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| **Science** | **Project #** | **Grade** | **Module Code** | **Focus** | **Title** | **Objective** | **CCSS**  Next-Generation  Science Standards  3-5.Engineering Design  3-5-ETS1-1,1-2,1-3  RI.5.1,RI.5.7,RI.5.9  W.5.7,W.5.8,W.5.9  MP.2,MP.4,MP.5  3-5.0A |
| 1 | 5 | BLB-01 | Physics | Center of Gravity | TLW invent and build new, unique objects using *BrickLab* that can be balanced on the string.  TLW test and evaluate these objects and identify their center of gravity. |
| 2 | 5 | BLB –01 | Physics | Scatter Patterns | TLW gather data and experiment with meteorite ejecta scatters. | 3.Weather & Climate  3-ESS2-1. 2-2, 3-1  4.Struture, function, & Information Processing  4-PS4-2, 4-LS1-1, 4-LS1-2  4.Earth’s Systems: Processes that shape the Earth  4.-ESS1-1, 2-1, 2-2, 3-2  5. Space Systems: Stars & the Solar System  5-PS2-1, 5-ESS1-1, 5-ESS1-2  RI.3.1,4.1,5.1,4.7, 5.7,3.9, 4.9, 5.9  W.3.1,3.3.7,3.9, 4.7,4.8, 4.9, 5.8, 5.9  SL.5.5  MP.2,.4,.5  3.MD.A.2, 3.MD.B.3, 4.MD.A.2, 4.OA.A.1, 5.G.2 |
| 3 | 3/4 | BLB –01 | Physics | Visible Light Spectrum | TLW create a rainbow with water and sunlight.  TLW record data in an organized method. |
| 4 | 3 | BLB –01 | Physics | Cloud Classification | TLW create 3-D models of stratus, cumulus, nimbus, and cirrus clouds.  TLW investigate Boyle’s Gas Law.  TLW investigate Charles’ Gas Law. |
| 5 | 4 | BLB –01 | Physics | Light and Shadow | TLW create a device that demonstrates the difference between light and shadow.  TLW trace and diagram the umbra and penumbra of the shadows created by the sun. |
| 6 | 5 | BLB –01 | Physics | Paper Airplane Variables | TLW experiment with variables, projectile motion, and paper airplanes.  TLW create graphs to evaluate data. | 3-5.Engineering Design  3-5-ETS1-1,1-2,1-3  3.Forces& Interactions  3-PS2-1, 3-PS2-2, 3-PS2-3, 3-PS2-4  4. Energy  4-PS3-1, 4-PS3-2, 4-PS3-3,4-ESS3-1  RI.4.1, 5.1, RI.4.3, ,RI.5.7,  RI. 4.9, 5.9  W.3.7, W.3.8  W.4.2,W.4.7, W.4.8, W.4.9  W.5.7,W.5.8,W.5.9  SL3.3  MP.2,MP.4,MP.5  4.OA.A.1, 4.0A.A.3  3-5.0A,3.MD.A.2 |
| 7 | 5 | BLB –01 | Physics | Pendulums and Periods | TLW study cycles and periods with pendulums.  TLW create the largest pendulum bob possible with provided materials. |

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| 8 | 5 | BLB-01 | Physics | Inertia Balance | TLW conduct an experiment with an inertia balance.  TLW measure and record the mass of a variety of objects.  TLW chart how different objects alter the cycle of vibration. | | 3-5.Engineering Design  3-5-ETS1-1,1-2,1-3  3.Forces& Interactions  3-PS2-1, 3-PS2-2, 3-PS2-3, 3-PS2-4  4. Energy  4-PS3-1, 4-PS3-2, 4-PS3-3,4-ESS3-1  RI.4.1, 5.1, RI.4.3, ,RI.5.7,  RI. 4.9, 5.9  W.3.7, W.3.8  W.4.2,W.4.7, W.4.8, W.4.9  W.5.7,W.5.8,W.5.9  SL3.3  MP.2,MP.4,MP.5  4.OA.A.1, 4.0A.A.3  3-5.0A,3.MD.A.2 |
| 9 | 5 | BLB –01 | Physics | Jensen Bar | TLW use *Bricklab* to construct several Jensen Bars (an example of a 1st class lever).  TLW use a Jensen Bar as a balance to compare the weight of various objects. | |
| 10 | 5 | BLB –01 | Physics | Friction Sled | TLW conduct experiments with a friction sled.  TLW test and retest the sled with different surfaces.  TLW collect and graph data. | |
| 11 | 5 | BLB –01 | Physics | Newton’s 2nd Law of Motion | TLW create a device that demonstrates force and motion.  TLW design several different Racers, experimenting with size, shape, and weight, to find the combination that completes the track in the best and fastest time. | |
| 12 | 5 | BLB –01 | Physics | Newton’s 3rd Law of Motion | TLW create a device that demonstrates an equal and opposite reaction.  TLW create a larger version of the Launcher and Projectile.  TLW record results. | |

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| **Technology** | **Project #** | **Grade** | **Module Code** | **Focus** | **Title** | **Objective** | **CCSS** |
| **1** | 4-6 | DVL-01 | Digital Video | Interview Your Friends | TLW record an interview with a peer using a video camera.  TLW share his/her video with peers. |  |
| **2** | 4-6 | DVL-01 | Digital Video | Interview with the Past | TLW research a historical figure and have a question and answer interview with him/her.  TLW select an event at school or in the community, watch the event, then video interview three different people about their response to the event. |  |
