Name: _____ **Date:** _____

Answer Key: Bears, Blankets, and Boiling: Pre-K Heat Heroes Quiz

Solve thermal puzzles by predicting how warmth moves through a snowy forest and designing ways to keep a polar bear's cocoa hot.

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1. If we want to build a house for a penguin that keeps the cold wind out and the warm air in, which material should we use to make it 'snuggly'?

Answer: B) Thick, fuzzy wool blankets

Fuzzy materials like wool trap air, which acts as an insulator to keep warmth from escaping, similar to how animals use fur.

2. If you hold a cold ice cube in your warm hand, the 'cold' jumps into your hand to make it shivery.

Answer: B) False

According to thermodynamics, heat always moves from the warm object (your hand) to the cold object (the ice). Cold doesn't 'move'; it's just the absence of heat!

3. You have a cup of hot soup and a cup of cold juice. If you pour them together into a big bowl, the new mixture will be ____.

Answer: C) Warm, in the middle

When hot and cold meet, they share energy until they reach a balance, creating a medium 'warm' temperature.

4. A dragon breathes fire on a giant rock. The rock gets hot, but then the dragon stops. What happens to the heat in the rock after a long time?

Answer: C) The heat spreads out into the cool air

Heat naturally spreads out from hot things to the cooler area around them until everything is the same temperature.

5. Imagine you are wearing a black shirt and your friend is wearing a white shirt on a sunny day. You will feel ____ than your friend.

Answer: C) Warmer

Dark colors absorb more energy from the sun's radiation, while light colors reflect it away.

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6. If you rub your hands together very, very fast, they will start to feel warm.

Answer: A) True

Moving your hands creates friction, which turns the energy of your movement into thermal (heat) energy.

7. We want to make a 'Robot Refrigerator.' To make the inside cold, what must the robot do with the heat?

Answer: B) Push the heat out into the kitchen

The Second Law of Thermodynamics says to move heat from a cold place to a hot place, you have to use energy to 'pump' or push it out.

8. A lizard sits on a hot brick in the sun. The lizard's tummy gets warm because of ____.

Answer: B) Touching the hot brick

This is conduction. When two things touch, heat moves directly from the warmer object to the cooler one.

9. Energy can be totally destroyed if we put it in a very strong box.

Answer: B) False

The First Law of Thermodynamics (Conservation of Energy) states that energy cannot be destroyed; it only changes form.

10. If we could make a toy car that was 'super-duper cold' (Absolute Zero), what would happen to its tiny molecules inside?

Answer: C) They would stop moving almost completely

The Third Law suggests that as we reach the coldest possible temperature, all movement (entropy) stops.