Standards in MESA
Paper Helicopter

Science

6.P2U1.4 - Develop and use a model to predict how forces act on objects at a distance.
7.P2U1.2 - Develop and use a model to predict how forces act on objects at a distance.
7.P3U1.4 - Use non-algebraic mathematics and computational thinking to explain Newton's laws of motion.
8.P4U2.5 - Develop a solution to increase efficiency when transferring energy from one source to another.
Plus HS+C.P1U1.5 - Plan and carry out investigations to test predictions of the outcomes of various reactions, based on patterns of physical and chemical properties.
Essential HS.P4U1.7 - Use mathematics and computational thinking to explain how Newton's laws are used in engineering and technologies to create products to serve human ends
Plus HS+E.E2U1.14 -Analyze and interpret data showing how gravitational forces are influenced by mass, and the distance between objects.

Mathematics

6-12.MP.1 - Make sense of problems and persevere in solving them.
6-12.MP.4 - Model with mathematics
6-12.MP.7 - Look for and make use of structure
6.SP.B.5Summarize numerical data sets in relation to their context by:

a. Reporting the number of observations.
b. Describing the nature of the attribute under investigation including how it was measured and its units of measurement

7.RP.A.2 - Recognize and represent proportional relationships between quantities.

a. Decide whether two quantities are in a proportional relationship (e.g., by testing for equivalent ratios in a table or graphing on a coordinate plane and observing whether the graph is a straight line through the origin).
b. Identify the constant of proportionality (unit rate) in tables, graphs, equations, diagrams, and verbal descriptions of proportional relationships

7.SP.C.6 - Approximate the probability of a chance event by collecting data on the chance process that produces it and observing its long-run relative frequency, and predict the approximate relative frequency given the probability.
8.G.A.2-Understand that a two-dimensional figure is congruent to another if one can be obtained from the other by a sequence of rotations, reflections, and translations; given two congruent figures, describe a sequence that demonstrates congruence.
A1.N-Q.A.2-Define appropriate quantities for the purpose of descriptive modeling. Include problem-solving opportunities utilizing real-world context.
A1.F-LE.A.1 Distinguish between situations that can be modeled with linear functions and with exponential functions.

a. Prove that linear functions grow by equal differences over equal intervals, and that exponential functions grow by equal factors over equal intervals.

b. Recognize situations in which one quantity changes at a constant rate per unit interval relative to another.

c. Recognize situations in which a quantity grows or decays by a constant percent rate per unit interval relative to another.

A1.S-ID.A.1 - Represent real-value data with plots for the purpose of comparing two or more data sets.

A1.S-ID.C.8 -Compute and interpret the correlation coefficient of a linear relationship

A1.S-ID.C.9 - Distinguish between correlation and causation

G.N-Q.A.2- Define appropriate quantities for the purpose of descriptive modeling. Include problem-solving opportunities utilizing real-world context.

G.G.CO.A.4-Develop definitions of rotations, reflections, and translations in terms of angles, circles, perpendicular lines, parallel lines, and line segments

G.G-CO.8.6-Use geometric definitions of rigid motions to transform figures and to predict the effect of a given rigid motion on a given figure; given two figures, use the definition of congruence in terms of rigid motions to decide if they are congruent.

G.G-MG.A.1 Use geometric shapes, their measures, and their properties to describe objects utilizing real-world context.

G.G-MG.A.2 Apply concepts of density based on area and volume in modeling situations utilizing real-world context.

G.G-MG.A.3 Apply geometric methods to solve design problems utilizing real-world context.