| **3** | 4-6 | DVL-01 | Digital Video | Time to Mime | TLW make a film about going on a trip using only imaginary objects to tell the story.  TLW write three scenes for a silent movie. |  |
| **4** | 4-6 | DVL-01 | Digital Video | You are the Reporter | TLW report on an event.  TLW write and host a news show.  TLW read a news story in a local newspaper and recreate it by acting out the events and video recording it. |  |
| **5** | 4-6 | DVL-01 | Digital Video | Day in the Life | TLW create a documentary.  TLW create a mock-umentary of a made up character. |  |
| **6** | 4-6 | DVL-01 | Digital Video | Cause and Effect | TLW think of a cause and effect event and make it into a short movie.  TLW outline a chain of events. |  |
| **Project #** | **Grade** | **Module Code** | **Focus** | **Title** | **Objective** | **CCSS** |
| **7** | 4-6 | DVL-01 | Digital Video | The Hidden Life of Things | TLW make a short movie with objects, not people as the characters.  TLW choose a genre; comedy, action, or western, for a short movie. |  |
| **8** | 4-6 | DVL-01 | Digital Video | Quiz Show | TLW create and film an original game show.  TLW use zoom lens to create fog effect using various items. |  |
| **9** | 4-6 | DVL-01 | Digital Video | Talent Search | TLW perform a silly talent for a panel of judges on a made up game show.  TLW create a game show using a two team model.  TLW record the game show. |  |
| **10** | 4-6 | DVL-01 | Digital Video | Look What We Invented | TLW invent a new product and record a commercial to advertise it.  TLW create a video to advertise a local event. |  |
| **11** | 4-6 | DVL-01 | Digital Video | Which One Do I Buy? | TLW create a persuasive video explaining why one product is better than the other.  TLW create a video explaining why not to buy a certain toy. |  |
| **12** | 4-6 | DVL-01 | Digital Video | A Night on Broadway | TLW create a musical production.  TLW create a video montage of his/her life with background music. |  |

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| **Engineering** | **Project #** | **Grade** | **Module Code** | **Focus** | **Title** | **Objective** | **CCSS/ Next Generation** |
| **1** | 4-6 | LEG - 02 | Mechanical Engineering with LEGO | Rotary to Lever Motion | TLW build a rotary-to-lever motion model.  TLW extend the reach of the lever arm by swapping out and adding beams.  TLW test and evaluate a model. | 3-5.Engineering Design  3-5-ETS1-1,1-2,1-3  3.Forces& Interactions  3-PS2-1, 3-PS2-2, 3-PS2-3, 3-PS2-4  4. Energy  4-PS3-1, 4-PS3-2, 4-PS3-3,4-ESS3-1  RI.4.1, 5.1, RI.4.3, RI.5.7,  RI. 4.9, 5.9  W.3.7, W.3.8  W.4.2,W.4.7, W.4.8, W.4.9  W.5.7,W.5.8,W.5.9  SL3.3  MP.2,MP.4,MP.5  4.OA.A.1, 4.0A.A.3  3-5.0A,3.MD.A.2 |
| **2** | 4-6 | LEG - 02 | Mechanical Engineering with LEGO | Super Poker | TLW build a rotary-to-linear motion model that can claw.  TLW motorize their model.  TLW extend the reach of the lever arm by swapping out and adding beams.  TLW test and evaluate a model. |
| **3** | 4-6 | LEG - 02 | Mechanical Engineering with LEGO | Super Slow Down | TLW build a gear train model with torque.  TLW count the number of turns the input handle must turn to make the output cam rotate once.  TLW test and evaluate a model.  TLW build a vehicle that incorporates a gear train. |
| **4** | 4-6 | LEG - 02 | Mechanical Engineering with LEGO | Crane | TLW build a worm gear driven crane.  TLW count the number of turns it takes to raise the hook to the top of the model.  TLW build an original machine that integrates a worm gear. |
| **5** | 4-6 | LEG - 02 | Mechanical Engineering with LEGO | Wind Machine | TLW build a powerful fan.  TLW count the number of turns the input handle it takes to make the output vanes rotate once.  TLW test and evaluate a model. |
| **6** | 4-6 | LEG - 02 | Mechanical Engineering with LEGO | Swimmer | TLW turn the crank handle and observe the direction the arms are turning. |
| **Project #** | **Grade** | **Module Code** | **Focus** | **Title** | **Objective** | **CCSS** |
| **7** | 4-6 | LEG - 02 | Mechanical Engineering with LEGO | Snowplow | TLW use a wedge to move snow.  TLW build a model of a snow plow.  TLW test and evaluate a model.  TLW change his/her model to integrate gears. | 3-5.Engineering Design  3-5-ETS1-1,1-2,1-3  3.Forces& Interactions  3-PS2-1, 3-PS2-2, 3-PS2-3, 3-PS2-4  4. Energy  4-PS3-1, 4-PS3-2, 4-PS3-3,4-ESS3-1  RI.4.1, 5.1, RI.4.3, ,RI.5.7,  RI. 4.9, 5.9  W.3.7, W.3.8  W.4.2,W.4.7, W.4.8, W.4.9  W.5.7,W.5.8,W.5.9  SL3.3  MP.2,MP.4,MP.5  4.OA.A.1, 4.0A.A.3  3-5.0A,3.MD.A.2 |
