26.1 Heat and Temperature

Physical Science

Summarize main points from each video.

Video Title / topic _____

Video Title / topic _____

Video Title / topic _____

Topic Introduction

Summarize your understanding of each paragraph.

Specific heat, also called specific heat capacity, is defined as the amount of energy that has to be transferred to or from one unit of mass (kilogram) or amount of substance (mole) to change the system temperature by one degree.

The hotter an object is, the faster the motion of the molecules inside it. The heat of an object is the total energy of all the molecular motion inside that object. Temperature, on the other hand, is a measure of the average heat of the molecules in a substance.

http://www.spitzer.caltech.edu/uploaded_files/other_files/0000/4597/TheDifferenceBetween.pdf

Often we think that heat and temperature are the same thing. However, this is not the case. Heat and temperature are related to each other, but are different concepts.

Heat is the total energy of molecular motion in a substance while temperature is a measure of the average energy of molecular motion in a substance.

Read/Summarize Text

1. **Read the passage.**
2. **Underline key expressions in each sentence.**
3. **Re-write each word (or expression) you underlined.**
4. **Summarize the passage.**

Thermometer

1

2

A thermometer is a device that measures temperature or a temperature gradient. A thermometer has two important elements: (1) a temperature sensor (e.g. the bulb of a mercury-in-glass thermometer or the digital sensor in an infrared thermometer) in which some change occurs with a change in temperature, and (2) some means of converting this change into a numerical value (e.g. the visible scale that is marked on a mercury-in-glass thermometer or the digital readout on an infrared model). Thermometers are widely used in industry to monitor processes, in meteorology, in medicine, and in scientific research.

