“Worksheet: Finding Thermal Equilibrium”

Materials
- 1 film canister with small hole punched in the lid
- 2 thermometers
- 1 250 ml beaker
- Hot and cool water
- Graph paper
- Red and blue colored pencils

Procedure
1. Fill a film canister with hot water.
2. Insert the thermometer into the film canister
3. Wait 20 seconds and record the temperature.
4. Fill a 250 mL beaker two thirds full with cool water.
5. Record the temperature of the cool water.
6. Place the film canister with thermometer in and a second thermometer into the cool water.
7. Record the temperature of each thermometer every 30 seconds.
8. When the temperatures of each liquid is the same STOP.
9. Graph your data. Plot temperature on the y-axis and time on the x-axis.

Hypothesis
How long will it take for both waters to reach the same ____________ temperature?

DATA:

<table>
<thead>
<tr>
<th>Initial temp.</th>
<th>30 sec.</th>
<th>1:00</th>
<th>1:30</th>
<th>2:00</th>
<th>2:30</th>
<th>3:00</th>
<th>3:30</th>
<th>4:00</th>
<th>4:30</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hot water</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
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<td></td>
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</tr>
<tr>
<td>Cool water</td>
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</tbody>
</table>
**Analysis:**

What happens to the rate of energy transfer as the two samples of water get closer in temperature?

Was your hypothesis correct?

How does this relate to thermal energy, temperature and heat?