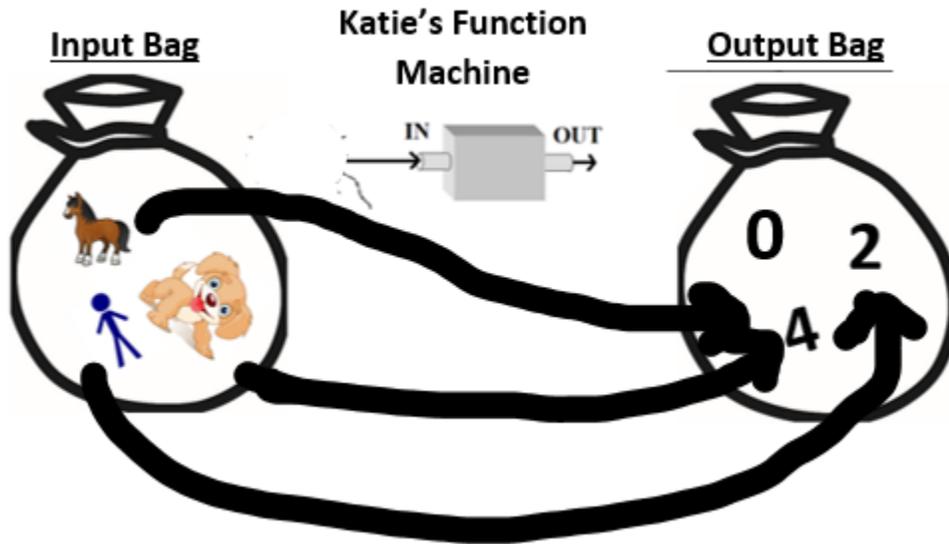


Function Machine

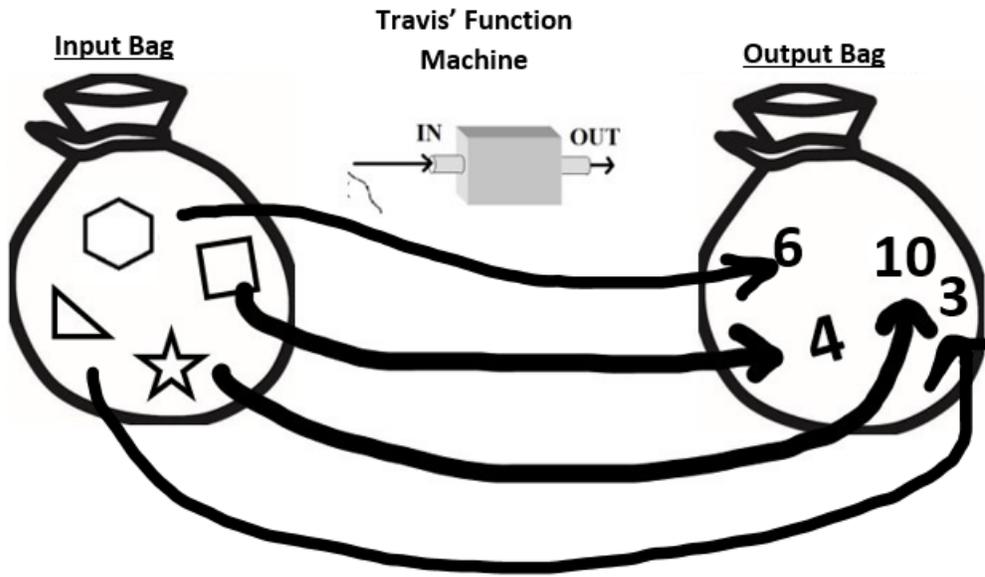
Part II

November 12th, 2017

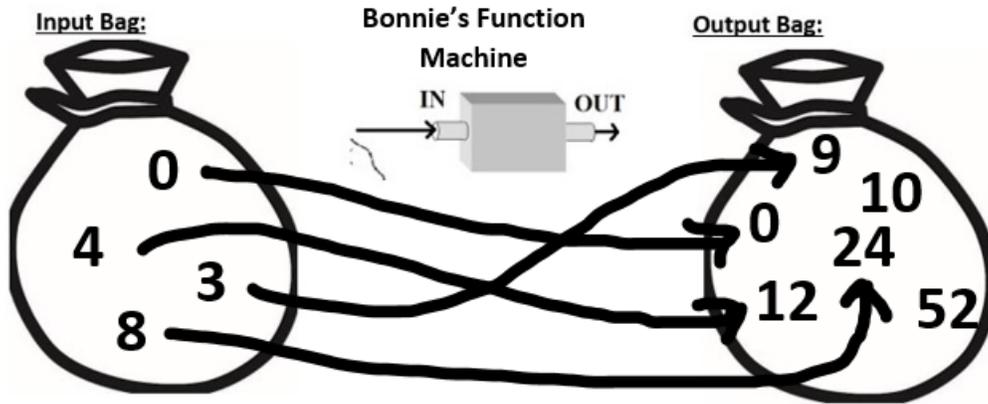
A function is called one-to-one if every one of its inputs goes to a different output. Let's determine which of our functions from last week are one-to-one.



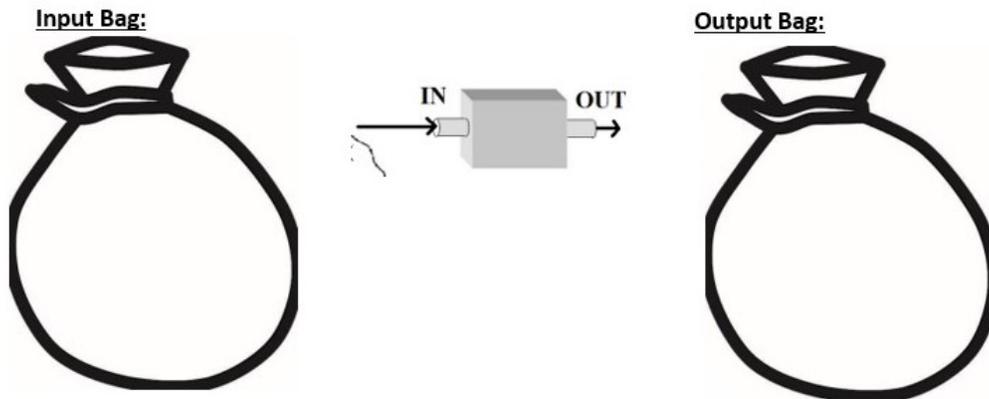
1. Is Katie's function machine one-to-one? If not, give an example of two inputs that go to the same output.



