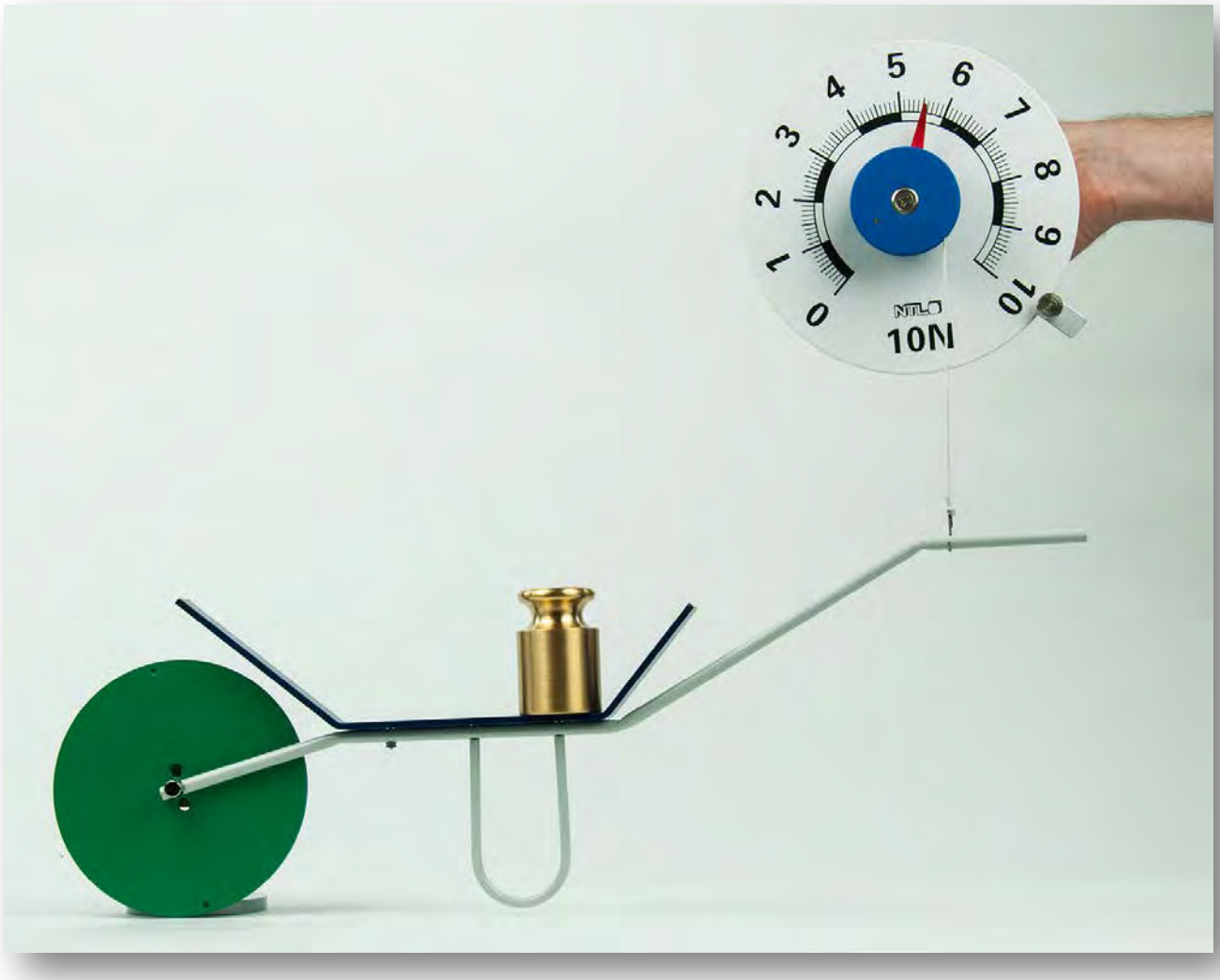
WHEEL BARROW
(ONE-SIDED LEVER)

MED 03.09b



Material:

Item-no.	Qty.	Description
DS085-1R	1	Round base with stand tube, uni
DS201-10	1	Support rod, round, L=100 mm, D=10 mm
DS400-3K	2	Bosshead cross-pattern, Demo, green
DS204-2L	1	Bearing pin with clamp insert
DM223-1S	1	Wheelbarrow - model
DM210-15	1	Belt pulley D=150 mm, green
DM120-1E1	1	Weight 1000 g
DM132-1F	1	Torsion dynamometer 10 N

WHEEL BARROW (ONE-SIDED LEVER)

MED 03.09b

Purpose
To demonstrate one of many practical applications of a one-sided lever.

