# **Math 8 B Unit Test Guide**

## Functions Unit Test

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| **Item** | **Lesson Coverage** | **Objective** | **Lesson Page** | **Assessment Item** |
| 1 | Lesson 2: Functions | Determine if a relation is a function. | p. 8-15 | Determine if the relation $y=4x-1$ is a function by first graphing the relation, then applying the vertical line test. Enter 1 if the relation is a function. Enter 2 if the relation is **not** a function.Answer: 1[Functions Unit Test Item #1 | Desmos](https://www.desmos.com/calculator/mhjsnqprjh) |
| 2 | Lesson 2: Functions | Give examples of functions that are not linear. | p. 16-21 | Determine if $7x^{2}+y=5$ is a linear or nonlinear function.Answer: The function $7x^{2}+y=5$ is a nonlinear function.[Functions Unit Test Item #2 | Desmos](https://www.desmos.com/calculator/1x5f7dny4v) |
| 3 | Lesson 3: Graph of a Function | Describe the graph of a function as the set of ordered pairs consisting of an input and the corresponding output. | p. 1-8 | *Use the image to answer the question.*Determine if the given graph is the graph of the function $y=-\frac{2}{5}x+3.$ Enter 1 for yes. Enter 2 for no.Answer: 1[Functions Unit Test Item #3 | Desmos](https://www.desmos.com/calculator/zg3fnwegnf) |
| 4 | Lesson 4: Slope and y-intercepts | Determine the initial value and the rate of change for a linear function given a description of the relationship between the two quantities. | p. 1-8 | Determine the initial value and the rate of change in the following description. Last year, Joshua’s tomato plant reached a maximum height of 2 feet. He is growing another tomato plant this year, and he is tracking its growth. The plant’s height today is 10 inches, and it grows 1.7 inches each day.The initial value is *b*= \_\_\_\_\_, and the rate of change is *m*=\_\_\_\_\_.Answer: 10; 1.7 |
| 5 | Lesson 4: Slope and y-intercepts | Determine the initial value and the rate of change for a linear function given two (x, y) values from a table. | p. 9-16 | *Use the table to answer the question.*Determine the rate of change and the initial value of the linear function given here as a table of values.The rate of change is *m*=\_\_\_\_\_, and the initial value is *b*=\_\_\_\_\_.Answer: $\frac{1}{2};21$[Functions Unit Test Item #5 | Desmos](https://www.desmos.com/calculator/du5n1hqzgz) |
| 6 | Lesson 4: Slope and y-intercepts | Determine the initial value and the rate of change for a linear function given two (x, y) values from a graph. | p. 17-25 | *Use the image to answer the question.*Determine the initial value and the rate of change of the linear function as given in the graph. Round the answer to three decimal places as needed.The initial value is \_\_\_\_\_, and the rate of change is \_\_\_\_\_.Answer: 3; $-\frac{1}{3}$[Functions Unit Test Item #6 | Desmos](https://www.desmos.com/calculator/aq5bhtiwpt) |
| 7 | Lesson 5: Slope in Real-World Problems | Interpret the rate of change of a linear function in terms of the situation it models and its graph. | p. 7-11 | *Use the image to answer the question.*The graph shows the elevation of a deep-sea diver in relation to minutes passed. Using any two points on the graph, what is the rate of change in the diver’s elevation?\_\_\_\_\_ feet per minuteAnswer: -20[Functions Unit Test Item #7 | Desmos](https://www.desmos.com/calculator/fyzkvh2oxk) |
| 8 | Lesson 6: y-intercepts in Real-World Problems | Interpret the initial value of a linear function in terms of the situation it models and its table of values. | p. 1-6 | A pan with four eggs weighs 18 ounces. A pan with eight eggs weighs 24 ounces. What is the weight of the pan?\_\_\_\_\_ oz.Answer: 12[Functions Unit Test Item #8 | Desmos](https://www.desmos.com/calculator/otwbwizfbs) |
| 9 | Lesson 6: y-intercepts in Real-World Problems | Interpret the initial value of a linear function in terms of the situation it models and its graph. | p. 7-11 | Manuel got a new job and was given a hiring bonus along with his monthly salary. His earnings after months are modeled by the function $f\left(x\right)=1,500x+300$. How much did he receive as a hiring bonus?Answer: 300[Functions Unit Test Item #9 | Desmos](https://www.desmos.com/calculator/gfjtwqxez2) |
| 10 | Lesson 7: Equations of Linear Functions | Interpret the equation y = mx + b as defining a linear function and describe the graph of a linear function as a straight line. | p. 1-5 | The equation $y=mx+b$ defines what type of function?Answer: a linear function |
| 11 | Lesson 7: Equations of Linear Functions | Write the equation of a linear function given a description of the relationship between the two quantities or two (x, y) values from a table. | p. 6-11 | *Use the table to answer the question.*Write the equation of the linear function that models the relationship shown in the table. Enter your answer in $y=mx+b$ form.Answer: $y=3x-2$[Functions Unit Test Item #11 | Desmos](https://www.desmos.com/calculator/uorcphwh9p) |
| 12 | Lesson 7: Equations of Linear Functions | Write the equation of a linear function given a description of the relationship between the two quantities or two (x, y) values from a graph. | p. 12-17 | Last year, Alayah ordered 4 cubic yards of soil and spent $220. This year, she orders 7 cubic yards of soil and spends $340. Write the equation of the linear function that models the relationship between the number of cubic yards of soil ordered and the total cost. Enter your answer in $y = mx + b$ form.Answer: $y=40x+60$[Functions Unit Test Item #12 | Desmos](https://www.desmos.com/calculator/rvajeoxnud) |
| 13 | Lesson 8: Properties of Functions | Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions).  | p. 1-6 | Compare Linear Function 1 with Linear Function 2. Which one has the greater rate of change? Choose 1 for Linear Function 1; choose 2 for Linear Function 2. Linear Function 1: $y=x+8$Linear Function 2:Linear Function \_\_\_\_\_ has the greater rate of change.Answer: 2[Functions Unit Test Item #13 | Desmos](https://www.desmos.com/calculator/auu6wrhlvi) |
| 14 | Lesson 8: Properties of Functions | Sketch a graph that exhibits the qualitative features of a function that has been described verbally. | p. 7-12 | A function has an initial value of 2 and a slope equal to $-1$. Choose the sketch of a graph that exhibits the qualitative features of the function.Answer: [Functions Unit Test Item #14 | Desmos](https://www.desmos.com/calculator/feljjijumy) |
| 15 | Lesson 2: Functions | Describe functions as rules that assign to each input exactly one output. | p. 1-7 | *Use the table to answer the question.*Describe the meaning of the word function in math. Then consider the table. Why does this table show a function?Answer: In math, a function is a rule that assigns exactly one output to each input. The student should explain that the table shows a function because each input (day of the week) has only one output (a specific number of children in the car). |