2. Is Travis' function machine one-to-one? If not, give an example of two inputs that go to the same output.

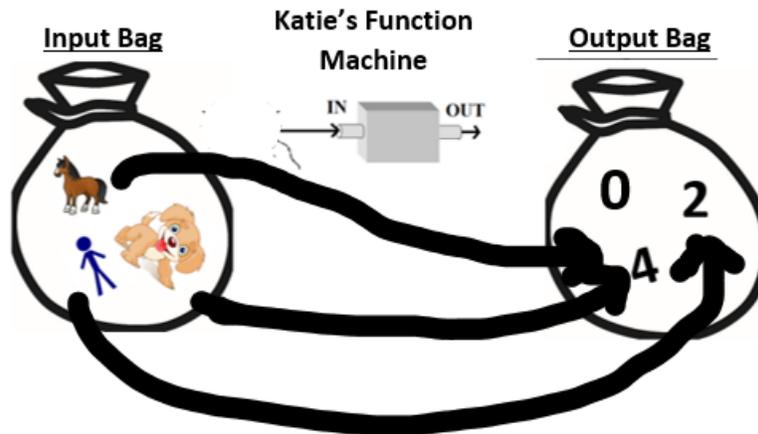


3. Is Bonnie's function machine one-to-one? If not, give an example of two inputs that go to the same output.

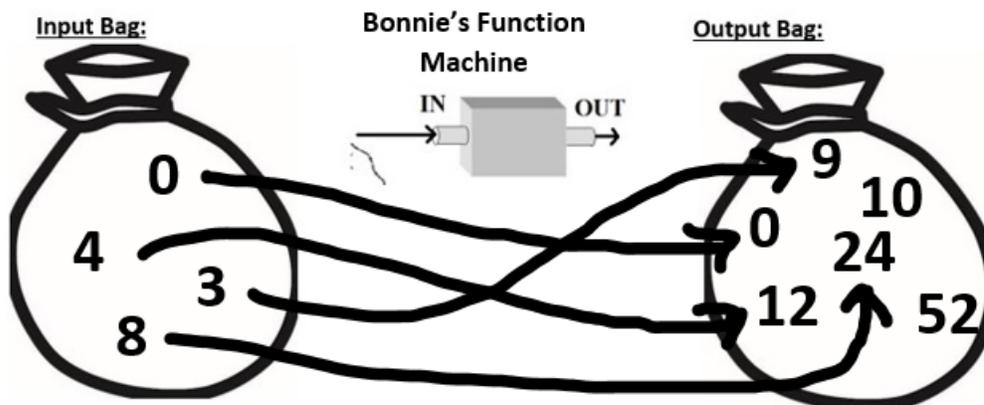


4. Is the function machine you made for homework one-to-one? If not, give an example of two inputs from your function machine that go to the same