

## Experiment 7 Rolling friction

### Topics covered in the experiment

- When two surfaces rub against each other, there is a force that tends to oppose their relative movement.
- This frictional force can be reduced significantly through rolling.

### Parts required:

#### From the Student Kit – Mechanics (U60020)

- 1 dynamometer
- 1 friction block
- 1 trolley
- 1 Aluminum weight

#### From the Student Kit – Basic Set (U60010)

- 1 Base plate

### Procedure

- 1) Hold the dynamometer horizontally and adjust the pointer to zero.

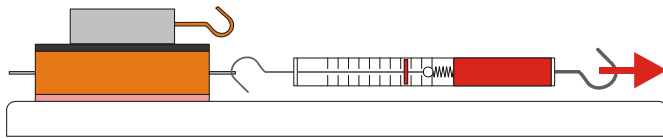


Figure 1

- 2) Place the friction block with its rough surface in contact with the base plate and place the weight on the friction block (see Figure 1).
- 3) Hook the dynamometer to the friction block.
- 4) Pull on the dynamometer and determine the tensile force that is needed to keep the friction block moving slowly and uniformly on the base plate.
- 5) Note down the measured value in the measurement table.

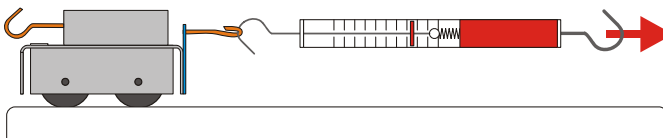


Figure 2

- 6) Replace the friction block to the trolley, place the weight on the trolley and hook the dynamometer to it (see Figure 2).
- 7) Pull the dynamometer and determine the tensile force required to keep the trolley moving slowly and uniformly over the surface of the table, and note down the values in the measurement table.
- 8) Observe the movement of the trolley when you are no longer pulling on the dynamometer.

**Measurement table:**

	Friction block with weight	Trolley with wheels and weight
Tensile force in N		

**Analyze and explain the observations**

- Compare the tensile forces that need to be applied to the friction block and to the trolley before they just begin to move.
- What is meant by the force of rolling friction?
- What happens if the tensile force that is applied to the rolling trolley is withdrawn?