Sarah Wolfman-Robichaud

Unit	Force and Machines – Lesson 8
Lesson Title	Simple Machines – categorize them!
Subject	Science
IRPs/PLOs	-Demonstrate mechanical advantage of simple machines. -Describe applications of simple and compound machines used in daily life in BC communities
SWBAT…	-Begin to recognize simple machines in daily life
Assessment	**Group mark for effort, ability to rationalize their choice, attitude (based on observations and worksheet that will be handed in)**
Materials	-Photocopy of pages from BC Science Probe 5: pp. 36-38. -6 large pieces of paper with simple machine name (cut/paste), image (copy/cut/paste), and definition -5 paper bags for each group's machines (see contents below) -Samples of each simple machine for 5 groups to identify (see bags below) actual machines are underlined, images will be made into cards – see last pages of lesson)
Bag 1	Hammer, snow shovel, seesaw, cork screw, water bottle lid, spiral staircase, ladder, escalator, dumptruck, scissors, axe, door wedge, old well, fan belt, Venetian blind, door knob, windmill, helicopter, 5 worksheets
Bag 2	Hammer, fork, seesaw, screw, water bottle lid, lightbulb, ladder, escalator, dumptruck, scissors, axe, door wedge, old well, fan belt, Venetian blind, door knob, windmill, helicopter, 5 worksheets
Bag 3	Flathead screwdriver, snow shovel, crowbar, screw, swivel chair, spiral staircase, ladder, escalator, wheelchair ramp, scissors, axe, door wedge, old well, fan belt, Venetian blind, door knob, windmill, helicopter, 5 worksheets
Bag 4	Flathead screwdriver, fork, seesaw, cork screw, screw, lightbulb, ladder, dumptruck, wheelchair ramp, scissors, axe, door wedge, old well, fan belt, Venetian blind, door knob, windmill, helicopter, 5 worksheets
Bag 5	Flathead screwdriver, fork, crowbar, screw, swivel chair, spiral staircase, escalator, dumptruck, wheelchair ramp, scissors, axe, door wedge, old well, fan belt, Venetian blind, door knob, windmill, helicopter, 5 worksheets

PROCEDURE

BC Science Probe 5/Simple machine definition review (~15 minutes)

-Review pages 36-38 with students
-Review names, pictures, and definitions of simple machines.
-Ask students to write simple machines on the sheet of paper

Sorting activity (~30 minutes)

-Based on the names, pictures, and definitions they have, the class will be broken up into 5 groups. They will receive a bag filled with simple machines – they must apply their knowledge and thinking caps to figure out which simple machine goes into while category.
-Not all bags are the same – some images/machines will match up with the other groups, but not all – so it's up to the team to figure out where they should go.
-The teacher may circle around and ask why certain machines have been categorized into specific places.
-On the sheet of paper – write the names of all the objects that they have categorized there.
-Choose 2 from each machine to explain/write, on the sheet of paper, WHY they think they are a specific type of simple machine.

Wrap up/clean up (~5 min.)

-Make sure students have written all of the objects that you placed in the categories on the actual sheet
-Put all objects back in bags and return to teacher
-Use the remaining time to complete the explanation of why the objects were placed in specific categories

Adaptation

Students who need extra help can work with a member of their team to answer questions, if need be.

Teacher info sheet

SIMPLE MACHINE DEFINITIONS

Inclined Plane (ramp) – A sloping surface. If you push an object up a ramp, you move it a longer distance than if you tried to lift it straight up, but less effort is needed to move it.

Wedge – A small tool that raises or splits apart an object.

Screw – An inclined plane that curves upward around a central shaft. A screw is used to apply a big force with very little effort.

Lever – A bar that rests on or turns around a support or fulcrum and lifts a weight with less effort.

Wheel and axle – A wheel and cylinder fastened together. They also turn together.

Pulley – A small wheel with a groove in the rim in which a rope or belt moves. Used to lift heavy loads (because pulling the rope down that is attached to the object may be easier than lifting the object up).

Bag contents:

Lever	**Screw**	**Inclined plane**
hammer	corkscrew	ladder
flathead screwdrivers	screw	escalator
snow shovel	water bottle lid	dumptruck
fork	swivel chair	wheelchair ramp
crowbar	spiral staircase	
seesaw	lightbulb	

Wedge	**Pulley**	**Wheel and axle**
scissors	old well	door knob
axe	fan belt	windmill
door wedge	Venetian blind	helicopter

To collect from home:

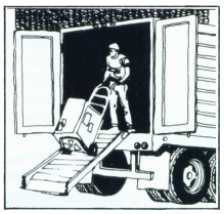
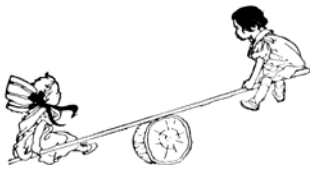
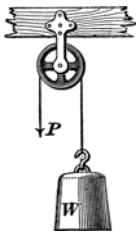
2 hammers 3 flatheads 3 forks 2 cork screws 2 water bottle lids
2 lightbulbs 4 screws

