



## physics guidebook

Are you curious about mechanical things, force, and motion? Then come along! Let's do the experiments in this kit together to learn all about them!

In this guidebook, you will see a lot of things that you already recognize. But there is so much left to discover about them! The pictures will guide us in doing our experiments and projects. And whenever you see a Try It box, you will see more ideas for other exciting experiments.

And now, let's begin!

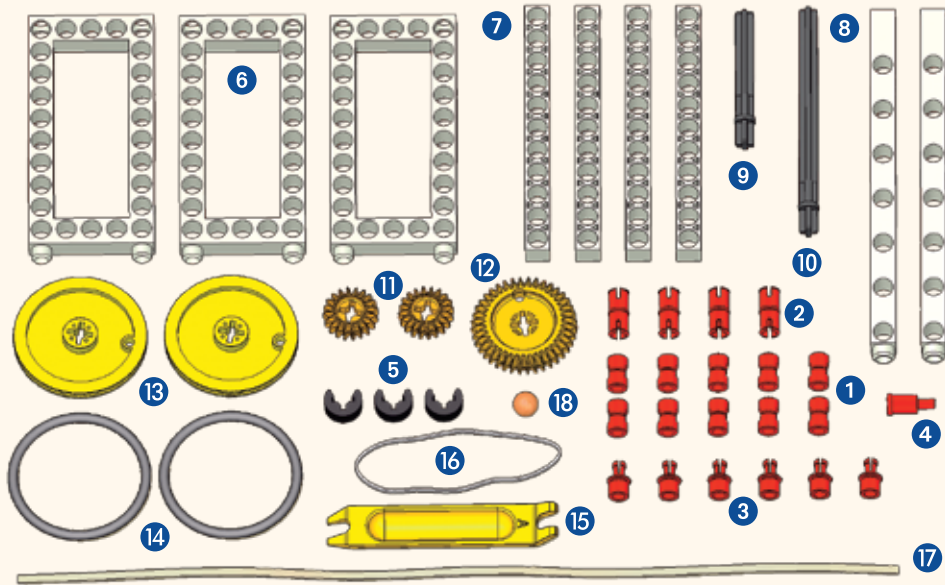


little  
labs™



## Getting Started: What comes in your kit?

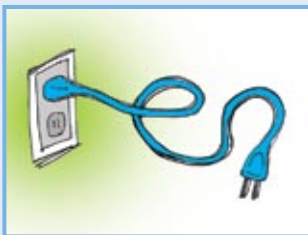
### Kit contents:



- |               |                          |
|---------------|--------------------------|
| 1 Anchor pin  | 10 Long axle             |
| 2 Joint pin   | 11 Small gear wheel      |
| 3 Shaft plug  | 12 Medium gear wheel     |
| 4 Shaft pin   | 13 Large pulley wheel    |
| 5 Axle lock   | 14 Tire for large pulley |
| 6 Short frame | 15 Part separator tool   |
| 7 Short rod   | 16 Rubber band           |
| 8 Long rod    | 17 Long rubber band      |
| 9 Short axle  | 18 Wooden ball           |

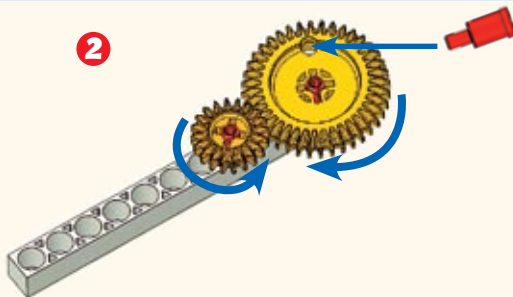
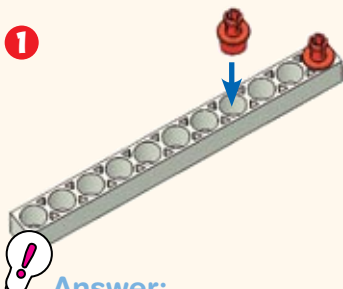
The designations “short frame” and “medium gear wheel” come from previously issued kits and make identification of these parts easier.

## Experiment 5: How can you transmit power from one place to another?



Or do you have other ideas?

Figure it out like this:



**Answer:**

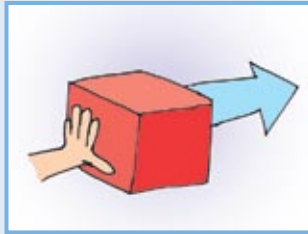
Build a power transmission! This transmission uses gears. With this, you can transmit a force from one gear to the other and either make it larger or smaller. The small gear has 20 teeth, whereas the larger has 40 teeth, which is twice as many. When you turn the large wheel once with the help of the peg (like a crank), the small wheel turns twice. The score is 2:1 for the small wheel.

This is called the transmission ratio. Turn the small wheel several times and count the revolutions of the larger gear wheel!

Other possible ways of transmitting power are: with chains (like on a bicycle), and with a belt or rubber band like in the rubber motor that you can build later.



# Experiment 6: How does force relate to motion?



Or do you have other ideas?

Figure it out like this:

