

Lesson Plan for 2018 Heritage Calendar

Instructional Designer	April Johnson
Honoree	Elvin Lamont Bethea
Subject Area	Science
Grade Level	7
CCSS or NCES	7.P.1 Understand motion, the effects of forces on motion and the graphical representations of motion.
Goals & Objectives	7.P.1.1 Explain how the motion of an object can be described by its position, direction of motion, and speed with respect to some other object. 7.P.1.3 Illustrate the motion of an object using a graph to show a change in position over a period of time.
Cross-Curricular Connections	<u>Physical Education.7.MC.2</u> Understand concepts, principles, strategies, and tactics that apply to the learning and performance of movement. PE.7.MC.2.1 Apply concepts from other disciplines, such as physics, to movement skills <u>Mathematics NC.7.EE.4 (2018)</u> Use variables to represent quantities to solve real-world or mathematical problems. a. Construct equations to solve problems by reasoning about the quantities. - Fluently solve multistep equations with the variable on one side, including those generated by word problems. - Compare an algebraic solution to an arithmetic solution, identifying the sequence of the operations used in each approach. - Interpret the solution in context
Literacy Connection	<u>ELA.CCR(2018)Anchor Standard RI.8</u> – Delineate and evaluate the argument and specific claims in a text, including the validity of the reasoning as well as the relevance and sufficiency of the evidence.
Time Allotment	70 min
Lesson Focus	Apply physics concepts, measuring force, with similar athletic tools used by Bethea.
Resources & Materials	Stop watch or timer Football, shot put, various athletic equipment Meter stick Triple beam balance or electronic balance Graph paper and pencil Access to football/soccer field or large grassy area Physics formula sheet Additional biographical information about this honoree is also available at NC Heritage Calendar and in the 2018 Heritage Calendar.

Instructional Activities	<ol style="list-style-type: none">1. Beforehand, teacher will select a safe area on the school grounds for this activity to occur.2. Teacher may measure mass of each equipment piece before the activity and provide data for student groups or have each group measure the mass for themselves.3. Arrange students in to groups of 4. Each student in the group will be given a task; recorder, timer, measurer, and thrower.4. Have a variety of athletic equipment that can be thrown a distance; football, basketball, baseball, tennis ball, shot put, if available, discus/javelin.5. Each group will throw each piece of equipment, measure the distance (in m), time its flight (in sec), and record the measurements to use in their calculations for velocity, force and momentum.6. Student groups will calculate their measurements using the formulas. Groups will share their data for class average.7. Graph the data on graph paper (teacher choice as to group specific or class average data)8. Student groups will compare/contrast each equipment piece data with the others as well as the following questions:<ol style="list-style-type: none">A. Does the mass effect the distance? The velocity? The acceleration? The force? If so, why?B. Why does each student group have variations in their data?C. What were the constants in this activity?D. What were possible errors made during the activity that could have skewed the results, no matter how minor?9. Student groups are to report out their findings.
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