

Practical 4

Forces in Equilibrium

Setting up the force sensor with SPARKvue app



choose a path

Manual Entry



Manually enter your data into a table and see it in a graph.

Sensor Data



Connect your sensors, choose measurements and displays.

Remote Logging



Configure your wireless sensor for remote data logging, or download your logged data.

Open PASCO Experiment

Build New Experiment

Open Saved Experiment

Build New Experiment

Experiments...

Open...

Manage Files...

Preferences...

Shared Session...

Choose Language...

Help...

About SPARKvue...



choose a path

Sensor Data



see

Connect your sensors, choose measurements and displays.

Remote Logging



Configure your wireless sensor for remote data logging, or download your logged data.

nt

Build New Experiment

Open Saved Experiment



← 3: Untitled



Select a layout →

Cancel

Layouts

Periodic: 10 Hz

Start 00:00:00.0





5: Untitled



A floating widget menu with a close button (X) in the top right corner. The menu contains the following icons in a 3x3 grid:

- Line graph icon
- Value: 1.23 (circled in red with an arrow pointing to it)
- Table icon
- Gauge icon
- Bar chart icon
- Location pin icon
- Video camera icon
- Image icon
- Text 'T' icon
- Checklist icon
- Two bar chart icon

Periodic: 10 Hz



Start

00:00:00.0



1.23



5: Untitled



Select Measurement

0.00

1.23 ▶



Periodic: 10 Hz



Start

00:00:00.0



1.23 ▼

5: Untitled



1.23 ▶

Periodic: 10 Hz

Start 00:00:00

Configure sensors and measurements

- Force Sensor
- Force, Push Positive
- Force, Pull Positive
- Force
- On-board Acceleration Sensor
- On-board Microphone

Hardware Setup

Data Properties:



Measurement:

Force, Pull Positive



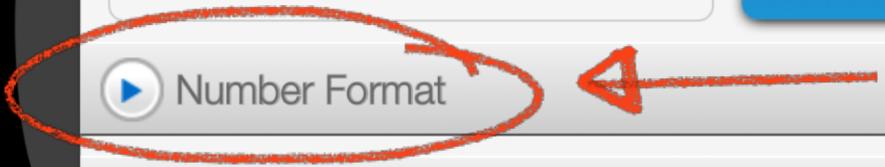
Units:

N



Units:

Set As Default



▶ Number Format

▶ Default Display Properties

▶ User-Entered Data Configuration

▶ Measurement Color Configuration

Cancel

OK



← 5: Untitled

Configure sensors and measurements

- Force Sensor
- Force, Push Positive
- Force, Pull Positive

1.23 ▶

Periodic: 10 Hz

Data Properties:



Number Format

Number Style:

Fixed Precision

Digits: (d.p)

2

Scientific Notation Transition:

- 0
- 1
- 2
- 3

Small Exponent Threshold:

Large Exponent Threshold:

Default Display Properties

Cancel

OK



5: Untitled

Configure sensors and measurements

- Force Sensor
- Force, Push Positive
- Force, Pull Positive

1.23 ▶

Periodic: 10 Hz

Data Properties:



Number Format

Number Style:

Fixed Precision

Digits:

2

Scientific Notation Transition:

On

Off

Small Exponent Threshold:

-4

Large Exponent Threshold:

7

Default Display Properties



Cancel

OK



5: Untitled

Configure sensors and measurements

- Force Sensor
- Force, Push Positive
- Force, Pull Positive

1.23 ▶

Periodic: 10 Hz



5: Untitled



Select Measurement

0.00

1.23 ▶

to start recording!

