

EPPro8 Challenge

Engineer Problem Solve Innovate

Caveman Car

The latest craze in your pre-historic town is a round thing called a wheel. It is turning up everywhere. There is even a new invention called a car.

Caveman cars need you to kick the ground to make them go – and you don't like getting your feet dirty.

What if you could build a rubber band powered car that could store energy and drive without you needing to kick?



This challenge contains optional elements using the EPro8 Electronics Starter Kit.

Construction

Criteria	Construct a vehicle that can be pushed along the ground. It must have somewhere for the cavemen to sit and a shelter to protect them from the rain.
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Dry Feet

Criteria	The reel is attached to a wheel. Rope is wound around the reel. When the rope is pulled the wheel rotates and the vehicle moves.
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Rubber Band Powered

Criteria A long string of rubber bands is attached to the reel.
Winding up the reel stretches the rubber bands.
When the vehicle is released the rubber bands pull on the reel which powers the wheels.

Hint You will need to attach the other end of the rubber band to another part of the vehicle.
The further away that you connect it the longer the string of rubber bands you can make and the longer the rubber band can be wound up.
You could attach a tall vertical pole to your vehicle and attach the rubber band to that.

Speed

Criteria Measure how far your vehicle travels in 5 seconds.

Calculate how far your vehicle travels in 1 second.
Calculate how far your vehicle travels in 1 minute.
Calculate how far your vehicle travels in 1 hour.

What is your vehicles speed in km/hr?

Fast

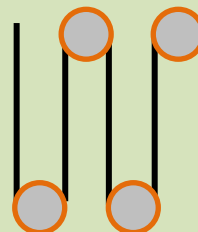
Criteria Make the string of rubber bands three times as thick.
How long does it take to travel the same distance as the previous step?

Long Distance

Criteria When released the rubber band powered car can travel the entire length of your classroom without stopping.

Hint You will need an extra, extra long string of rubber bands.
But now you would need an extra, long pole.
But this will hit the roof of your classroom.

Build a frame with pulleys on the top and the bottom.
Feeding the rubber bands through these allows for an extra long string of rubber bands in a relatively small area.





Motorised Car

Criteria

Your cavemen are clever, and they have discovered electricity.
The car has two push buttons.
Pushing one button drives the car forward.
Pushing the other button drives the car in reverse.



Speed of Motorised Car

Criteria

Hold your finger on the forward button.
Measure how far your vehicle travels in 5 seconds.

Calculate how far your vehicle travels in 1 second.
Calculate how far your vehicle travels in 1 minute.
Calculate how far your vehicle travels in 1 hour.

What is your vehicles speed in km/hr?

After you have attempted this challenge watch the tutorial to see our solution at www.EPro8Challenge.co.nz/Tutorial and enter the Challenge Code **CMCR**.