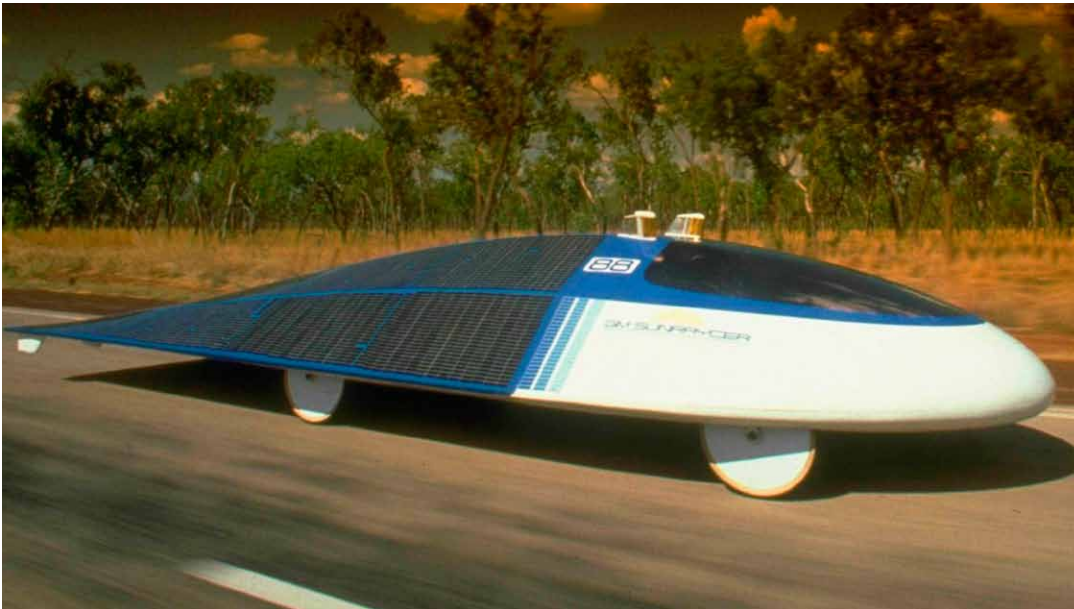


## Connect



Solar vehicles use the ability of solar panels to convert solar energy into electrical energy. The motor has the ability to convert electrical energy into mechanical energy and move the vehicle.

**Now build the Solar Vehicle and investigate its speed with different gear ratios and wheel size.**

# Solar Vehicle

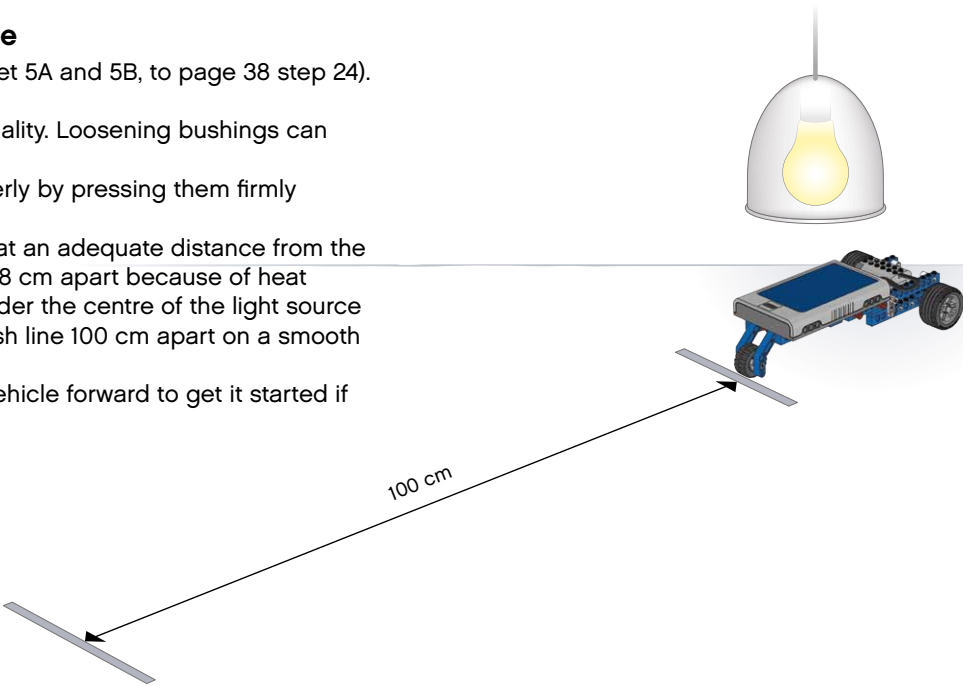
Name(s): \_\_\_\_\_

Date and subject: \_\_\_\_\_

## Build the Solar Vehicle

(Building Instruction booklet 5A and 5B, to page 38 step 24).

- Test the model's functionality. Loosening bushings can reduce friction
- Connect the plugs properly by pressing them firmly together
- Position the Solar Panel at an adequate distance from the light source, but at least 8 cm apart because of heat
- Place the Solar Panel under the centre of the light source
- Mark a start line and finish line 100 cm apart on a smooth flat surface
- Gently 'push' the Solar Vehicle forward to get it started if needed



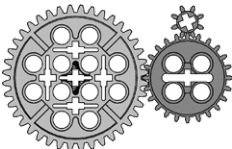
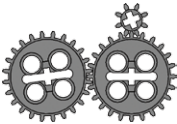
## Travelling with different gear ratios

First, predict with which speed the Solar Vehicle will travel the track with a gearing of 5:1.

Then, investigate with which speed the Solar Vehicle will travel the track with the gearing of 5:1, where speed is measured in meters per second (m/s), by using this formula:

Speed =  $\frac{\text{Distance travelled}}{\text{Time taken}}$

Next, rebuild the Solar Vehicle and follow the same procedure for the new Solar Vehicle with a gearing of 3:1. (Building Instruction booklet 5A and 5B, to page 42 step 4).

		
My prediction	sec.	sec.
My findings	sec.	sec.
My calculations	(m/s)	(m/s)

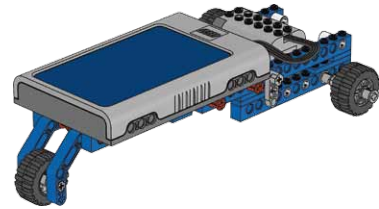
### Travelling with smaller wheels



(Building Instruction booklet 5A and 5B, to page 44 step 6).

First, predict with which speed the Solar Vehicle will travel the track with a gearing of 3:1 and three identical small wheels.

Then, investigate and calculate the speed of the rebuilt Solar Vehicle.

Next, compare how the rebuilt Solar Vehicles findings compare to the prior test findings, where the Solar Vehicle had a 3:1 gearing and two larger rear wheels. Collect your findings below.



		
My prediction	sec.	sec.
My findings	sec.	sec.
My calculations	(m/s)	(m/s)

Look carefully and analyze your findings. Draw a conclusion and write it down.

---



---



---



---



---

### Identifying variables

Identify and write down at least three variables, explaining clearly how these affect the efficiency of the Solar Vehicle.

---



---



---



---



---