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| **STARBASE Alignment Summary**NGSS and Common Core (Grade 5) |  |  | **CAD part 1** | **Eggbert****Straw Rockets****Molecular Models & Matter** | **Nanotechnology** | **3rd Law** |  |  |  |  | **Rocket Launch****Fingerprints** | **Bernoulli’s Principle**  |  |  | **Robotics** |  | **Fly on the Ceiling** | **Navigation/Mapping** |  |
| **RUTLAND STARBASE SITE** | **Day 1****1st Law: Crash Test Dummies****Rocketry** |  | **Day 2** | **Day 3****Chromatography****Molecular Models & Matter****CAD part 2** | **Day 4****Energy Explorations** | **Day 5****Physical & Chemical Changes/ Warm Ups & Cool Downs** |
|  | **NGSS Structure and Properties of Matter** |
| 5-PS1-1. | Develop a model to describe that matter is made of particles too small to be seen. |  |  |  |  |  | X |  |  | X | X |  |  | X |  |  | X |  |  |  |
| 5-PS1-3. | Make observations and measurements to identify materials based on their properties. |  |  |  |  |  | X |  |  |  | X |  |  |  |  |  |  |  |  |  |
| 5-PS1-4. | Conduct an investigation to determine whether the mixing of two or more substances results in new substances.  |  |  |  |  |  |  |  |  |  | X |  |  |  |  |  | X |  |  |  |
| MS-PS1-1  | Develop models to describe the atomic composition of simple molecules and extended structures. |  |  |  |  |  |  |  |  | X |  |  |  |  |  |  |  |  |  |  |
| MS-PS1-2 | Analyze and interpret data of the properties on substances before and after the substances interact to determine if a chemical reaction has occurred. |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | X |  |  |  |
| MS-PS1-4 | Develop a model that predicts and describes changes in particle motion, temperature, and state of a pure substance when thermal energy is added or removed. |  |  |  |  |  |  |  |  | X |  |  |  |  |  |  |  |  |  |  |
|  | **NGSS Motion and Stability: Forces and Interactions** |
| 5-PS2-1. | Support an argument that the gravitational force exerted by Earth on objects is directed down. | X | X | X |  | X |  | X |  |  |  | X |  |  |  |  | X |  |  |  |
| MS-PS2-1 | Apply Newton’s Third Law to design a solution to a problem involving the motion of two colliding objects. |  | X |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| MS-PS2-2 | Plan an investigation to provide evidence that the change in an object’s motion depends on the sum of the forces on the object and the mass of the object.  | X |  |  |  | X |  |  |  |  |  | X |  |  |  |  |  |  |  |  |
| MS-PS2-4 | Construct and present arguments using evidence to support the claim that gravitational interactions are attractive and depend on the masses of interacting objects. | X | X |  |  |  |  |  |  |  |  | X |  |  |  |  |  |  |  |  |
| MS-PS2-5  | Conduct an investigation and evaluate the experimental design to provide evidence that fields exist between objects exerting forces on each other even though the objects are not in contact. |  |  |  |  |  |  | X |  |  |  |  |  |  |  |  |  |  |  |  |
|  | **NGSS Molecules to Organisms: Structures and Processes** |
| 5-LS-1 | Support an argument that plants get the materials they need for growth chiefly from air and water. |  |  |  |  |  |  |  |  |  |  |  |  |  | X |  | X |  |  |  |
|  | **NGSS Energy** |
| 4-PS3-1 | Use evidence to construct an explanation relating the speed of an object to the energy of that object. | X | X |  |  | X |  |  |  |  |  |  |  |  | X |  |  |  |  |  |
| 4-PS3-2 | Make observations to provide evidence that energy can be transferred from place to place by sound, light, heat, and electric currents. |  |  |  |  |  |  |  |  | X |  |  |  |  | X |  | X |  |  |  |
| 4-PS3-3 | Ask questions and predict outcomes about the changes in energy that occur when objects collide. | X | X | X |  |  |  | X |  |  |  |  |  |  | X |  |  |  |  |  |
| 4-PS3-4 | Apply scientific ideas to design, test, and refine a device that converts energy from one form to another. |  |  |  |  |  |  |  |  |  |  |  |  | X | X |  |  |  |  |  |
| 5-PS3 | Use models to describe that energy in animals food (growth, motion, and to maintain warmth) was once energy from the sun.  |  |  |  |  | X |  |  |  | X |  |  |  |  | X |  |  |  |  |  |
