



Teacher(s): Roebuck and Lowden	Subject/Course: Principles of Science 2
Unit Number and Title: Unit 1: Heat	Estimated Dates and Length: Weeks 0-2; August 28-September 13
Essential Question: What is heat and how does it move? How are heat and phase related to the motion of particles?	Main Topic(s): Heat conductivity, heat transfer, effect of heat on particle motion and density

Standards (number and words) Bold power standards	Objectives (Bold those related to power standards and provide	Major and Minor Assessment(s)
PS14: Recognize that heat is a form of energy and that temperature change results from adding or taking away heat from a system. PS16: Give examples of how heat moves in predictable ways, moving from warmer objects to cooler ones until they reach equilibrium. PS15: Explain the effect of heat on particle motion through a description of what happens to particles during a change in phase. PS9: Recognize that a substance (element or compound) has a melting point and a boiling point, both of which are independent of the amount of the sample. HS Physics: 3.1: Explain how heat energy is transferred by convection, conduction, and radiation. ESS3: Differentiate among radiation, conduction, and convection, the three mechanisms by which heat is transferred through the earth's system.	Explain how heat moves from warmed objects to cooler ones until they reach thermal equilibrium. Identify and describe the phases of matter. Draw a diagram illustrating the density and motion of particles in each phase of matter. Define the following terms: melting, boiling, condensation, freezing Identify the melting and boiling points of water and explain that these remain the same regardless of the amount of water. Explain why food coloring spreads around faster in warm water than cold water. Explain why metal feels colder than felt, even though both are at room temperature. Explain why ice melts faster on metal than felt, even though both are at room temperature. Explain what heat conductivity means and give examples of things that have high and low heat conductivity. Define conduction, convection, and radiation.	HW, exit tickets, quizzes, heat conductivity lab, benchmark 1, heat mind map



RST.6-8.3. Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks.	Identify which type of heat transfer is occurring in different scenarios. Explain the difference between heat, heat conductivity, and temperature. Carefully follow the steps of a lab procedure. Write an if, then, because hypothesis that includes a scientific rationale. Draw a mind map that illustrates the relationships among various key terms.	
Vocabulary	Temperature, heat, heat conductivity, phase, density, solid, liquid, gas, plasma, melt, boil, condense, freeze, conduction, convection, radiation, thermal equilibrium	
Resources, including texts and other materials	Guides notes, leveled science texts, <i>Uncovering Student Ideas</i> probes	



		Block/lesson #1	Block/lesson #2	Block/lesson # 3	Block/lesson #4
Week 0:	Aug. 28-29			✓ SWBAT correctly follow the procedure for starting and ending class. ✓ SWBAT quickly get silent, receive instructions, and return to work with minimum time wasted. ✓ SWBAT write and evaluate hypotheses that are supported by a rationale.	✓ SWBAT explain why food coloring spreads around faster in warm water than cold water. ✓ SWBAT identify and describe the phases of matter. ✓ SWBAT draw a diagram illustrating the density and motion of particles in each phase of matter.
	ASMT			• HW: get course description signed + getting to know you questionnaire	• SWBAT 1 – exit ticket • SWBAT 2-3 - HW
Week 1: Sept. 3-6	AM	✓ Carefully follow the steps of a lab procedure. ✓ SWBAT write and evaluate hypotheses that are supported by a rationale.	✓ Explain why metal feels colder than felt, even though both are at room temperature. ✓ Explain why ice melts faster on metal than felt, even though both are at room temperature. ✓ Explain what heat conductivity means and give examples of things that have high and low heat conductivity.	✓ Define conduction, convection, and radiation. ✓ Identify which type of heat transfer is occurring in different scenarios. ✓ Demonstrate mastery of particle motion and heat conductivity concepts by taking a short quiz.	✓ E block only – brain games video? Extra practice with heat conductivity or transfer?
	ASMT	• HW – finish lab	• Exit ticket on why ice melted fastest on metal • HW – more heat conductivity practice/quiz SG	• Quiz 1 – particle motion and heat conductivity • Exit ticket identifying type of heat transfer • HW practicing with heat transfer	•
Week 2: Sept. 9-13	AIM	✓ Define the following terms: melting, boiling, condensation, freezing ✓ Identify the melting and boiling points of water and explain that these remain the same regardless of the amount of water.	✓ Reteach tbd ✓ Draw a mind map that illustrates the relationships among various key terms. ✓ Explain the difference between heat, heat conductivity, and temperature.	✓ Draw a mind map that illustrates the relationships among various key terms. ✓ Explain the difference between heat, heat conductivity, and temperature.	✓ Demonstrate mastery of heat concepts by taking a quiz. ✓ Draw a mind map that illustrates the relationships among various key terms. ✓ Explain the difference between heat, heat conductivity, and temperature.
	ASMT	• ET – phases of matter vocab? • HW – phase changes vocab, applying rule that boiling/melting points remain constant	• SWBAT 3 – individual check-ins during mind map work • HW – finish mind map planning	• HW – quiz SG	• Quiz 2 – all of heat, emphasizing transfer and phase changes • Finish mind map

Leave at least half to one full block open every two weeks for reteaching. In Objectives box, write “reteach tbd”