Periodic: 10 Hz



Start

00:00:00.0



1.23 ▼



5: Untitled



Force, Pull Positive

2.01N

1.23 ▶

Run 8 ◀

to stop recording

Periodic: 10 Hz



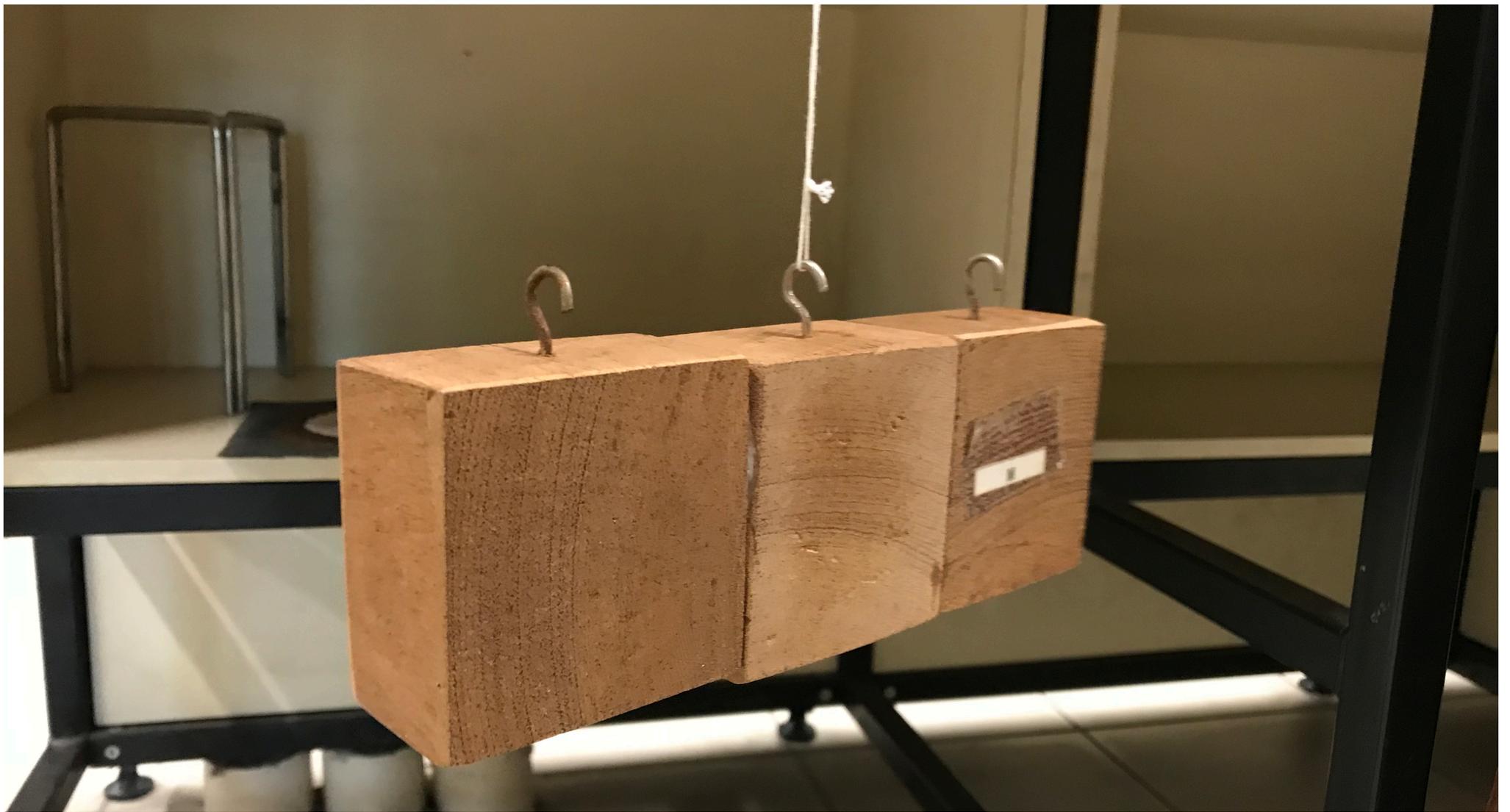
Stop

00:00:27.4



1.23 ▼

Setting up the experiment



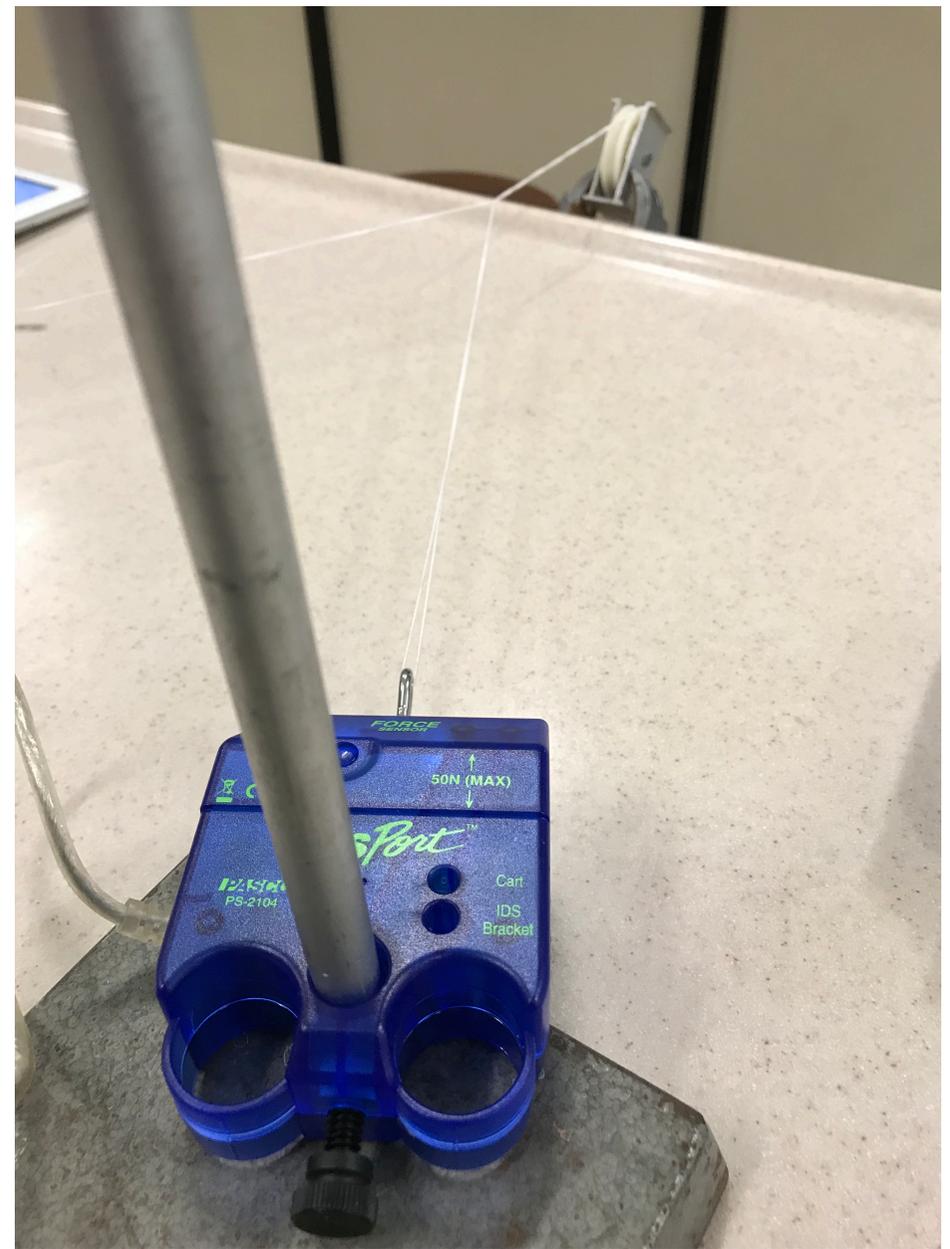
Hang the mass from the centre hook like this. The blocks should not be touching the bench or stools.



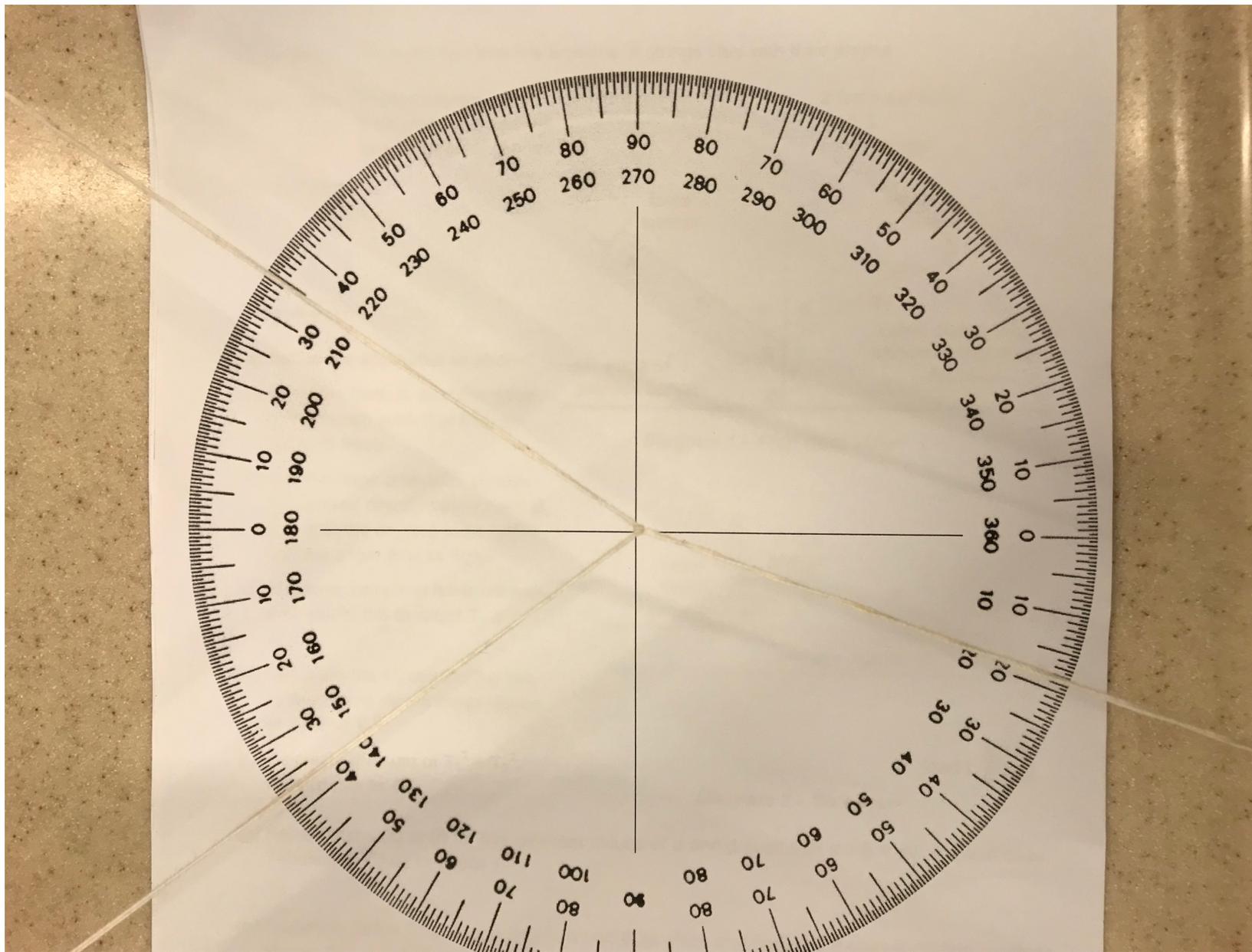
Clamp the pulley wheel as in the diagram.



