

<b>Topic</b>	Temperature and energy transfer by heating	<b>Level</b>	GCSE (or any course for students aged 11-16)
<b>Outcomes</b>	<ul style="list-style-type: none"> <li>• Understand that the higher the temperature an object is, the greater the tendency of that object to transfer energy by heating</li> <li>• Know that heat is the transfer of energy from a hotter object to a colder object</li> </ul>		
<b>Information for teachers</b>	<ul style="list-style-type: none"> <li>• This problem should be posed once students have a firm understanding of the processes of temperature, conduction, convection and radiation. The question provides an opportunity to listen to student understanding so that appropriate feedback can be given.</li> <li>• Remember that temperature is a measure of hotness. It is the average kinetic energy of particles in a system. It is measured using the Kelvin or Celsius scale.</li> <li>• Heat is the transfer, or flow, of energy from a hotter object to a colder object. This happens when there is a difference in temperature. It is measured in Joules.</li> </ul>		

Imagine you have just poured two cups of hot tea. You add cold milk from the fridge immediately to the first cup. We will call this cup A.

You then wait two minutes and pour cold milk into the second cup. We will call this cup B.

**Which cup will be colder after the experiment? Explain your answer.**



Cup A – milk will  
be added straight  
away



Cup B – milk will  
be added after 2  
minutes

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**Which cup will be colder after the experiment? Explain your answer.**

The answer is cup B. It was hotter for the first two minutes and so transferred more energy to the surroundings by heating than cup A. When milk was added the temperature decreased further.



Cup A – milk will be added straight away



Cup B – milk will be added after 2 minutes