8.F.A

Define, evaluate, and compare functions.

1. Select **all** tables where *y*, the dependent variable, is a function of *x*, the independent variable.  
     
   A.

| ***x*** | –2 | 0 | 1 | 1 | 2 |
| --- | --- | --- | --- | --- | --- |
| ***y*** | –2 | 0 | 1 | 2 | 3 |

B.

| ***x*** | –2 | 0 | 1 | 2 | 3 |
| --- | --- | --- | --- | --- | --- |
| ***y*** | –2 | 0 | 1 | 1 | 2 |

C.

| ***x*** | 1 | 1 | 1 | 1 | 1 |
| --- | --- | --- | --- | --- | --- |
| ***y*** | –2 | 0 | 1 | 2 | 3 |

D.

| ***x*** | –2 | 0 | 1 | 2 | 3 |
| --- | --- | --- | --- | --- | --- |
| ***y*** | 1 | 1 | 1 | 1 | 1 |

1. What shape do you expect the graph of the function described by 3*x* + 7*y* = 8 to take? Is it a linear or nonlinear function?
2. The table and the equation shown each represent a different linear function.  
     
   **Function 1:**

| ***x*** | –2 | 0 | 2 | 4 | 6 |
| --- | --- | --- | --- | --- | --- |
| ***y*** | –5 | –2 | 1 | 4 | 7 |

**Function 2:**

*y* = 4*x* + 3  
  
Which function has the greater initial value? Explain how you know.

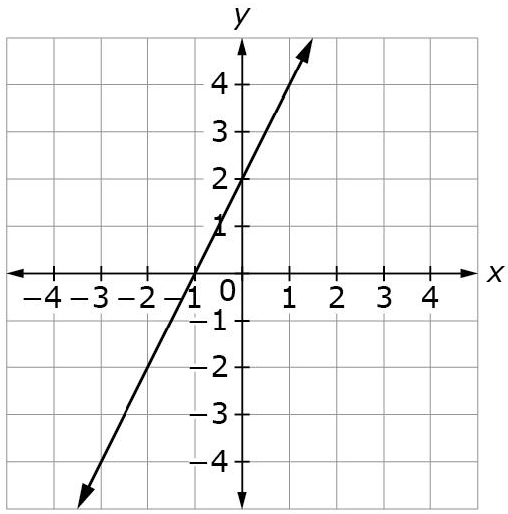
8.F.A

Define, evaluate, and compare functions.

1. The table shows the time, in seconds, since a stone is dropped off a cliff and the total distance the stone has traveled, in feet.

| **Number of seconds (*x*)** | **Distance traveled in feet (*y*)** |
| --- | --- |
| 0.5 | 4 |
| 1 | 16 |
| 1.5 | 36 |
| 2 | 64 |
| 2.6 | 100 |
| 3 | 144 |
| 3.5 | 196 |
| 4 | 256 |

Does the data in the table suggest a linear relationship between the time, in seconds, and the distance traveled, in feet? Explain why or why not.

1. Alan and Margot drive from City A to City B, a distance of 147 miles. Alan begins driving at 1:40 p.m. and arrives at City B at 4:15 p.m. Margot’s trip from City A to City B can be described with the equation *y* = 64*x*, where *y* is the distance traveled in miles and *x* is the time in hours spent traveling. Who gets from City A to City B faster? Explain how you got your answer.
2. This graph represents a linear function.  
     
     
     
   Write an equation for the linear function represented by the graph.

**Teacher Material**

8.F.A

Define, evaluate, and compare functions.

| **Question** | **Claim** | **Key/Suggested Rubric** |
| --- | --- | --- |
| 1[[1]](#footnote-1) | 1 | **1 point:** Selects B and D |
| 21 | 1 | **1 point:** Answers will vary. Example: A straight line, so it’s linear. |
| 3[[2]](#footnote-2) | 3 | **1 point:** Function 2 AND describes reasoning. Example: Function 2 because when I put use *x* = 0 for both functions, Function 1 has a *y*-value of –2 and function 2 has a *y*-value of 3. |
| 4[[3]](#footnote-3) | 1 | **1 point:** Identifies the data does not suggest a linear relationship AND provides an explanation. Example: No, the data isn’t linear because from time 1 second to 2 seconds the distance traveled is 48 feet. But from 2 seconds to 3 seconds the distance traveled is 80 feet. Linear data would have the same distance traveled form both times. |
| 5[[4]](#footnote-4) | 2 | **2 points:** Margot AND provides an explanation comparing Alan’s trip to Margot’s trip. Example: Margot get there faster because it take her a little less than 2.3 hours, or 2 hours and 18 minutes. Alan takes 2 hours and 35 minutes.  **1 point:** Margot AND provides a partial explanation that includes only information for Margot or Alan |
| 61 | 1 | **1 point:** *y* = 2*x* + 2, or equivalent |

1. Adapted from Smarterbalanced.org. Grade 8, Claim 1, Target E Item Specifications. Internet. Available from <http://www.smarterbalanced.org/smarter-balanced-assessments/>; accessed 11/2015. [↑](#footnote-ref-1)
2. Adapted from the Mathematics K–12 Learning Standards. Internet. Available from <http://www.k12.wa.us/Mathematics/Standards.aspx>; accessed 11/2015. [↑](#footnote-ref-2)
3. From EngageNY.org of the New York State Education Department. Grade 8 Mathematics Module 5, Topic A, Lesson 1. Internet. Available from <https://www.engageny.org/resource/grade-8-mathematics-module-5-topic-lesson-1>; accessed 11/2015. [↑](#footnote-ref-3)
4. From EngageNY.org of the New York State Education Department. Grade 8 Mathematics Module 5, Topic A, Lesson 7. Internet. Available from <https://www.engageny.org/resource/grade-8-mathematics-module-5-topic-lesson-7>; accessed 11/2015. [↑](#footnote-ref-4)