

Each of the seven stations (and one additional computer-based station) is designed to teach both a concept lesson from Joules and a technology lesson from the students. Students will be role-playing the part of journalists reporting on superhero Joules' latest adventure. As such, they will be keeping notes on all activities in their "Reporter's Journal." This will be the written work that can be assessed by the teacher at the end of the crate's stay.

Activity	Curriculum and Technological Targets
Temperature Tattles on Hurrying Heat	Curriculum Target: There is a distinct difference between heat and temperature, but these two terms are regularly misused. This activity is designed to clear up common misconceptions.
	Technology Target: Thermal imaging technology is used to keep track of heat-related enhanced oil recovery efforts (removing oil not recoverable by normal methods). These images use colour rather than numbers to record temperature.
Pushy Particles	Curriculum Target: The Particle Model of Matter is key to understanding the behaviour of matter exposed to heat.
	Technology Target: Bitumen (tar) can be turned into a number of useful petroleum products through the breakdown of particles by heat (distillation).
Heat Round Up	Curriculum Target: Fluids (liquids and gases) transfer heat through the process of convection.
	Technology Target: Convection, along with passive solar heating, can be used to make heating buildings more efficient, economical, and sustainable.
Through Thick and Thin	Curriculum Target: As heat is added to a solid, its particles move more quickly and spread out, enabling it to flow (become a fluid). The measure of a material's ability to flow is called viscosity.
	Technology Target: The hydrocarbon in oil sands reservoirs is bitumen which is very viscous (resists flow). Engineers must introduce heat into the reservoir to decrease the viscosity of the tar so that it can be pumped to the surface.
Bar Wars	Curriculum Target: Different metals have different thermal conductivities and expansion rates.
	Technology Target: Bimetallic strips are made of metals with different thermal expansion rates. They can be used as a switch for heat-related technologies.

Heat Ambush	Curriculum Target: There are three different types of heat transfer that must be considered – conduction, convection, and radiation. They may occur separately or all at the same time.
	Technology Target: A thermos is a device designed to prevent heat transfer through conduction, convection, and radiation.
Cool Trucks	Curriculum Target: Radiant heat transfer is very common and does not require any particles (matter).
	Technology Target: Radiant heat transfer can be controlled through surface modification, including colour and reflectivity. The temperatures of objects can be regulated in this way.
Thermometer Mittens (additional activity)	Curriculum Target: Insulators are materials that prevent heat transfer through conduction. They have low thermal conductivities.
	Technology Target: Insulating materials are used for devices that would be too hot to handle or that would be damaged without some sort of protection. This includes materials used in enhanced oil recovery operations in oil sands reservoirs.