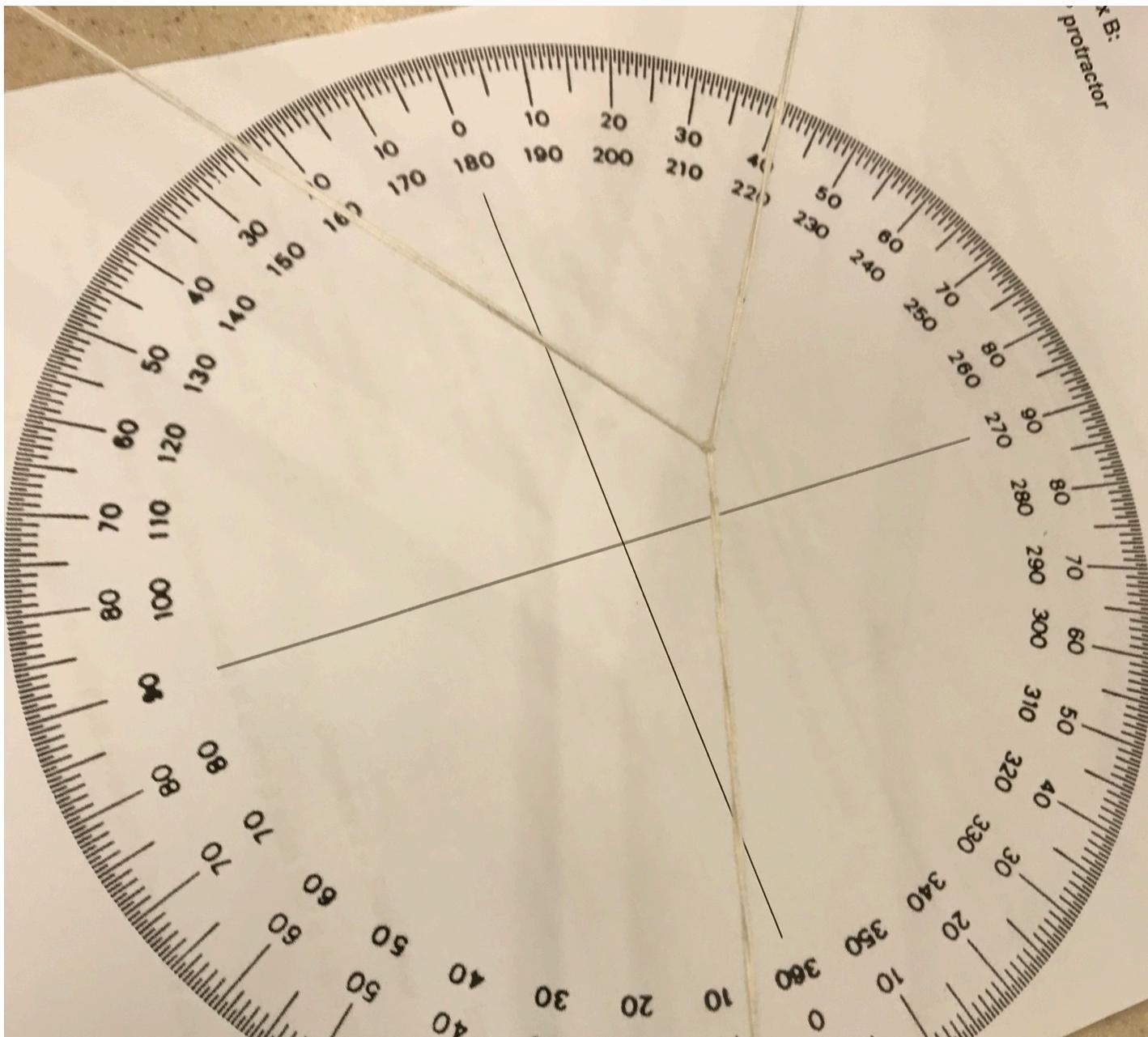
Trap the pulley in the draw **like this**. Ensure that the wheel **can turn freely** and does not rub on the drawer