output. (You can use the above picture to fill in what your function machine looks like)

Function machines work one after the other. This can happen when one function's outputs can be another function's inputs. Let's see when this can happen.



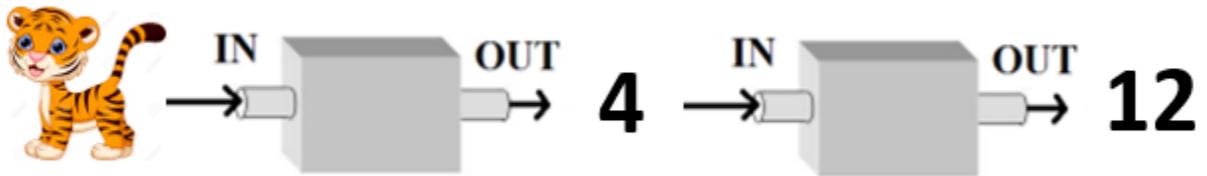
5. What types of things are the outputs for Katie's machine?



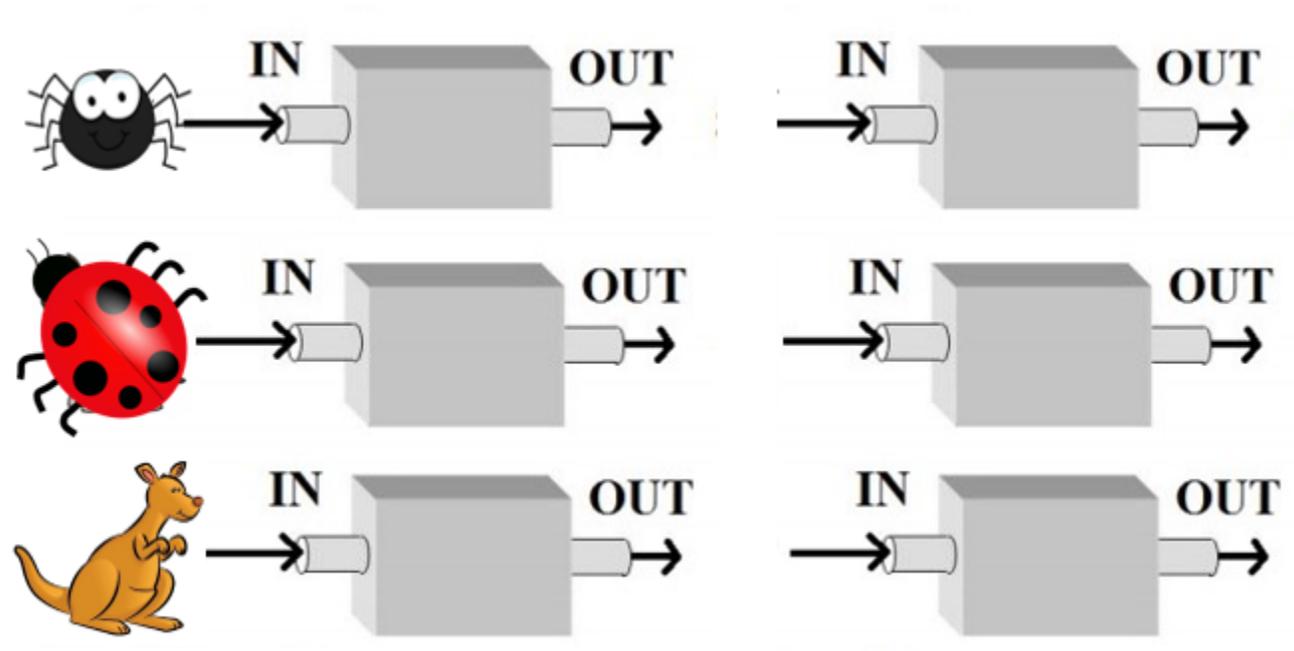
6. What types of things are the inputs for Bonnie's machine?

