# Unit 5 Student Self-Assessment

After completing Unit 5, please mark how much you agree with the following statements.

If you want to brush up on any of these skills, refer to the lesson heading above it.

| I can... | I can | Almost | Not yet |
|---|---|---|---|
| **Lesson 5.1: Properties of Exponents** | | | |
| Simplify expressions using different properties for exponents. | | | |
| Simplify expressions containing exponents of zero. | | | |
| Use the definition of a negative exponent to simplify expressions. | | | |
| **Lesson 5.2: Rational Exponents** | | | |
| Simplify radical expressions with even and odd indexes. | | | |
| Rewrite expressions with rational exponents as roots. | | | |
| Use properties for exponents with rational exponents. | | | |
| **Lesson 5.3: Patterns of Growth** | | | |
| Compare growth patterns using calculations and graphs. | | | |
| Use words and expressions to describe patterns in tables of values. | | | |
| Write expressions and create tables of values to represent them using descriptions of linear and exponential relationships. | | | |
| Begin making connections between linear and exponential growth and the real world (especially financially). | | | |

| I can... | I can | Almost | Not yet |
|---|---|---|---|
| **Lesson 5.4: Representing Exponential Growth** | | | |
| Explain the connections between an equation and a graph that represents exponential growth. | | | |
| Write and interpret an equation that represents exponential growth. | | | |
| **Lesson 5.5: Representing Exponential Decay** | | | |
| Use only multiplication to represent "decreasing a quantity by a fraction of itself." | | | |
| Write an expression or equation to represent a quantity that decays exponentially. | | | |
| Define "exponential growth" and "exponential decay." | | | |
| Explain the meanings of $a$ and $b$ in an equation that represents exponential decay and is written as $y=a \cdot b^x$ | | | |
| Find a growth factor from a graph and write an equation to represent exponential decay. | | | |
| Graph equations that represent quantities that change by a growth factor between 0 and 1. | | | |
| **Lesson 5.6: Negative Exponents and Scientific Notation** | | | |
| Describe the meaning of a negative exponent in equations that represent exponential growth and decay. | | | |
| Write equations that represent exponential growth and decay to solve problems. | | | |
| Graph an equation that represents exponential decay to solve a problem. | | | |

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|---|---|---|---|
| Convert numbers between decimal form and scientific notation. | | | |
| Use scientific notation to solve problems arising from real-world situations. | | | |
| **Lesson 5.7: Analyzing Graphs** | | | |
| Use graphs to compare and contrast situations that involve exponential decay. | | | |
| Use information from a graph to write an equation that represents exponential decay. | | | |
| **Lesson 5.8: Exponential Situations as Functions** | | | |
| Use function notation to write equations that represent exponential relationships. | | | |
| Determine whether the relationships in descriptions, tables, equations, or graphs are functions. | | | |
| **Lesson 5.9: Interpreting Exponential Functions** | | | |
| Analyze a situation and determine whether it makes sense to connect the points on the graph that represents the situation. | | | |
| Describe the relationship in a graph of an exponential function using function notation. | | | |
| **Lesson 5.10: Looking at Rates of Change** | | | |
| Calculate the average rate of change of a function over a specified period of time. | | | |
| Recognize how the average rate of change of an exponential function differs from that of a linear function. | | | |

| I can... | I can | Almost | Not yet |
|---|---|---|---|
| **Lesson 5.11: Modeling Exponential Behavior** | | | |
| Use exponential functions to model situations that involve exponential growth or decay. | | | |
| Determine an appropriate model for a situation described by data. | | | |
| **Lesson 5.12: Reasoning about Exponential Graphs, Part 1** | | | |
| Describe the effect of changing $a$ and $b$ on a graph that represents $f(x) = a \cdot b^x$ | | | |
| Use equations and graphs to compare exponential functions. | | | |
| **Lesson 5.13: Reasoning about Exponential Graphs, Part 2** | | | |
| Explain the meaning of the intersection of the graphs of two functions in terms of the situations they represent. | | | |
| Write an equation for the function given two points on a graph of an exponential function. | | | |
| **Lesson 5.14: Which One Changes Faster?** | | | |
| Use tables, calculations, and graphs to compare growth rates of linear and exponential functions and predict how the quantities eventually change. | | | |
| **Lesson 5.15: Changes Over Equal Intervals** | | | |
| Calculate rates of change of functions given graphs, equations, or tables. | | | |
| Use rates of change to describe how a linear function and an exponential function change over equal intervals. | | | |