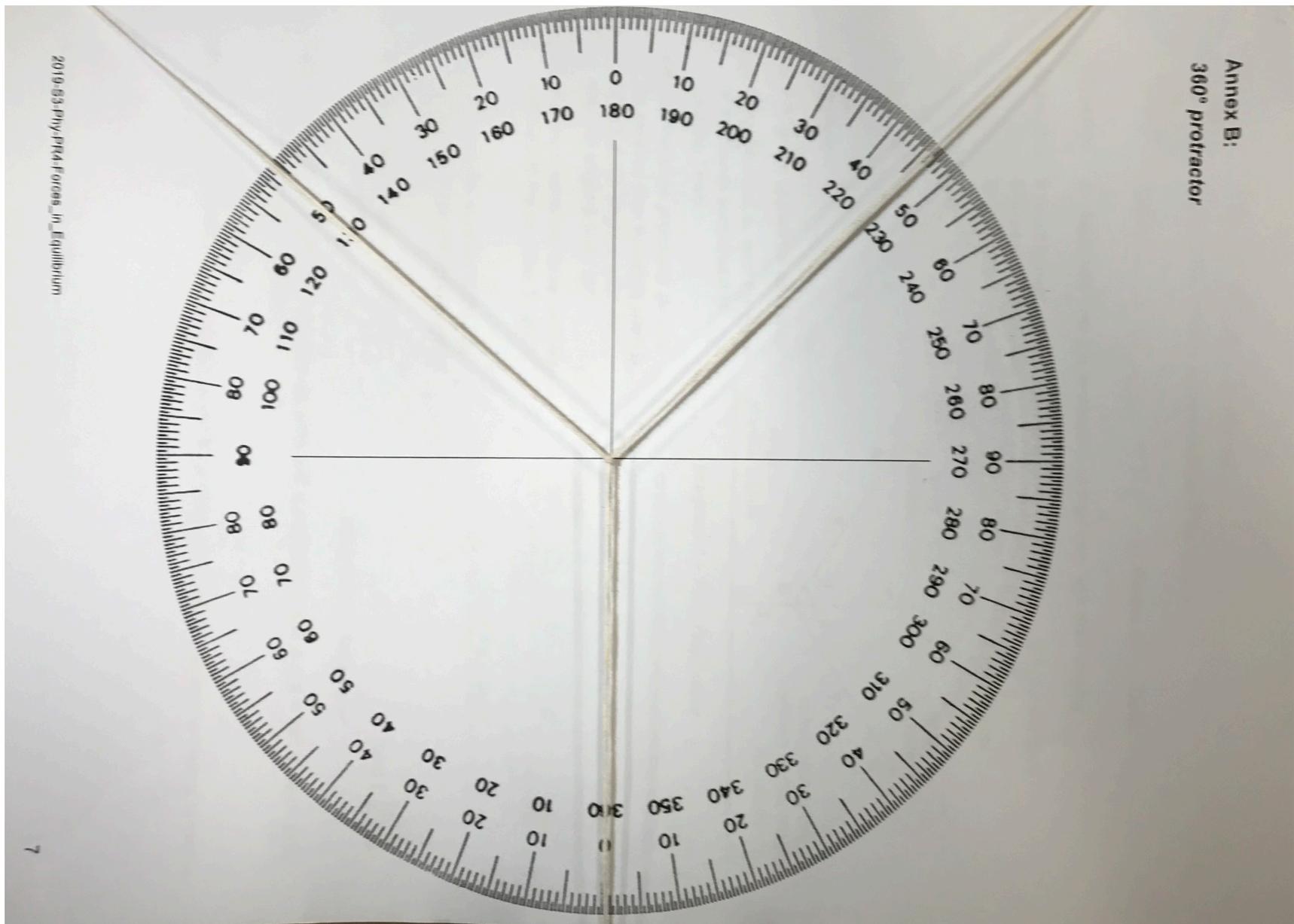
Ensure that the string comes away from the force sensor perpendicularly. The screw does not need to be tightened.



