

<p>MAFS.912.F-LE.1.1</p> <p>Also assesses MAFS.912.F-LE.2.5</p>	<p>Distinguish between situations that can be modeled with linear functions and with exponential functions.</p> <ul style="list-style-type: none"> <li>a. Prove that linear functions grow by equal differences over equal intervals and that exponential functions grow by equal factors over equal intervals.</li> <li>b. Recognize situations in which one quantity changes at a constant rate per unit interval relative to another.</li> <li>c. Recognize situations in which a quantity grows or decays by a constant percent rate per unit interval relative to another.</li> </ul> <p>Interpret the parameters in a linear or exponential function in terms of a context.</p>
<p>Item Types</p>	<p>Editing Task Choice – May require choosing a model, a parameter, and/or an interpretation.</p> <p>Equation Editor – May require creating a value or an expression.</p> <p>GRID – May require dragging and dropping expressions or statements to a graph.</p> <p>Hot Text – May require dragging and dropping justifications or interpretations.</p> <p>Matching Item – May require matching parameters with interpretations.</p> <p>Multiple Choice – May require selecting an interpretation from a list.</p> <p>Multiselect – May require selecting multiple values.</p> <p>Open Response – May require analyzing the growth of a function or explaining parameters of a function.</p>
<p>Clarifications</p>	<p>Students will determine whether the real-world context may be represented by a linear function or an exponential function and give the constant rate or the rate of growth or decay.</p> <p>Students will choose an explanation as to why a context may be modeled by a linear function or an exponential function.</p> <p>Students will interpret the rate of change and intercepts of a linear function when given an equation that models a real-world context.</p> <p>Students will interpret the x-intercept, y-intercept, and/or rate of growth or decay of an exponential function given in a real-world context.</p>
<p>Assessment Limit</p>	<p>Exponential functions should be in the form <math>a(b)^x + k</math>.</p>
<p>Stimulus Attributes</p>	<p>Items should be set in a real-world context.</p> <p>Items may use function notation.</p>

Response Attributes	<p>Items may require the student to apply the basic modeling cycle.</p> <p>Items may require the student to choose a parameter that is described within the real-world context.</p> <p>Items may require the student to choose an appropriate level of accuracy.</p> <p>Items may require the student to choose and interpret the scale in a graph.</p> <p>Items may require the student to choose and interpret units.</p>
Calculator	No

Sample Item	Item Type
<p>The graph shows <math>T</math>, the temperature of water, in degrees Celsius, in a test tube after <math>m</math> minutes of an experiment.</p> <p>Drag a label to each box to correctly identify the type of rate of change between temperature and time on each part of the graph.</p>	<p>GRID – Drag and Drop</p> <div style="border: 1px solid black; padding: 10px;"> <div style="display: flex; justify-content: space-between; align-items: center;"> <div style="border: 1px solid black; padding: 5px; width: 100px;"> <p>zero</p> <p>constant</p> <p>quadratic</p> <p>exponential</p> </div> <div style="text-align: right;"> <span style="border: 1px solid blue; border-radius: 5px; padding: 2px 5px; color: blue;">Delete</span> </div> </div> <div style="text-align: center; margin-top: 20px;"> </div> <div style="border: 1px solid lightblue; height: 20px; width: 100%; margin-top: 10px;"></div> </div>