



Reflecting on the Activity and the Challenge

Knowing how well a material conducts heat is the first step in making a cookware choice. Heat conductivity is most important for pots and skillets used on the stovetop, where uniform heating helps to prevent hot spots that burn food before it's completely cooked. The low specific heat capacity of metals means that it does not take much heat to increase the temperature of the metal. Consider how information such as this might be used in your cooking-show segment. For instance, you could describe why a chef might choose a copper-coated steel pan over an iron skillet for frying eggs. Your cooking show may also point out how some materials from the oven quickly cool to room temperature while others stay hot. A good restaurant must ensure that all foods are the right temperature when the food is served. This may be something that you want to highlight in your cooking show.

Chem to Go

1. If you had pans (of identical mass) made of each of the following metals—Al, Cu, and Fe—which would be the hottest after sitting on a burner for 1 min? Explain your answer.

Material	Specific heat (J/g·°C)
copper	0.390
iron	0.470
aluminum	0.900
glass	0.840
stainless steel	0.500
water	4.18

2. a) If you had a 1000.0 g copper pot, how many calories of heat energy would it take to raise its temperature by 60.0°C?
b) How many calories of heat energy would it take to raise an iron pot with the same mass by 60.0°C?
3. Why do confectioners use marble slabs to prepare candies and fudge?
4. When you pour hot water into a china cup, why should you have a spoon in the cup?
5. If you had water in either of the pots in *Question 2*, would the same amount of heat need to be supplied in order to bring about the same temperature change?
6. The heat capacity of a substance depends on:
 - a) temperature only
 - b) mass only
 - c) temperature and mass
 - d) mass and specific heat