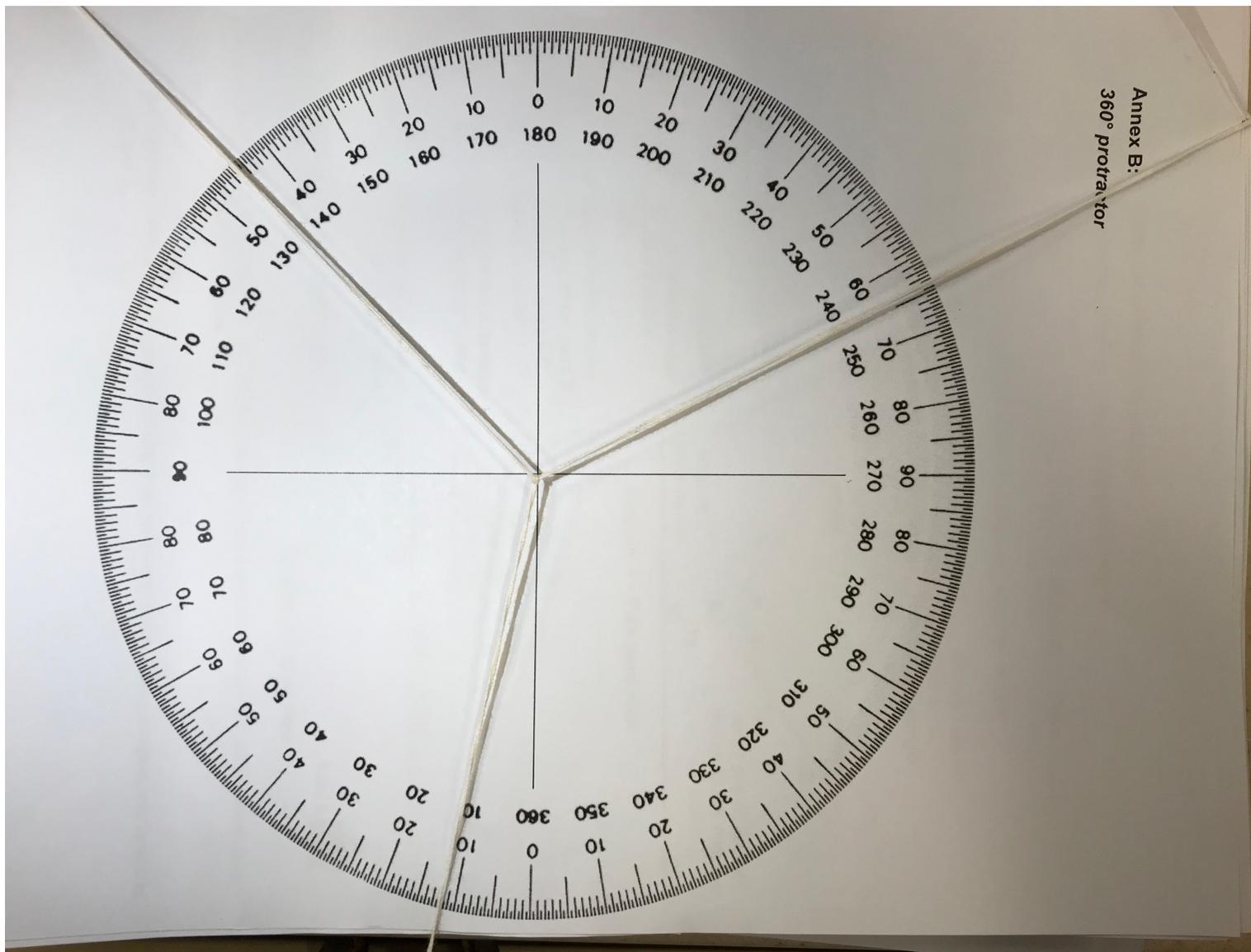
To avoid parallax error, all readings must be taken with the eye directly over the central knot.



