

Push and Pull - Simple Machines

- 1** Locomotives push and pull many different types of things.
Explore the Fitch Pavilion
Draw a line to match the name of the wagon to the photo

Answers

SAR Carriage 3
Row 5

Provision Van
Row 6

Caboose No 4367
Row 1

Wooden Tool and Goods
Van No 251
Row 1





Find the Glenelg Line Signal, located near Track 3.
Find a lever, wheel and pulley. You can operate this interactive exhibit.

**Pull the lever to move the signal. If the arm is pointing straight out should the train stop or go?
(Clue: read the instructions)**

STOP

The lever, the wheel and axle, and the pulley are three simple machines that have something in common. It's easy to see how the wheel and axle and the pulley are related; a pulley looks a lot like a wheel and axle with a rope over it.

The lever is the basic simple machine that the other two are based on.



Go to the large platform - Break of Gauge Platform in the Fitch Pavilion

What simple machines can you find on the platform?
trolleys

Is the machine an example of a lever or a pulley?
lever

Do you push or pull the machine?
push



also discuss

- ramps/platforms versus stairs
- wheels, levers and axles
- height of ramps
- energy and force to move objects
- do you need less energy and force to move objects on a ramp/platform

A **lever** is a bar or board that rests on a support called a fulcrum. A downward force exerted on one end of the lever can be transferred and increased in an upward direction at the other end, allowing a small force to lift a heavy weight.

A **wheel and axle** is made up of a circular frame (the wheel) that revolves on a shaft or rod (the axle). In its earliest form it was probably used for raising weights or water buckets from wells.

Inclined planes are commonly used as **ramps**. A ramp is a simple machine; specifically, it is a type of inclined plane that makes work easier by reducing the amount of force needed to move an object over a greater distance. The longer and gentler the slope of the ramp, the less force is required, though the object will travel a longer path.

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Power/energy

Introduction

Types of power/energy have been used over time to help move wagons, vans, carriages etc



Find the MIC 4 (refer to your map and photo)

Complete the sentence, by underlining the correct answer.

**The car was operated by
steam/motor/hand?**

motor



Find the locomotive - Rx93 It is in the Fitch Pavilion Track 3

Underline the type of power that moves this locomotive
steam



Find the fire truck in the photo. It is near the entrance of the Fitch Pavilion. Sorry you cannot move this exhibit.

Can you find a lever, axle or wheels? How is the truck moved?

hand



Look at the display in The Long Journey - Women In Railways.

Find the red Hard Yakka 3 wheel Pump Trike

Complete the sentence, by underlining the correct answer.

**The trike was operated by
motor/steam/hand?**

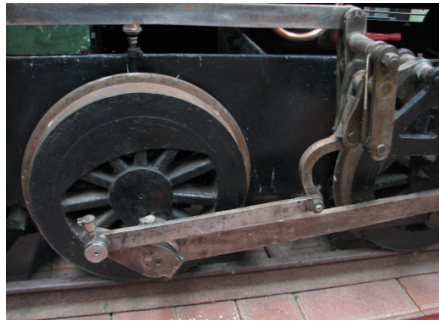
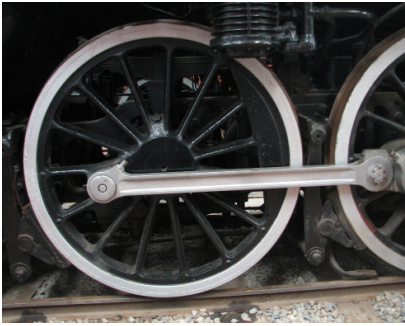
hand

Is the trike moved by pushing or pulling?

pushing and pulling

● **Can you find a lever?**

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Wheel and Axle Introduction

- *the axle is a rod that goes through the wheel and lets the wheel turn*

Explore the museum. Discuss the size of locomotive wheels. Look for the axle.

How was the Explosives Van moved? horses

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Go to the Model Railway and the Display Cases see Track 4
List the toys and models that can be pushed and pulled.
Discuss the objects in the Model Railway. How are they moved/ powered in real life.

Display cases -
 old tin toy pushed by hand
 modern model trains powered by electricity

Model Railway -
 boats, cars, tractors, buses are powered by motors
 cranes lifts cars, locomotives and goods
 earth mover lifts soil and rocks
 windmill blades and balloons are pushed by the wind
 airship is pushed by the wind
 locomotives (at the front of the train) pull carriages and freight
 tug pulls ships and boats