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| **What will we be learning?****Materials**Nails with solid fill | **Why this? Why now?**Previous Learning Forces, Energy, Stopping Distances, Motion, Future Learning Newtons Laws of Motion and Momentum, Electric and Gravitational Fields.Enquiry ProcessesIdentify Variables, Collect Data, Present Data, Analyse Patterns, Manipulate Equations, Draw Conclusions, Justify opinions and conclusions.  | **Key Words:**StressStrainYoungs ModulusBrittleDuctilePolymericElasticPlasticDeformationTensionCompressionHysteresis |
| **What will we learn?*** Tensile and compressive deformation.
* Hooke’s Law
* Force – extension (or compression) graphs for springs and wires and force constant F=kx.
* Elastic and plastic deformation of springs.
* Force – Extension graphs and work done.
* Elastic Potential Energy
* Stress, strain and ultimate tensile strength
* Youngs Modulus

**Misconceptions in this topic*** Springs are always elastic.
* Hooke’s Law applies after plastic deformation (it doesn’t!)
* Energy isn’t transferred during stretching
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| **What opportunities are there for wider study?**Careers – Materials Engineer, Metallurgist, Engineer, Architect, Construction, Civil Engineering, Aviation, Automotive Engineer, Car mechanic, Production Engineer, Radio and Television Engineer, Sound and Acoustic Engineer, Defence Specialist.STE(A)M – For details of courses and opportunities look at:<https://highcliffe.sharepoint.com/sites/LearnSTEM> |
| **How will I be assessed?**End of Topic Assessment, AS Paper Assessment |