Identify Functions Name:

In this activity you will investigate relationships between points, decide how to distinguish functions from non-functions, and identify which relationships are functions.

VARY THE VARIABLES

Begin by varying independent variables and observing how several functions behave.

1. Open **Identify Functions.gsp.** Look at the Learning Goal and then go to page 1.
2. Try to drag each point on page 1. You can drag some points but not others. The points you can drag are *independent*. The ones that move only when you drag some other related object are *dependent*.

Some independent points may control more than one dependent point, and some may not control a dependent point at all.

Q1 By dragging, determine which points are related. Then list the independent and dependent points, and describe the relationship.

Independent Point	Dependent Point(s)	Relationship
→		
→		
→		
→		
→		

Q2 On page 2, drag the independent variables. How is the behavior of the function ($x \rightarrow x'$) different from that of the non-function ($y \rightarrow y'$)?

Q3 On page 3, drag the independent variables. How is the behavior of the function ($b \rightarrow b'$) different from that of the non-function ($a \rightarrow a'$)?

On pages 10 and 11, you see only the variables. The arrows on earlier pages may help you see connections, but the important thing is the behavior of the variables.

Q4 On pages 4 through 11, list the function and the non-function. For each page, write an observation or question you have about the relationships.

Page	Function	Non-function	Observations and Questions
4			
5			
6			
7			
8			
9			
10			
11			

Q5 Based on the examples and non-examples of functions on pages 2 through 11, describe in your own words what a function is. In your description, use the terms "independent variable" and "dependent variable" rather than "independent point" and "dependent point." (Also use complete sentences.)

EXPLORE MORE

You can use pages 12 and 13 to make your own examples and non-examples of functions.

3. On page 12, follow the directions to reflect both independent variables, and to translate one of the independent variables. Then adjust the translation to match the reflection, so that they both sides look like functions until the independent variables are dragged.
4. On page 13, use other transformations to make a similar puzzle. For tips on using transformations, choose **Help | Using Sketchpad | Sketchpad Tips | Transform** and then click the  icon for **Translate, Rotate, Dilate,** or **Reflect.** (Don't click the  icon unless you have headphones.)