**Colton Hills Community School medium term planning**

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| **Topic title:**.. P5 Forces  | **Year:** … 11**Term:** …Autumn | **Why we teach this:**… To understand how forces affect our everyday lives, from gravity | **Why we teach this here:**… This builds on our understanding of energy and forces to fully understand the way that forces affect and help us. |
| **Big questions:**1. What are contact forces?
2. What is a scalar quantity?
3. What is a vector quanitity?
4. What is the difference between mass and weight?
5. What are Newton’s Laws?
 | **Builds on previous topics:**…P1 Energy, P4 Atoms, C1 Atoms | **Links to future topics:**…P6 Waves, P7 Electromagnetism and P8 Space (Triple only). Chemistry and Biology. |
| **Key knowledge Triple*** Scalars, vectors, contact and non-contact forces
* Parallel forces
* Free body diagrams and resolving single forces HT ONLY
* Weight + Work done and joules
* Energy transfers and changing shape
* Elastic deformation + Hooke’s Law
* Work done and springs
* Required practical 6 + Turning forces
* Simple levers and gears + Pressure in a fluid
* Calculating pressure HT ONLY
* Upthrust HT ONLY
* Pressure and height + Distance + displacement
* Speed + Speed of sound and distance travelled
* Velocity + Distance time graphs
* Acceleration + deceleration
* Required practical 7 + Velocity time graphs
* Equations of motion + Falling
* Newton’s 1st Law + Newton’s 2nd Law
* Inertial mass HT ONLY + Newton’s 3rd Law
* Stopping distance and braking distance
* Reaction and thinking time
* Energy changes when stopping + Momentum HT ONLY
* Conservation of momentum + Force + momentum
 | **Key knowledge continued:*** Scalars, vectors, contact non-contact forces
* Weight +Parallel forces
* Free body diagrams and resolving single forces HT ONLY
* Work done and Energy transfers
* Elastic deformation +changing shape
* Hooke’s Law, work done and springs
* Required practical 5
* Distance and displacement
* Speed and speed of sound
* Distance travelled and velocity
* Distance time graphs + Acceleration
* Required practical 6
* Equations of motion + Falling
* Newton’s 1st and 2nd Law
* Inertial mass HT ONLY
* Newton’s 3rd Law
* Stopping and braking distance
* Reaction and thinking time
* Energy changes when stopping + Momentum
* Conservation of momentum
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| **Skills developed:**Researching information, make predictions using scientific knowledge and understanding, analyse observations and data using tables and graphs, select, plan and carry out the most appropriate types of scientific enquiries to test predictions, including identifying independent, dependent, and control variables where appropriate.Application of knowledge, making links, ethical debate, critical evaluation |
| **Mini/Interim assessments:*** Multiple choice questions
* Retrieval questions

**Termly summative assessment:*** End of topic test
 | **Independent study tasks/resources:*** Oak Triple <https://teachers.thenational.academy/units/forces-6562>
* Oak Combined F <https://teachers.thenational.academy/units/forces-ft-9dee>
* Oak Combined H <https://teachers.thenational.academy/units/forces-ht-573f>
* Triple F <https://app.senecalearning.com/classroom/course/2670ac10-1d69-11e8-bf76-f14a3ef7c0e6>
* Triple H <https://app.senecalearning.com/classroom/course/fe56ca00-05aa-11e8-9a61-01927559cfd5/section/0ad221d0-05ab-11e8-9a61-01927559cfd5/session>
* Combined F <https://app.senecalearning.com/classroom/course/f4627c20-1e1d-11e8-b99c-3168302284a4/section/23223030-1e20-11e8-820c-35b74d6c4779/session>
* Combined H <https://app.senecalearning.com/classroom/course/e7813ccb-376e-4375-9477-e8baddd262ba>
* Bitesize Combined <https://www.bbc.co.uk/bitesize/topics/ztmttv4>
* Bitesize Triple <https://www.bbc.co.uk/bitesize/topics/z82j97h>
 | **Key vocabulary 1:**Scalarscontact WeightParallel forcesFree body diagrams Work done JoulesElastic deformation Hooke’s Lawwork done Acceleration | **Key vocabulary 2:**vectors displacement velocityEquations of motionInertial massbraking distanceReaction and thinking timeEnergy changes when stoppingMomentumConservation of momentum |
| **Cultural capital opportunities:** … Technological advances <https://www.iop.org/explore-physics/technology-our-lives> , history of technological advances <https://spark.iop.org/collections/stories-physics-electricity-magnetism>. Careers and applications. | **Whole school Curricular Concept links:**… technological progress. |

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| **Week/Phase** | **Key Features** |
| 1 | **Small Questions:** … |
| **Key Activities/Resources:**… | **Retrieval focus:**…**Independent study:**… |
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| 2 | **Small Questions:** … |
| **Key Activities/Resources:**… | **Retrieval focus:**…**Independent study:**… |
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| 3 | **Small Questions:** … |
| **Key Activities/Resources:**… | **Retrieval focus:**…**Independent study:**… |
| **Week/Phase** | **Key Features** |
| 4 | **Small Questions:** … |
| **Key Activities/Resources:**… | **Retrieval focus:**…**Independent study:**… |
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| 5 | **Small Questions:** … |
| **Key Activities/Resources:**… | **Retrieval focus:**…**Independent study:**… |
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| 6 | **Small Questions:** … |
| **Key Activities/Resources:** … | **Retrieval focus:**…**Independent study:**… |