



Teacher Guide

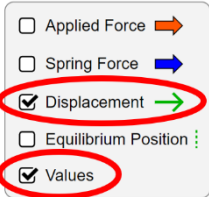
Developed as part of an Ogden Trust Senior Teacher Fellowship in partnership with PhET. Find more resources at pheteffect.com

Inquiry type	Simple Investigation
Topic	Hooke's Law
Simulation	Hooke's Law
Link	https://phet.colorado.edu/sims/html/hookes-law/latest/hookes-law_all.html?screens=1
Learning Objective(s)	- To understand what is meant by spring constant - To understand how spring constant and force affect the extension of an elastic object
Specification Content	AQA GCSE Physics Specification 4.5.3 <i>The extension of an elastic object, such as a spring, is directly proportional to the force applied, provided that the limit of proportionality is not exceeded.</i> <i>force = spring constant $\times$ extension ($F = k e$)</i> <i>force, F, in newtons, N</i> <i>spring constant, k, in newtons per metre, N/m</i> <i>extension, e, in metres, m</i>
Suggested prior learning	While not essential, it may help if students should be aware of the distinction between elastic and inelastic objects

Lesson Guidance

Slides 1-4	Use slides 1-4 to introduce the problem and encourage students to use the simulation to work out what spring constant is. It can be helpful to get students to think about spring constant in a number of different ways, both quantitatively and qualitatively. This link takes students directly to the correct screen: https://phet.colorado.edu/sims/html/hookes-law/latest/hookes-law_all.html?screens=1
Slide 4	After students have explored the simulation, encourage students to share their ideas about what spring constant means, using the questions on the slide as a guide.
Slides 5-8	Use these slides to consolidate what has been learnt about Hooke's Law. Hopefully students have already shared some of the ideas in slides 5 and 6. Use these to lead on to the more mathematical description of Hooke's Law on slides 7 and 8.

Simulation Guidance

Values-based education	Turn these on 	Students will need to turn on these buttons in order to view the extension, which may help them to think about Hooke's Law mathematically
Stretching the truth		If displaying the simulation on the screen, switching to the 2 springs mode can help to make more direct comparisons.