https://en.wikipedia.org/wiki/Thermometer

Re-write words you underlined

3

_____ _____ _____

_____ _____ _____

Using a complete sentence, summarize or rephrase the passage

4

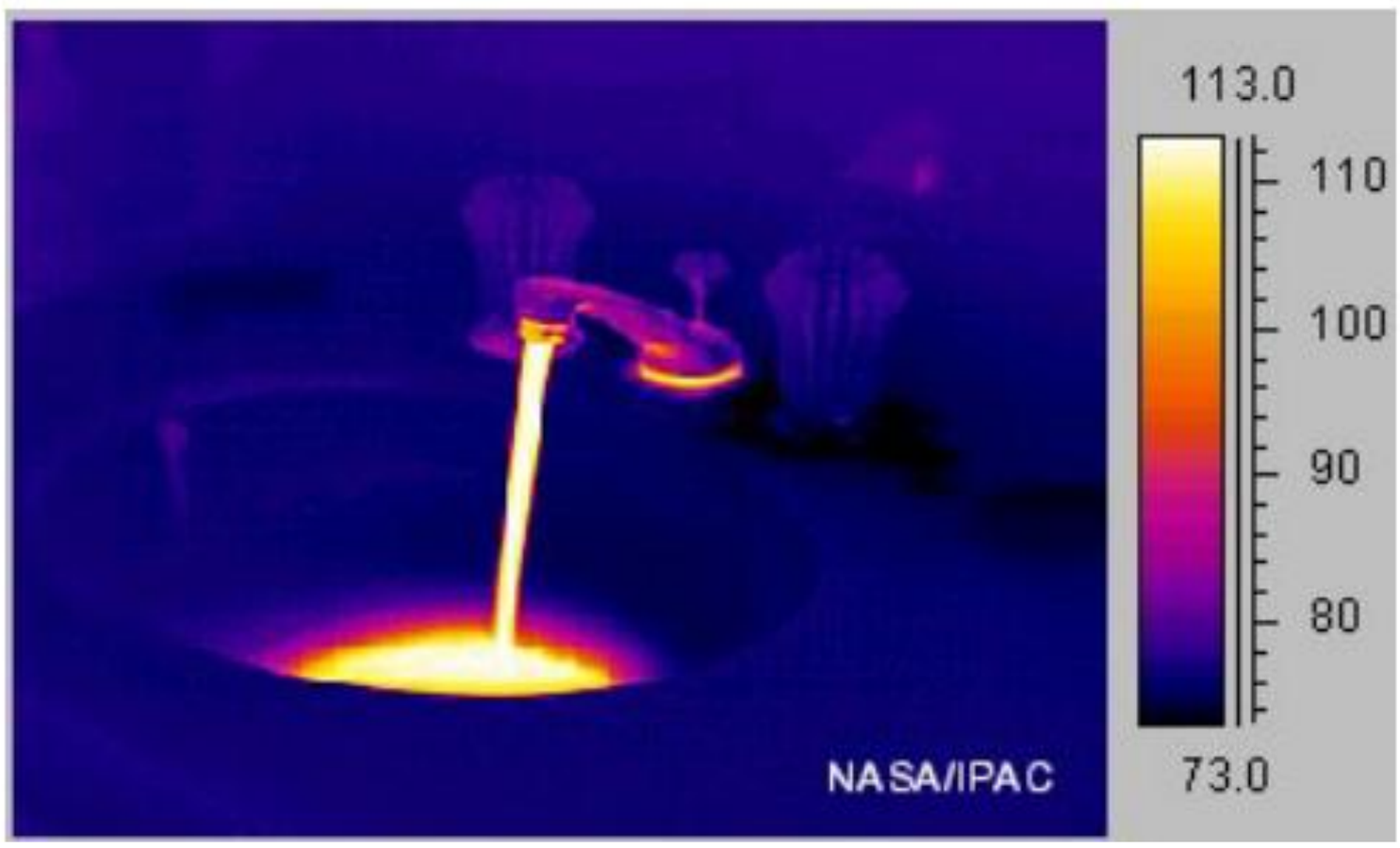
Read Text for Comprehension

Read this article for deeper understanding. No summary is required, although you may want to circle, underline, or mark key ideas and words.

The Difference Between Heat and Temperature?

We often refer to infrared radiation as being primarily heat (or thermal) radiation. But what exactly is heat, and how does it differ from temperature? Simply put, heat is a measurement of energy. All molecules contain some amount of kinetic energy, that is to say, they have some intrinsic motion. The hotter an object is, the faster the motion of the molecules inside it. Thus, the heat of an object is the total energy of all the molecular motion inside that object.

