

**Task Model 6**

**Response Type:**  
Matching Tables

**DOK Level 2**

**8.F.3**

Interpret the equation  $y = mx + b$  as defining a linear function, whose graph is a straight line; give examples of functions that are not linear. *For example, the function  $A = s^2$  giving the area of a square as a function of its side length is not linear because its graph contains the points  $(1, 1)$ ,  $(2, 4)$  and  $(3, 9)$ , which are not on a straight line.*

**Evidence Required:**

6. The student recognizes and gives examples of functions that are not linear.

**Tools:** Calculator

**Prompt Features:** The student recognizes representations of nonlinear functions.

**Stimulus Guidelines:**

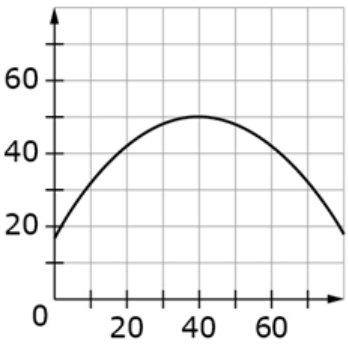
- Tables and graphs should be labeled.
- Tables should include 3–5 sets of values.
- Linear equations can be either  $y = mx + b$ , where  $b \neq 0$ , or  $y = ax + by + c = 0$ , where  $a > 0$  and  $c \neq 0$ .
- Sets of ordered pairs should include between 3–5 pairs.
- Nonlinear functions can include the forms  $y = x^2$ ,  $y = |x|$ , and  $y = \sqrt{x}$  where  $x > 0$ .
- Item difficulty can be adjusted via these example methods:
  - Functions may be represented as tables or equations rather than graphs.

**TM6**

**Stimulus:** The student is presented with linear and nonlinear functions represented in different ways.

**Example Stem:** Several functions are represented in the table.

Determine whether each function is linear or nonlinear.

Function	Linear	Nonlinear												
$y = \frac{3}{4}x + 2$														
														
<table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>x</th> <th>y</th> </tr> </thead> <tbody> <tr> <td>-2</td> <td>5</td> </tr> <tr> <td>-1</td> <td>9</td> </tr> <tr> <td>0</td> <td>13</td> </tr> <tr> <td>1</td> <td>17</td> </tr> <tr> <td>2</td> <td>21</td> </tr> </tbody> </table>	x	y	-2	5	-1	9	0	13	1	17	2	21		
x	y													
-2	5													
-1	9													
0	13													
1	17													
2	21													
$\{(2, 2), (1, 2), (0, -2), (-1, -2)\}$														

**Rubric:** (1 point) The student selects the correct box to identify whether the functions are linear or nonlinear (e.g., L, N, L, N).

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