Preparation

- Insert the 100 mm support rod into the round base.
- Fix the bosshead to the top end of the support rod.
- Insert the bearing pin with clamp insert into the bosshead.
- Put the bearing pin through the front whole of the hole of the carriage frame (the fork of the wheel barrow) and through the pulley 150 mm.
- Fix the complete unit to the bosshead.

- Mount the second bosshead on the axis of the Torsion dynamometer.
- Prepare the 1000 g weight.

WHEEL BARROW (ONE-SIDED LEVER)

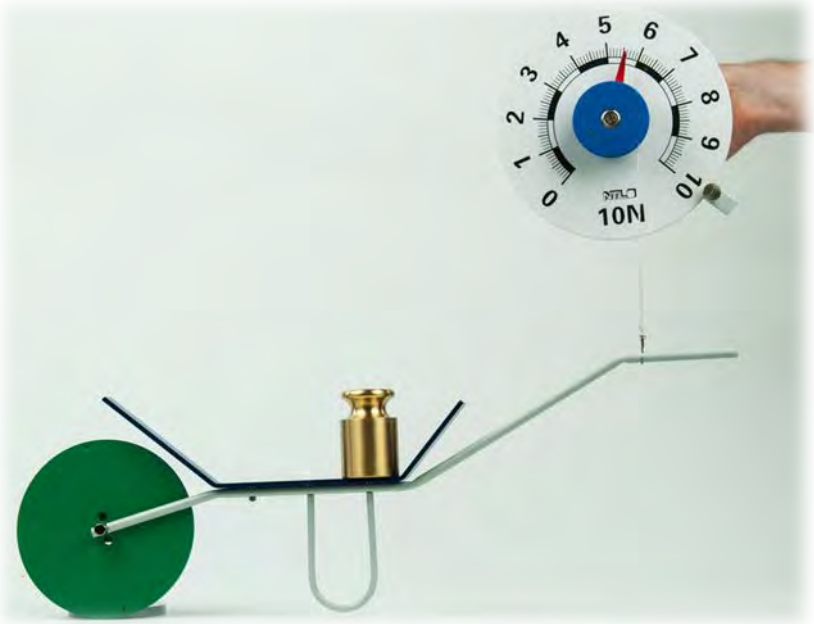
MED 03.09b

Experiment 1 - A

The weight is placed in the “tub" of the wheel barrow. It should be positioned as far away from the wheel as possible.

Hang the hook of the Torsion dynamometer to the wheel barrow as shown on the image to the right.

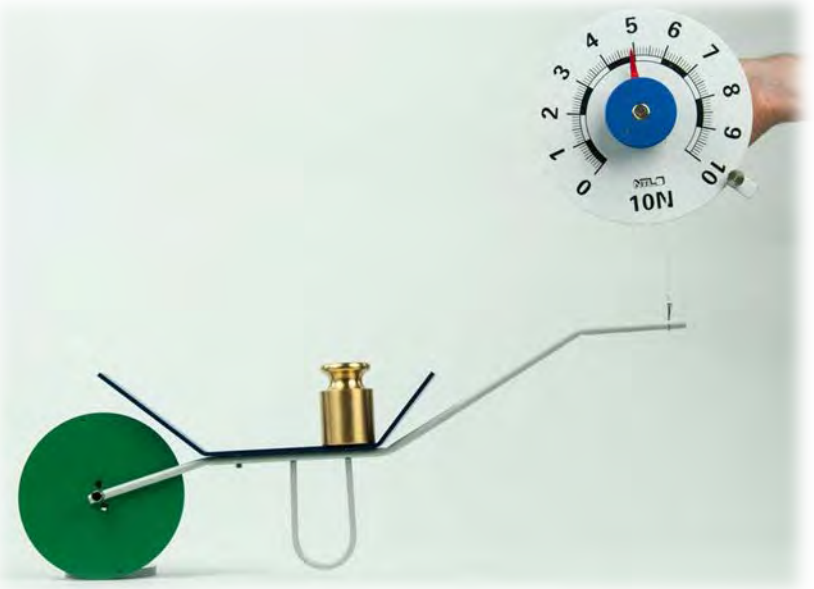
Lift the wheel barrow and read off the required force.



