

Gear Racer

Name(s): _____

Date and Subject: _____

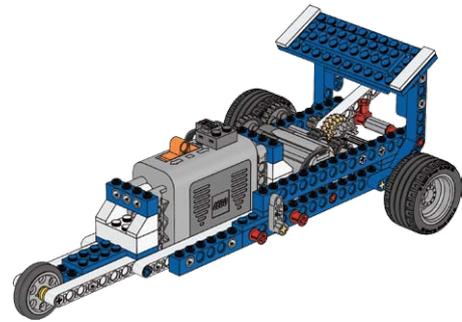
Build the Gear Racer

(Building Instruction 18A and 18B to page 17, step 20)

- Keep the power lead clear of all moving parts
- Try the two gear position and make sure the gears mesh

Mark a test track

- Mark a start line and finish line 2 m (≈ 2 yd) apart



Why does a Gear Racer use a gear box?

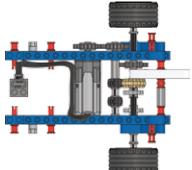
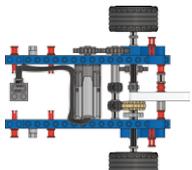
Due to the gears in a Gear Racer it can deliver the best in both power and speed transmission. Calculate the average speed of the Gear Racer by using this formula:

$$\text{Average speed} = \frac{\text{Distance}}{\text{Time}}$$

First, calculate the gear ratio of the Gear Racer with the gear set in position A and predict how much time the Gear Racer will need to do the 2 m (≈ 2 yd) stretch.

Then test your prediction and calculate the average speed.

Next, follow the same procedure for the Gear Racer with the gear set in position B.

Gear Racer Gear box setting	Gear ratio	Predicted time	Actual time	Percentage of accuracy	Average speed
<p>A</p>  <p>(page 17, step 20)</p>					
<p>B</p>  <p>(page 18, step 21)</p>					

Redesign needed?

Race cars come in many different types to fit the race type and race track.

Now redesign the Gear Racer to make it best in its class. We have highlighted some questions you could explore. Choose one area that you would like to investigate.

Then design a test that will help you explore how it functions and possible additional improvements you could make to your new Gear Racer. Remember to record all your test results.