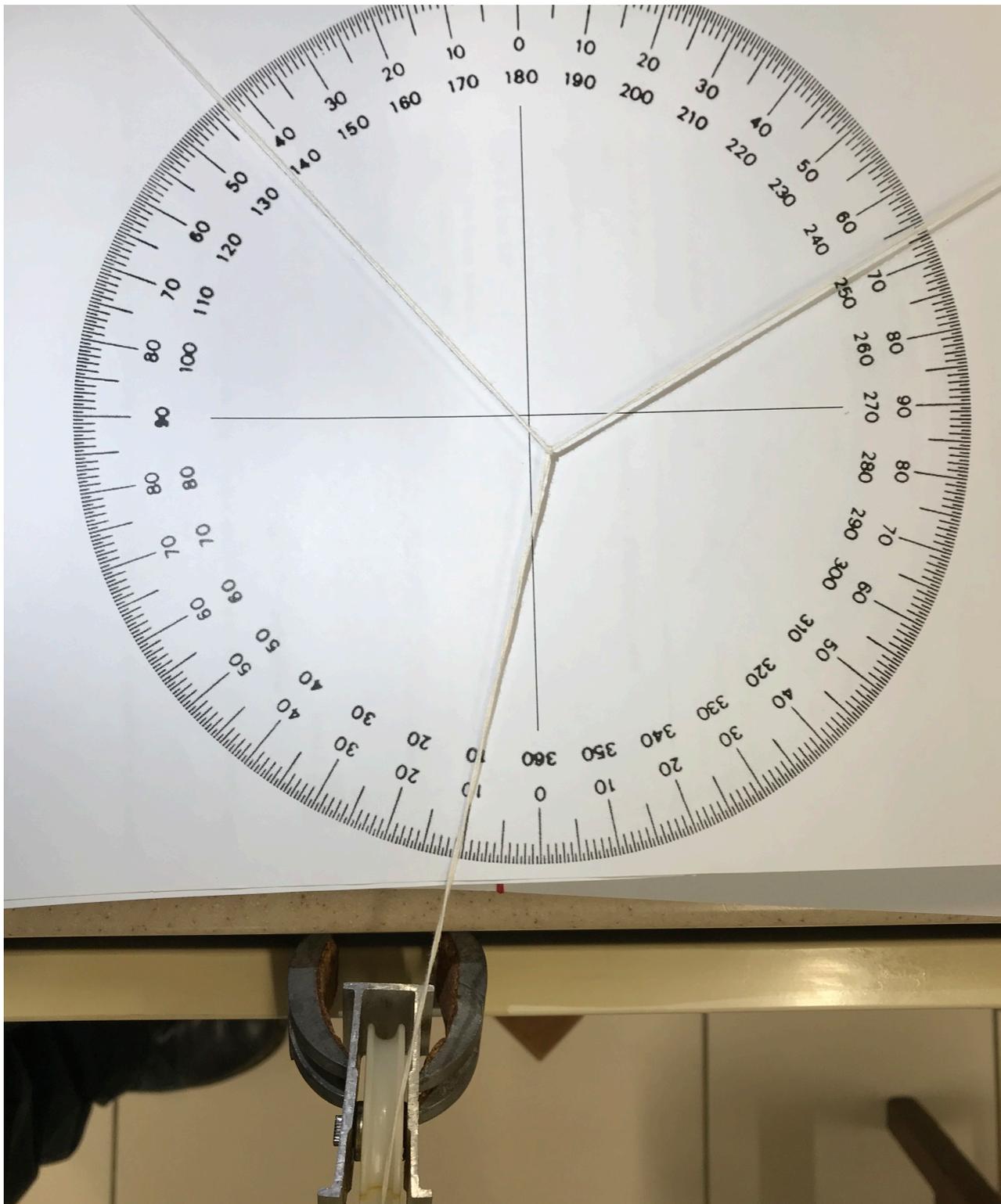
Parallax error can be very large as the paper is some distance from the suspended string.



Here the paper has been raised by placing a book underneath it.



Ensure the string leaving the table is along the zero line. Here it is wrong.



What is wrong with the way this reading is being taken?