Experiment 1 - B

Now hang the hook of the Torsion dynamometer a bit further to the back as shown on the image to the right.

Lift the wheel barrow again and read off the required force.



WHEEL BARROW (ONE-SIDED LEVER)

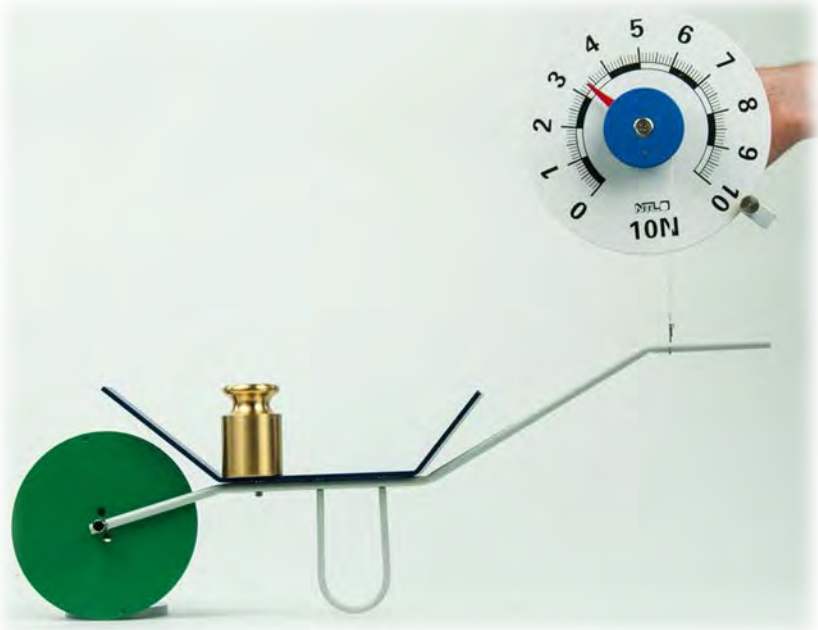
MED 03.09b

Experiment 2 - A

Move the weight as close as possible to the wheel.

Hang the hook of the Torsion dynamometer to the wheel barrow as shown on the image to the right.

Lift the wheel barrow and read off the required force.



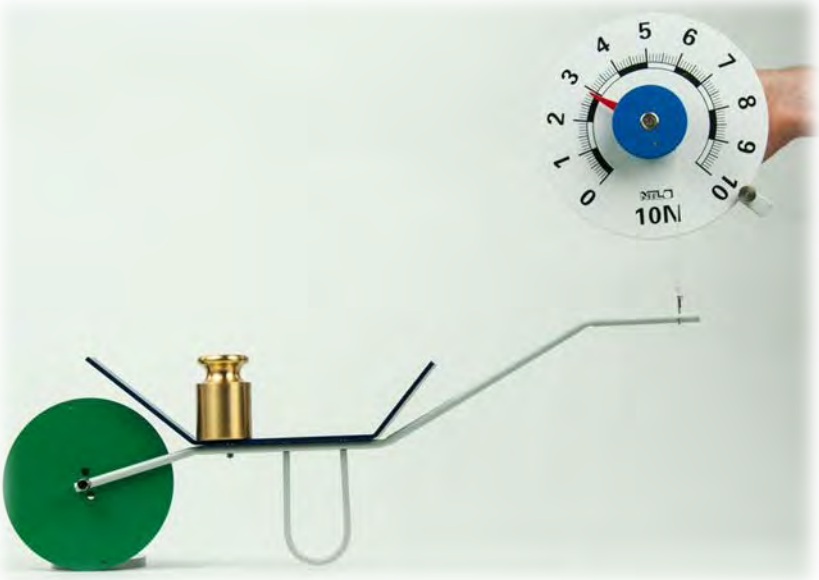
Experiment 2 - B

Now hang the hook of the Torsion dynamometer a bit further to the back as shown on the image to the right.

Lift the wheel barrow again and read off the required force.

Compare the required force of the four experiments and analyse.

In which case is the required force the lowest?



Result
The required force to lift the wheel barrow is lower if the weight is as close as possible to the wheel axis and the point of attack is in the back of the handle.