|  | **NGSS Engineering Design and Links Among Engineering, Technology, Science, and Society** |
| 3-5-ETS1-1. | Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.  |  |  | X | X |  |  |  | X |  |  |  |  |  |  | X |  |  |  |  |
| 3-5-ETS1-2. | Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.  |  |  | X | X |  |  |  | X |  |  |  |  |  |  | X |  |  |  |  |
| 3-5-ETS1-3. | Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.  |  | X | X |  | X |  |  |  |  |  |  |  |  |  | X |  |  |  |  |
| 3-5-ETS2-A | Use a variety of tools such as rulers, balances, thermometers, graduated cylinders, telescopes, and microscopes to collect data. | X |  |  |  | X |  |  |  |  |  |  |  |  |  | X |  |  | X |  |
| 3-5-ETS2-B | Connect examples of technology to problems that scientists and engineers are working together to solve.  |  |  |  | X |  | X |  | X | X |  |  |  |  |  | X |  |  | X |  |
|  | **NGSS Earth’s Systems** |
| 4-ESS2-2 | Analyze and interpret data from maps to describe patterns of Earth’s features |  |  |  |  |  |  |  |  | X |  |  |  |  |  |  |  |  | X |  |
|  |  |
|  | **NGSS Earth and Human Activity** |
| 4-ESS3-1 | Obtain and combine information to describe that energy and fuels are derived from natural resources and their uses.  |  |  |  |  |  |  |  |  | X |  |  |  |  |  |  |  |  | X |  |
| 5-ESS3-1 | Obtain and combine information about ways individual communities use science ideas to protect the Earth’s resources and environment.  |  |  |  |  |  | X |  |  | X |  |  |  |  |  | X |  |  |  |  |
|  | **CCSS Speaking and Listening** |
| CCSS.ELA-Literacy.SL.5.1 | Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 5 topics and texts, building on others’ ideas and expressing their own clearly.  | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X |  |
| CCSS.ELA-Literacy.SL.5.1.b | Follow agreed-upon rules for discussions and carry out assigned roles.  | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X |  |
| CCSS.ELA-Literacy.SL.5.1.d | Review the key ideas expressed and draw conclusions in light of information and knowledge gained from the discussions.  | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X |  |
|  | **CCSS Base 10** |
| CCSS.Math.Content.5.NBT.A.1 | Recognize that in a multi-digit number, a digit in one place represents 10 times as much as it represents in the place to its right and 1/10 of what it represents in the place to its left. |  |  |  |  |  | X |  |  |  |  |  | X |  |  |  |  |  |  |  |
| CCSS.Math.Content.5.NBT.A.2 | Explain patterns of zeros as a number is divided or multiplied. Use whole number exponents to denote powers of 10. |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| CCSS.Math.Content.5.NBT.A.4 | Use place value understanding to round decimals to any place. Perform operations with multi-digit whole numbers with decimals.  |  |  | X |  | X | X |  |  |  |  |  | X |  |  | X |  |  |  |  |
|  | **CCSS Measurements** |
| CCSS.Math.Content.5.MD.A.1 | Convert among different-sized standard measurement units within a given measurement system (e.g., convert 5 cm to 0.05 cm), and use these conversions in solving multi-step, real world problems. |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | X |  |
|  | **CCSS Geometry** |
| CCSS.Math.Content.5.G.A.1 | Use a pair of perpendicular number lines, called axes, to define a coordinate system, with the intersections of the lines (the origin) arranged to coincide with the 0 on each line and a given point in the plane located by using an ordered pair of numbers, called its coordinates. Understand that the first number indicates how far to travel from the origin in the direction of one axis, and the second number indicates how far to travel in the direction of the second axis, with the convention that the names of the two aces and the coordinates correspond (e.g., x-axis and x-coordinate, y-axis and y-coordinate) |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | X | X |  |
| CCSS.Math.Content.5.G.A.2 | Represent real world and mathematical problems by graphing points in the first quadrant of the coordinate plane, and interpret coordinate values of points in the context of the situation.  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | X | X |  |