

## Urban Planning - Class Period 08

Class Goal: Understanding the how heat happens in our cities. The Urban Heat Island

**SimCity5:** In SimCity5, you will not be able to control the color of your buildings. The Sims build them the way that suits them. However, when you are building your model city, you will need to take color into consideration.

**Engineering:** Design engineers research and develop ideas for new products and the systems used to make them. They also work to improve the performance and efficiency of existing products. There are design engineers at work designing building materials and shapes that will make our urban environment cooler.

### Which one's cooler? Building with Black or White?

One of the things that can affect the temperature of a building is the color of the building materials, especially on the roof. In this activity, you will test how the color of a building can affect the temperature inside the building. Your "buildings" will be shoeboxes.

- **Step 1:** Cover one of your shoeboxes in black construction paper and cover the other one in white construction paper. You don't need to cover the bottom.
- **Step 2:** Stick four pushpins in the bottom corners of each box, so the box is supported by the pushpins when you set it down.
- **Step 3:** Measure the temperature in the classroom, and record in the data table (back of this sheet). Also record the weather outside (sunny, cloudy, etc.)
- **Step 4:** Place the shoeboxes on the cement outside the classroom – make sure they are both in the sun.
- **Step 5:** Wait 15-20 minutes, then measure the temperature inside the two shoeboxes. Measure the temperature by first poking a hole in the side of the shoebox. Then put the metal part of the thermometer in the box and hold it so it doesn't touch the sides of the box. Hold it for about two minutes, then record the temperature in the data table.
- **Step 6:** On two other days, repeat steps 3-5 with the shoeboxes you used before.

Day	Weather (sunny, cloudy, rain, etc.)	Room Temperature	Temperature of Black Box	Temperature of White Box
1				
2				
3				

Questions:

1) Which box was usually warmer, the box with black paper or the box with white paper?

2) If you lived in the desert and wanted to spend less money on air conditioning, what color would you paint your house?

If you lived in the Arctic and wanted to spend less money on heat, what color would you paint your house?

3) Many of the skyscrapers in Los Angeles are gray or black. Do you think they should be painted a different color? Why?