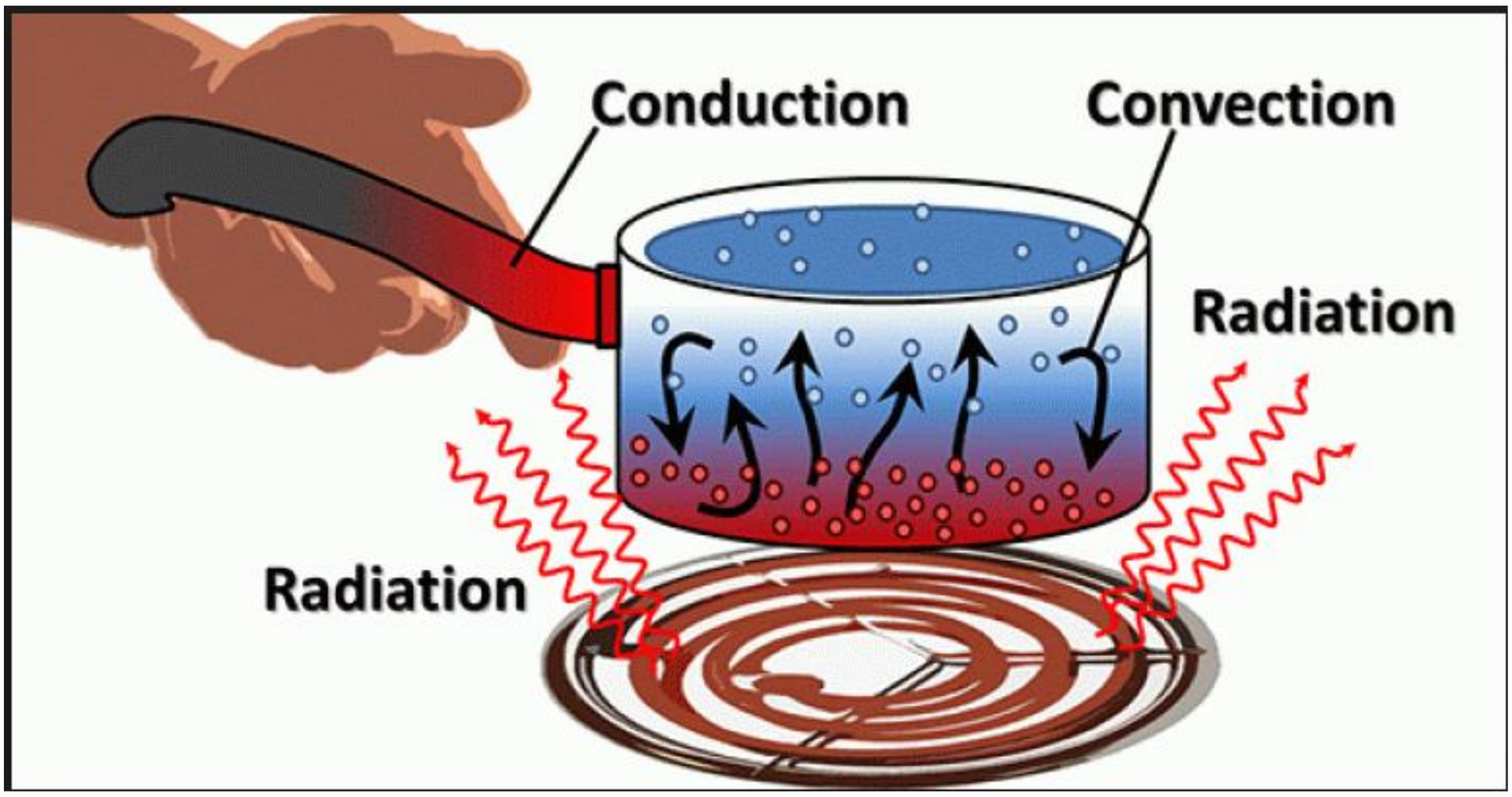
Temperature, on the other hand, is a measure of the average heat or thermal energy of the molecules in a substance. When we say an object has a temperature of 100 degrees C, for example, we do not mean that every single molecule has that exact thermal energy. In any substance, molecules are moving with a range of energies, and interacting with each other as well, which changes their energies. But if we average the thermal energies of all the molecules together, we can obtain an object's temperature.