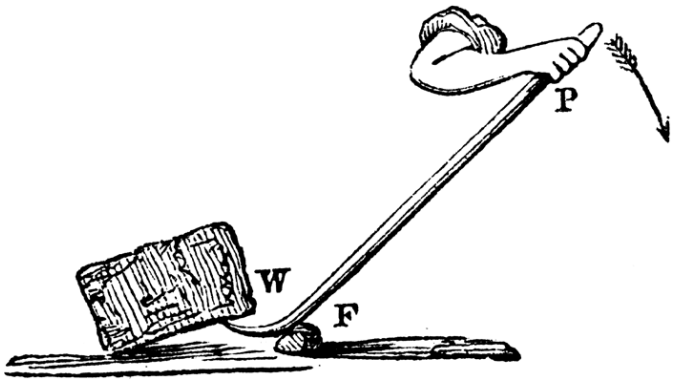
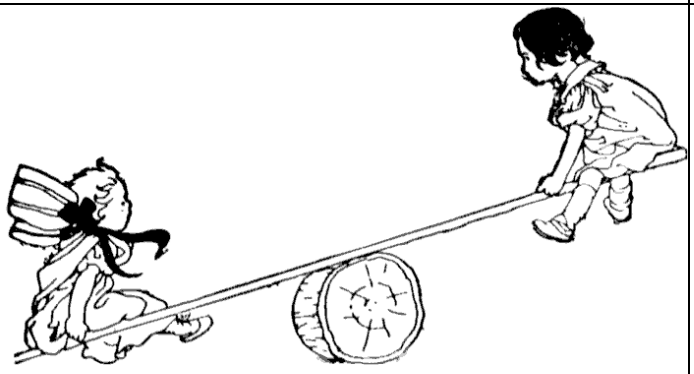
To collect from Walter Lee:

5 pairs of scissors

Name: _____

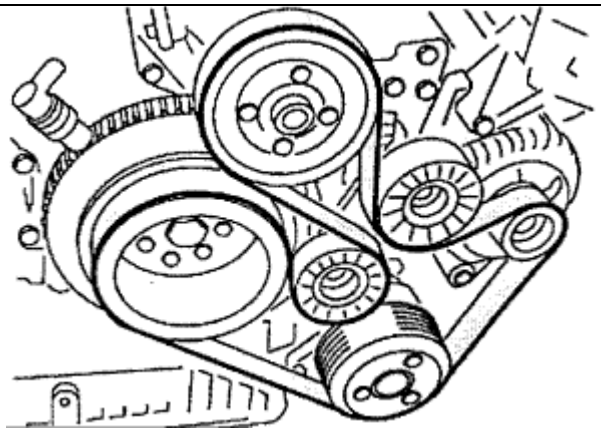
Simple Machines

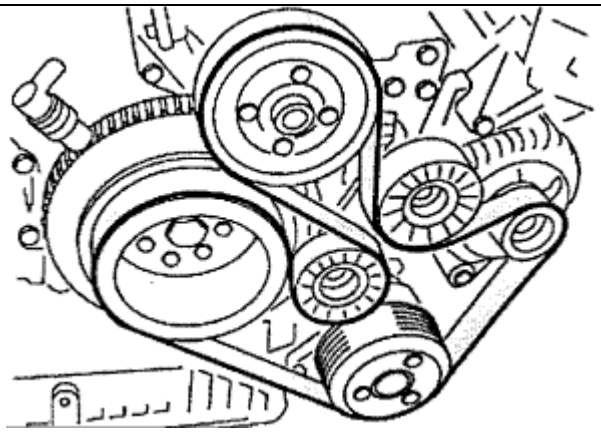
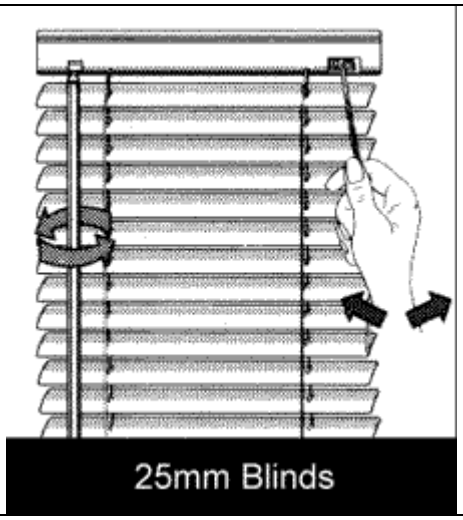
MACHINE	DEFINITION	PICTURE
Inclined Plane (Ramp)	A sloping surface. If you push an object up a ramp, you move it a longer distance than if you tried to lift it straight up, but less effort is needed to move it.	
Wedge	A small tool that raises or splits apart an object.	
Screw	An inclined plane that curves upward around a central shaft. A screw is used to apply a big force with very little effort.	
Lever	A bar that rests on or turns around a support or fulcrum and lifts a weight with less effort.	
Wheel and Axle	A wheel and cylinder fastened together. They also turn together.	
Pulley	A small wheel with a groove in the rim in which a rope or belt moves. Used to lift heavy loads (because pulling the rope down that is attached to the object is easier than lifting the object up).	

