Name:_____ Date: _____

Lesson 4: Climate Controlled Clothing

So far, we have learned a few things about heat and energy:

1. There are different forms of energy, divided into potential (stored) and kinetic (moving) energy.
2. Thermal energy (heat energy) is a form of kinetic energy that comes from moving particles.
3. Energy can be transformed from one type of energy to another. For example, chemical energy from food can be transformed into thermal energy to help heat our bodies.
4. Insulators keep heat in
5. Climate change is altering the weather and seasonal temperatures around the world.

Insulators and Conductors:
- heat flows naturally from hot to cold
- insulators and conductors can help to moderate or control this flow
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	Insulators	Conductors
Definition	Materials that do not allow heat to pass through them easily.	Materials that allow heat to pass through them easily.
Clothing Examples	- thicker clothing - air (i.e. the air trapped between layers of clothing) - wool, silk	- thinner clothing - water - looser fitting to allow air to flow - linen, cotton
Other Tips	- polyester reflects heat back to the body - black clothing absorbs the sun	- white clothing reflects the sun

Your Challenge:
Choose scenario A or B on the other side of this sheet (if you have time, you can do both). Using the provided paper, design clothing that would solve the problem explained in the scenario. Make sure you explain how solved the problem using insulators and conductors.

Name:_____ Date: _____

Scenario A: Extreme Cold

James Balog, world-famous photographer known for his role in the documentary "Chasing Ice", will be venturing even farther into the Arctic Circle to track the movement of ice.

He will be facing **temperatures of -50 degrees Celsius, high winds, limited sunlight, and the elements (snow, ice, blizzards, and very cold water).**

Your task is to design an outfit (including under layers, coat, boots, hat and gloves) that will protect James in this extreme environment. *Make sure to identify and explain all the materials you are using and why you have made these choices. Draw and label a diagram of James' outfit.*

Scenario B: Extreme Heat

Kati is living in North Africa, where average temperatures are expected to rise by 3 degrees Celsius over the next few years. **The hottest temperatures already exceed 50 degrees Celsius, so Kati needs clothing that will help her face extreme heat, lack of rain, powerful sun and lack of water.**

Your task is to design an outfit that will protect Kati in this extreme environment. *Make sure to identify and explain all the materials you are using and why you have made these choices. Draw and label a diagram of Kati's outfit.*