http://www.spitzer.caltech.edu/

Draw Illustration

Copy and Label the Illustration in the Space Provided



http://www.machinedesign.com

Draw (Copy) the Illustration Here

Interpret a Graph

Write the title of the graph _____

Circle the type of chart this represents

Bar Chart *Line Chart* *Pie Chart* *Other*

If applicable,

What does the X-axis represent _____

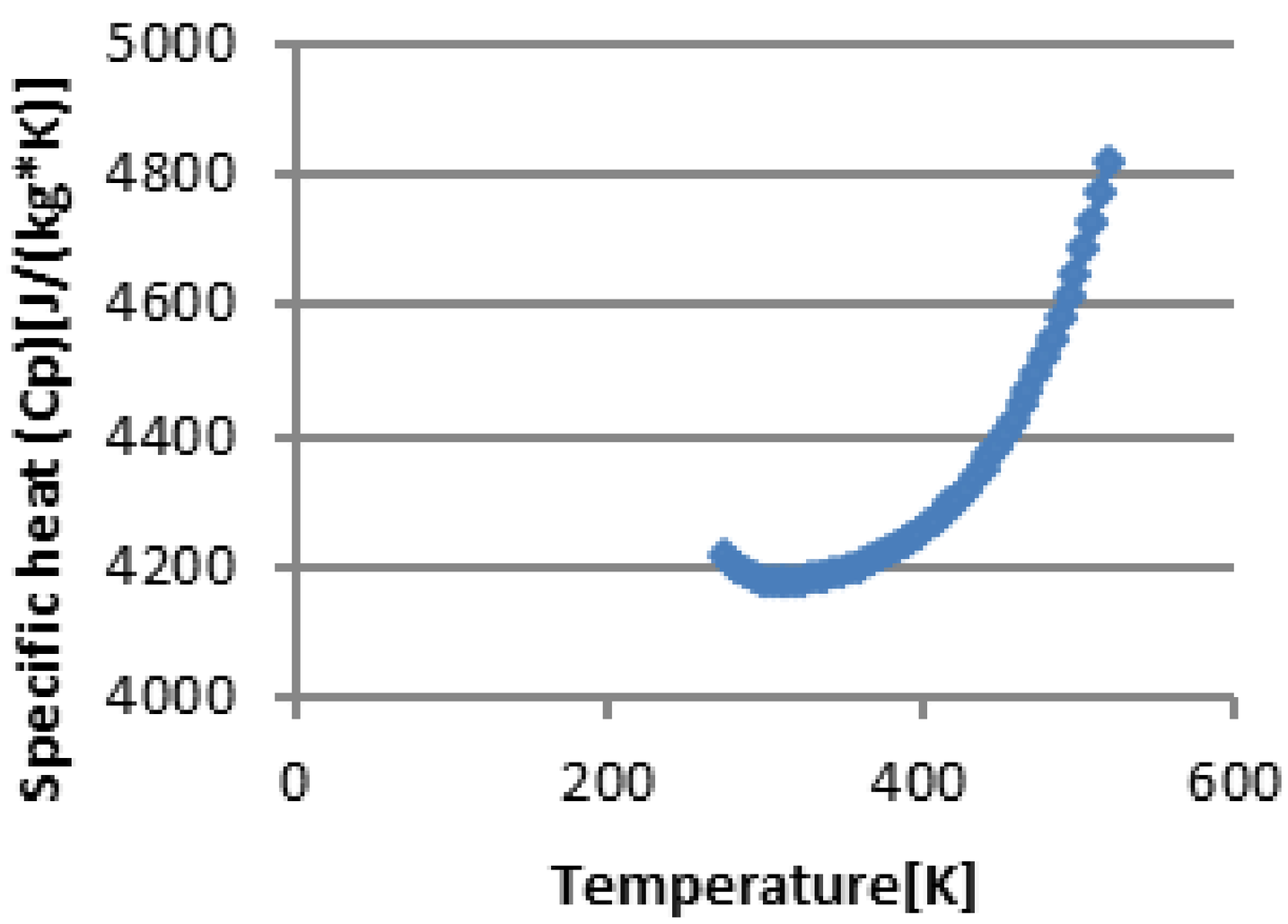
What does the Y-axis imply _____

Summarize what this graph represents or conveys

_____

https://www.researchgate.net/

Graph of Specific Heat Capacity Vs Temperature of Water



Show-Off Your Smarts!

Instructions

- Complete as an individual or small group.
- Discuss your ideas/answers/responses in a small group.
- Select one person to present your responses to the class.

Q1. How can this information be applied to a young-person's life?

Q2. How does this information apply to (or impact) communities?

Q3. When do scientists need to apply this information? How?

Q4. How would a person from 100 years ago view this information?

Q5. How does this topic connect to other science topics or math?

Write down at least three words introduced or covered by this topic.

1.
2.
3.
4.
5.
6.

Make a Poster

In the space provided here, create/draw a poster which conveys the concepts you have learned on this topic.