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| **Activity** | **Alignment with NGSS and Common Core** |
| **Unit: Wild Tracks: Motion as a Process of Continuous Change** |
| *Critical Areas Addressed in Common Core Mathematics: 1) Developing understanding of multiplication and division and 2) Developing strategies for multiplication and division within 100 3) Represent and Interpret Data**Critical Areas Addressed in NGSS: 3-PS2-2: Motion and Stability: Forces and Interactions*  |
| Students read ‘Wild Tracks and discover that footprints provide histories for animals. | **Common Core:***ELA/Literacy:*1. RI.3.1: Ask and answer questions to demonstrate understanding of a text, referring explicitly to the text as the basis for the answers.
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| Students leave ink footprints on banner paper | **N/A** |
| Students invent measures for a ‘step size’. What is a step size? Where do we begin measuring? What tools do we use to measure our step sizes? | **Common Core:***Represent and Interpret Data:*1. Generate measurement data by measuring lengths using rulers marked with halves and fourths of an inch. Show the data by making a line plot, where the horizontal scale is marked off in appropriate units— whole numbers, halves, or quarters.

*NGSS:*1. 3-PS2-2: Make observations and/or measurements of an object’s motion to provide evidence that a pattern can be used to predict future motion*.*
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| Students create graphs of their ‘step size’ data. They compare calculated total distances to measured total distances. Disparity in calculated versus measured results in a change to the ‘step size’ measurement convention. | **Common Core:***Represent and Interpret Data:*1. Draw a scaled picture graph and a scaled bar graph to represent a data set with several categories.

*NGSS:*1. 3-PS2-2: Make observations and/or measurements of an object’s motion to provide evidence that a pattern can be used to predict future motion*.*
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| Students model step sizes in ViMAP and observe total distance traveled through ViMAP grapher. | *NGSS:*1. 3-PS2-2: Make observations and/or measurements of an object’s motion to provide evidence that a pattern can be used to predict future motion*.*
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| Students consider the role of approximation in experiment.Students discover approximations have a predictive power.Students choose approximate values for their step sizes and calculate total distance traveled by multiplying their approximate step sizes with the number of steps. | *NGSS:*1. 3-PS2-2: Make observations and/or measurements of an object’s motion to provide evidence that a pattern can be used to predict future motion*.*

**Common Core:***Represent and Interpret Data:*1. Draw a scaled picture graph and a scaled bar graph to represent a data set with several categories.
2. Solve problems involving measurement and estimation

*Multiply and divide within 100:*1. Understand properties of multiplication and the relationship between multiplication and division.
2. Understand division as an unknown-factor problem.
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| Students derive a specific equation for calculating total distance: Total Distance = Number of Steps x Step Size (this is a derivation of the more recognizable equation Rate x Time = Distance) | *NGSS:*1. 3-PS2-2: Make observations and/or measurements of an object’s motion to provide evidence that a pattern can be used to predict future motion*.*

**Common Core:***Multiply and divide within 100:*1. Understand properties of multiplication and the relationship between multiplication and division.

Understand division as an unknown-factor problem. |
| Model Speed of two cars traveling at different speeds | *NGSS:*1. 3-PS2-2: Make observations and/or measurements of an object’s motion to provide evidence that a pattern can be used to predict future motion*.*
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