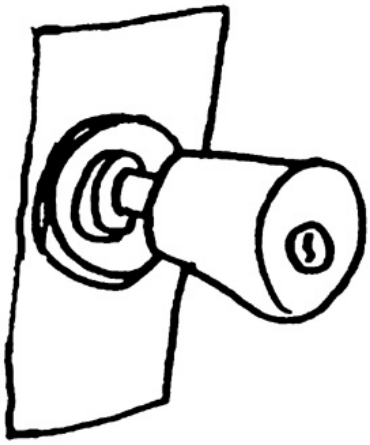
	
SNOW SHOVEL	**CROWBAR**
	
SEESAW	**SPIRAL STAIRCASE**

	
LADDER	**DUMP TRUCK**

	
ESCALATOR	DOOR WEDGE

	
WHEELCHAIR RAMP	**AXE**
	
CARS FAN BELT	**OLD WATER WELL**

	
CAR'S FAN BELT	**VENETIAN BLIND (CURTAIN) OPENER**

	
DOOR KNOB	**WINDMILL**
	
HELICOPTER	

Inclined Plane (Ramp)

Names: _____, _____, _____

_____, _____, _____

List the objects that you placed in the <u>Inclined Plane (ramp)</u> category:

Choose 2 objects that you've placed in this category and explain <u>WHY</u> you think it is an <u>inclined plane (ramp)</u>:

Object #1: _____

Why do you think it is an <u>inclined plane</u>? _____

_____

_____

_____

Object #2: _____

Why do you think it is an <u>inclined plane</u>? _____

_____

_____

_____

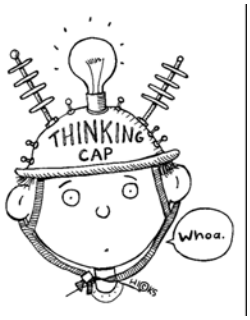
Please put all of the objects back in the bag and return it to the teacher!

Wedge

Names: _____, _____, _____

_____, _____, _____

List the objects that you placed in the <u>Wedge</u> category:



Choose 2 objects that you've placed in this category and explain <u>WHY</u> you think it is a <u>Wedge</u>:

Object #1: _____

Why do you think it is a <u>Wedge</u>? _____

_____

_____

_____

Object #2: _____

Why do you think it is a <u>Wedge</u>? _____

_____

_____

_____

Please put all of the objects back in the bag and return it to the teacher!

Screw

Names: _____, _____, _____

_____, _____, _____

List the objects that you placed in the <u>Screw</u> category:

Choose 2 objects that you've placed in this category and explain <u>WHY</u> you think it is a <u>Screw</u>:

Object #1: _____

Why do you think it is a <u>Screw</u>? _____

_____

_____

_____

Object #2: _____

Why do you think it is a <u>Screw</u>? _____

_____

_____

_____

Please put all of the objects back in the bag and return it to the teacher!

Lever

Names: _____, _____, _____

_____, _____, _____

List the objects that you placed in the <u>Lever</u> category:

Choose 2 objects that you've placed in this category and explain <u>WHY</u> you think it is a <u>Lever</u>:

Object #1: _____

Why do you think it is a <u>Lever</u>? _____

_____

_____

_____

Object #2: _____

Why do you think it is a <u>Lever</u>? _____

_____

_____

_____

Please put all of the objects back in the bag and return it to the teacher!

Wheel and Axle

Names: _____, _____, _____

_____, _____, _____

List the objects that you placed in the <u>Wheel and Axle</u> category:

Choose 2 objects that you've placed in this category and explain <u>WHY</u> you think it is a <u>Wheel and Axle</u>:

Object #1: _____

Why do you think it is a <u>Wheel and Axle</u>? _____

_____

_____

_____

Object #2: _____

Why do you think it is a <u>Wheel and Axle</u>? _____

_____

_____

_____

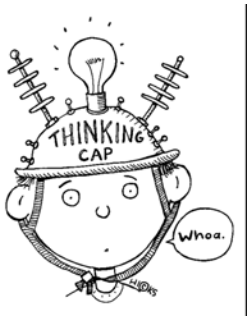
Please put all of the objects back in the bag and return it to the teacher!

Pulley

Names: _____, _____, _____

_____, _____, _____

List the objects that you placed in the <u>Pulley</u> category:



Choose 2 objects that you've placed in this category and explain <u>WHY</u> you think it is a <u>Pulley</u>:

Object #1: _____

Why do you think it is a <u>Pulley</u>? _____

_____

_____

_____

Object #2: _____

Why do you think it is a <u>Pulley</u>? _____

_____

_____

_____

Please put all of the objects back in the bag and return it to the teacher!