| **8** | 4-6 | LEG - 02 | Mechanical Engineering with LEGO | Differential Warrior | TLW use a differential to ensure a model continues to function with minor damages.  TLW observe and test various “problems” with their model.  TLW alter the gear train to change the speed of the rotating arms. |
| **9** | 4-6 | LEG - 02 | Mechanical Engineering with LEGO | Helicopter | TLW build a model of a helicopter with bevel gears to fly.  TLW observe the direction and speed at which the helicopter rotors are turning.  TLW alter the gear train so the blades spin in the opposite direction. |
| **10** | 4-6 | LEG - 02 | Mechanical Engineering with LEGO | Grabber | TLW use belts to enable a grabber to grab an object.  TLW observe pulleys rotating.  TLW alter pulleys to change the speed of the claws. |
| **11** | 4-6 | LEG - 02 | Mechanical Engineering with LEGO | Hill Climbing Buggy | TLW build a buggy that can climb hills.  TLW connect a motor cord to a battery.  TLW alter the gear train to change the speed of a buggy. |
| **12** | 4-6 | LEG - 02 | Mechanical Engineering with LEGO | Pulley Mule | TLW build a complex machine with pulleys, bevel gears, universal joints, and gear trains to transfer motion.  TLW trace the transmission of motion from system to stem and identify the input and output. |

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| **Math** | **Project #** | **Grade** | **Module Code** | **Focus** | **Title** | **Objective** | **CCSS** |
| **1** | 4-6 | KNX - 03 | Geometry | Triangles & Trusses | TLW sketch, build and classify triangles.  TLW sketch, build and classify angles.  TLW build a truss bridge with  K’NEX pieces. |  |
| **2** | 4-6 | KNX - 03 | Geometry | Circles | TLW measure the diameter and the circumference of a circle.  TLW calculate Pi.  TLW build circle makers with K’NEX to make three different size circles. |  |
| **3** | 4-6 | KNX - 03 | Geometry | Area of a Triangle | TLW calculate the area of a triangle.  TLW build a variety of triangles using K’NEX and calculate their areas. |  |
| **4** | 4-6 | KNX - 03 | Geometry | Parallelograms & Trapezoids | TLW calculate the area for squares, rectangles, parallelograms, and trapezoids.  TLW will build parallelograms and trapezoids with K’NEX.  TLW calculate the amount of paint needed to paint a classroom. |  |
| **5** | 4-6 | KNX - 03 | Geometry | Perimeter | TLW build triangle squares, rectangles, octagons, and other irregular shapes using K’NEX.  TLW measure the perimeter of squares, rectangles, octagons, and other irregular shapes.  TLW calculate the perimeter to determine the amount of fencing needed for a yard or wallpaper for a wall. |  |
| **Project #** | **Grade** | **Module Code** | **Focus** | **Title** | **Objective** | **CCSS** |
| **6** | 4-6 | KNX - 03 | Geometry | Coordinates | TLW build a grid coordinate system and identify coordinates on the grid.  TLW draw a Cartesian Plan.  TLW create a 3-D coordinate system using K’NEX and decide how to label a point of this grid. |  |
| **7** | 4-6 | KNX - 03 | Geometry | Angles, Rays, Points, Lines | TLW construct angles, rays points, and lines with K’NEX.  TLW use an Angle Tool to estimate the angles between lines of a triangle.  TLW create a 3-D object using K’NEX and record the planes on grid paper. |  |
| **8** | 4-6 | KNX - 03 | Geometry | Triangles and Squares | TLW build models of polygons and determine the number of squares using the counting method.  TLW use K’KEX to create a 2-D or 3-D object, and will identify all triangles and squares that make up the surfaces of the model. |  |
| **9** | 4-6 | KNX - 03 | Geometry | Polygons | TLW explore polygons by building shapes with K’NEX.  TLW measure and record interior angles of created polygons. |  |
| **10** | 4-6 | KNX - 03 | Geometry | Prisms | TLW build 3-D prisms using K’NEX.  TLW build original prisms using K’NEX. |  |
| **11** | 4-6 | KNX - 03 | Geometry | Volume of Prisms | TLW calculate the volume of a prism.  TLW construct original prisms and calculate their volumes. |  |
| **12** | 4-6 | KNX - 03 | Geometry | Congruent Triangles | TLW identify congruent triangles.  TLW construct large congruent triangles with one side being as tall as he/she is. |  |