss** endotherms and ectotherms. Explain endotherms need for a constant body temperature. Brainstorm the ways ectotherms behave to regulate their body temperature.
- **Explain** they will play a game in which they must keep their lizard (the thermometer) alive by feeding it and by regulating it's body temperature.

❖ GAME PREPERATION

- **Divide students into pairs** and hand out the thermometers.
- **Explain how to read the thermometer.**
- **Define the boundaries** of the playing field (marked with ropes or just verbally described.)
- **Find the average temperature.** Ask students to find the warmest and coolest spots on the playing field. Have students take temperature measurements for about three

minutes. (It takes at least one full minute for the thermometer to register the correct temperature.) Call the students back and add the highest and lowest numbers together, then divide by 2.

- **Mark a 5 degree window on each thermometer.** Have students place a piece of masking tape so the bottom edge is placed 3 degrees above the average temperature and another piece of tape is 2 degrees below the average. Each thermometer should look like this:



- **Explain the game.** The object is to feed your lizard all eight arthropods without having the temperature go above or below the 5 degree temperature window. If your lizard becomes too hot or too cold, the lizard "dies" and your team is out of the game. It takes 90 seconds for the lizard to eat the arthropod. In other words, each team must keep their thermometer in one location for 90 seconds before moving to another spot.

STUDENTS MAY NOT USE
THEIR BODIES TO SHADE
THE LIZARD!

- **Distribute arthropods.** Each team should have eight of the same color. Have students place their arthropods in strategic locations (such as the sun, shade and partial shade) within the playing field. Remind students that their lizard's temperature will rise in the sun and drop in the shade.

❖ **PLAY ROUND ONE!**

- **Leader calls out "Go Eat!"** Students run to their first arthropod and read the

temperature while remaining for 90 seconds.

- **Leader times 90 seconds** then yells out "Go to your next arthropod!" Continue until all eight are "eaten" or all teams are out.

❖ **DISCUSSION**

- **Ask students these questions:**
 - Which lizards survived?
 - What strategies were used?
 - What problems did the others have?
 - What adaptations (or changes) does your lizard need to make in order to survive?

❖ **PLAY ROUND TWO!**

- **Implement changes and play again.** Consider some of these possibilities:
 - Allow lizards to move more quickly to illustrate the need for lizards to dash from sun to shade.
 - Move the entire 5 degree window up or down the thermometer to illustrate that different kinds of lizards live in different kinds of temperature ranges. (The window must still remain within 5 degrees!)
 - Allow students to bury their thermometers to illustrate

the burrowing behavior of lizards to cool themselves off.

❖ **DISCUSSION**

- **Ask students these questions:**
 - What behavior did your lizard show that was different?
 - Were the adaptations successful?
 - What temperature ranges were successful in the sun? The shade? The partial shade?
 - What would be the result of taking a lizard from the desert into your home as a pet?