

	The activity topics are as follows.
ACTIVITY	Topic
Activity 1 - Gears	Students experiment with individual gears and a model manual transmission to explore the use of gears in the heavy haulers in the oil sands. Students learn about speed ratios, changing the direction of forces, and driving and driven gears.
Activity 2 - Levers	Students examine the components of a Type 1 lever and gain an understanding of load and effort forces. A relationship between force and displacement is also addressed as students test the effect of different fulcrum positions.
Activity 3 - Pulleys	Students investigate the concept of Mechanical Advantage in relation to pulleys found on cable shovels in the oil sands. By experimenting with different combinations of pulleys, students calculate mechanical advantage and examine the benefits of each pulley arrangement.
Activity 4 - Pascal's Law	Students explore Pascal's Law with the use of several devices to determine that pressure acts equally in all directions in a closed system. Pascal's law is presented in the context of tire pressure on heavy haulers in the oil sands.
Activity 5 - Hydraulics	Students learn how hydraulic systems generate force through the use of fluids and pistons. Students are provided with industrial cylinders to first calculate and then test the relationship between pressure, force, and area.
Activity 6 - Inclined Planes	Students gain an understanding of work and how this concept relates to the use of Inclined Planes. They explore how the principles of inclined planes apply to roads in the oil sands, screws, and the transport of materials with an Archimedes Screw.
Activity 7 - TechnOILogy Timeline	Students play the TechnOILogy Game and learn about the development of oil sands machinery. Students also explore how the principles of simple machines are being applied in these mega machines.