

## PR2.A – TEACHING SOURCES

<b>Title</b>	<i>Mass -Weight Measurement</i>
<b>Duration</b>	1 session
<b>Age Group</b>	13 – 14 YO
<b>Dimension of the advised group of students</b>	The dimension of the group can be unlimited
<b>Area</b>	<input type="checkbox"/> <i>Area 1: Reading, writing and literature</i> <input checked="" type="checkbox"/> <i>Area 2: Math</i> <input type="checkbox"/> <i>Area 3: Second language learning</i> <input checked="" type="checkbox"/> <i>Area 4: Sciences-Physics</i> <input checked="" type="checkbox"/> <i>Area 5: Soft skills</i>
<b>Specific objectives</b>	<ul style="list-style-type: none"> <li>- <i>Learning to carry out a virtual experiment</i></li> <li>- <i>Developing critical thinking</i></li> <li>- <i>Familiarizing students with diagrams</i></li> </ul>
<b>Needed Materials</b>	<i>A computer or laptop Internet connection</i>
<b>Software</b>	<i>The Simulation can be performed online.</i>
<b>Description</b>	<i>In High School Physics A, we learn about mass and weight, their differences and their measurements. In class we perform a Lab experiment: We have a spring, a ruler and weights of known mass. We place the zero of the ruler on the end of the spring hanging from a fixed point. Then we place known weights in succession and note the values of mass and elongation in a table. At the end, we make a diagram with these values. Here the force is the weight, so the elongation is proportional to the weight and since mass is proportional to the weight (<math>B=mg</math>) then mass is also proportional to the elongation of the spring. We can perform the same exactly experiment virtually, online, using a Simulation. We carry out the virtual experiment so that students can answer the question: What is the relationship between mass and elongation of the spring?</i>
<b>Procedure on how to put in practice</b>	<i>This Simulation , when conditions do not allow a hands-on activity, can also help students reproduce at home the experiment we can do in the laboratory. Place the known weights in sequence, noting the values of mass and spring elongation in a table and make a “Mass - Spring elongation” diagram. Observe that mass is proportional to the elongation of the spring.</i>
<b>Link</b>	<a href="https://phet.colorado.edu/sims/html/masses-and-springs/latest/masses-and-springs_el.html">2https://phet.colorado.edu/sims/html/masses-and-springs/latest/masses-and-springs_el.html</a> <a href="https://physiquiz.gr/wp-content/uploads/html/fe3-2.html">https://physiquiz.gr/wp-content/uploads/html/fe3-2.html</a>



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<b>External documents</b>	<i>Please upload the PDF file(s) of any other resource as annex of the Teaching Source</i>



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