7. Can the outputs of Katie's machine go in Bonnie's machine?

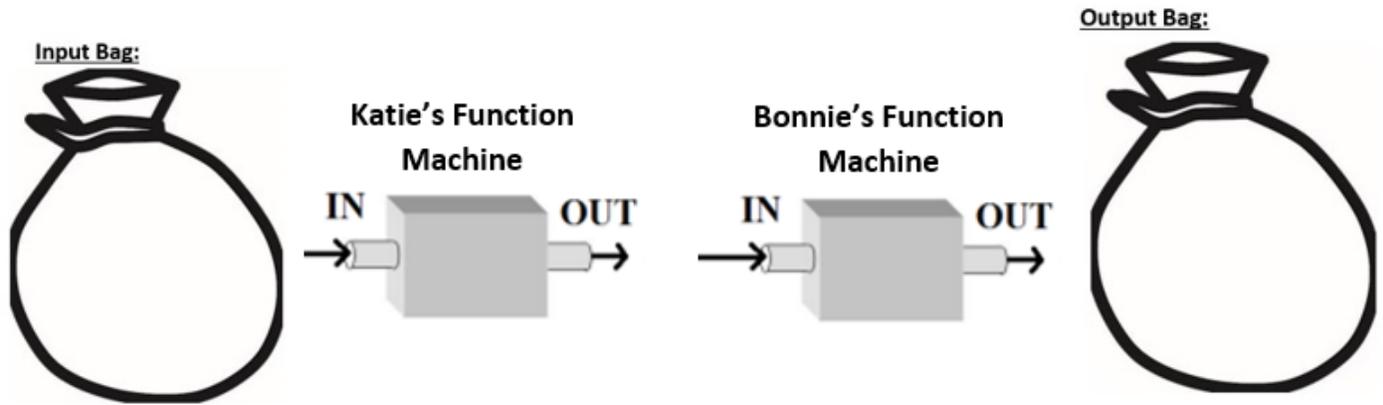
Since the outputs of Katie's machine can go into Bonnie's machine, Bonnie's machine can work after Katie's machine! Here is what that will look like:



8. What will be the outputs for the following inputs when Bonnie's machine works after Bonnie's?



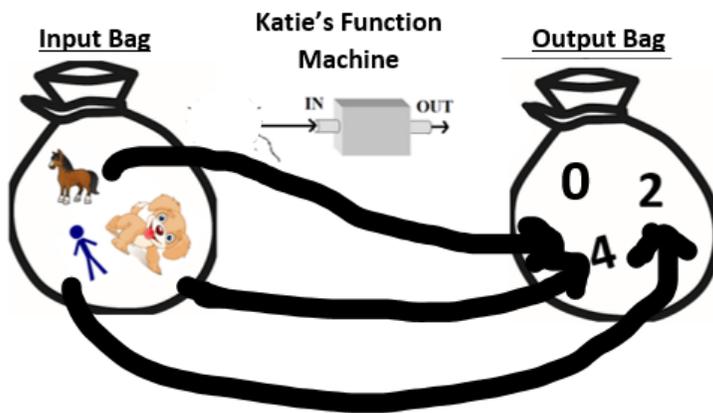
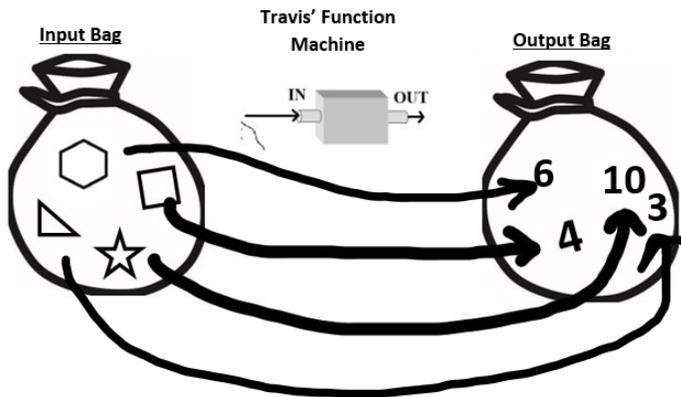
9. Fill in some examples of what we will find in our Input and Output bags:



10. What types of things will we find in our Input bag?

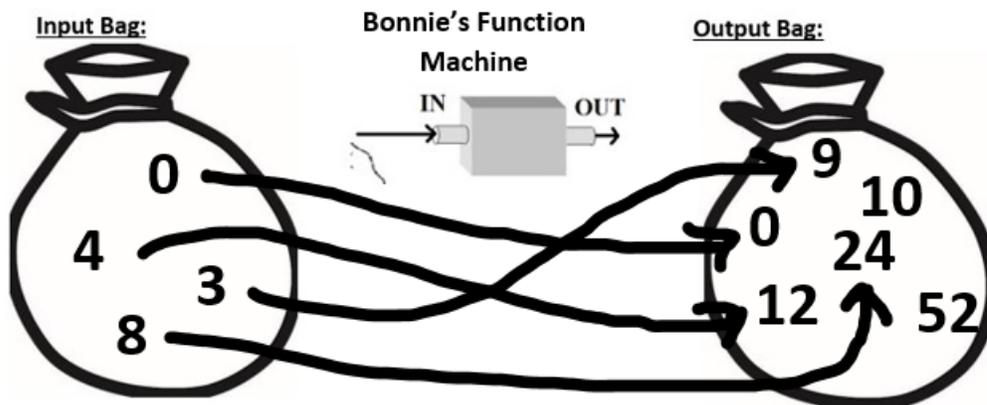
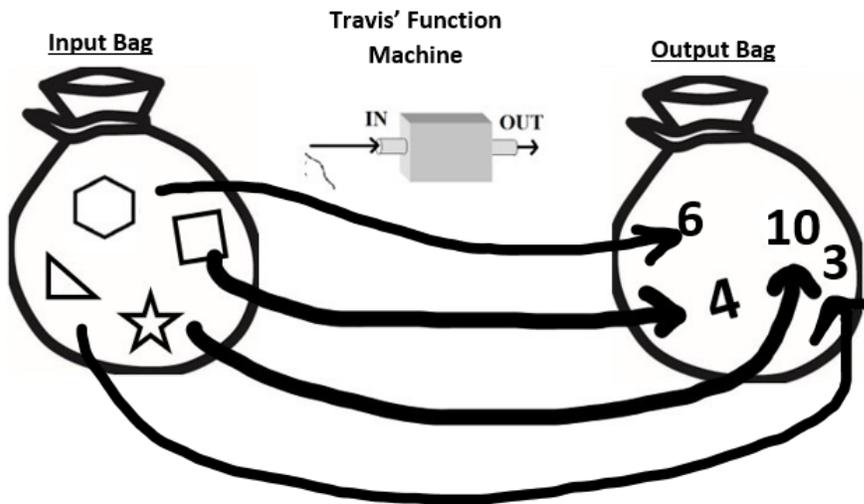
11. What types of things will we find in our Output bag?

If one machine's outputs can't be found in another machine's Input bag, then the machines will not work one after the other.



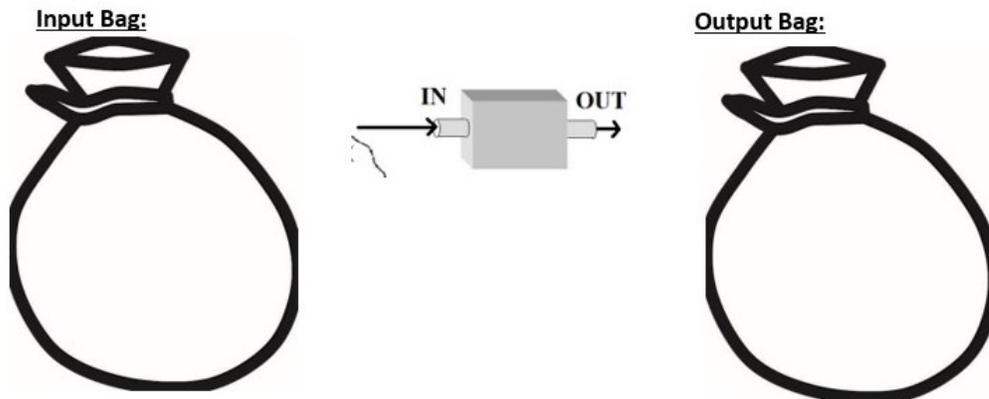
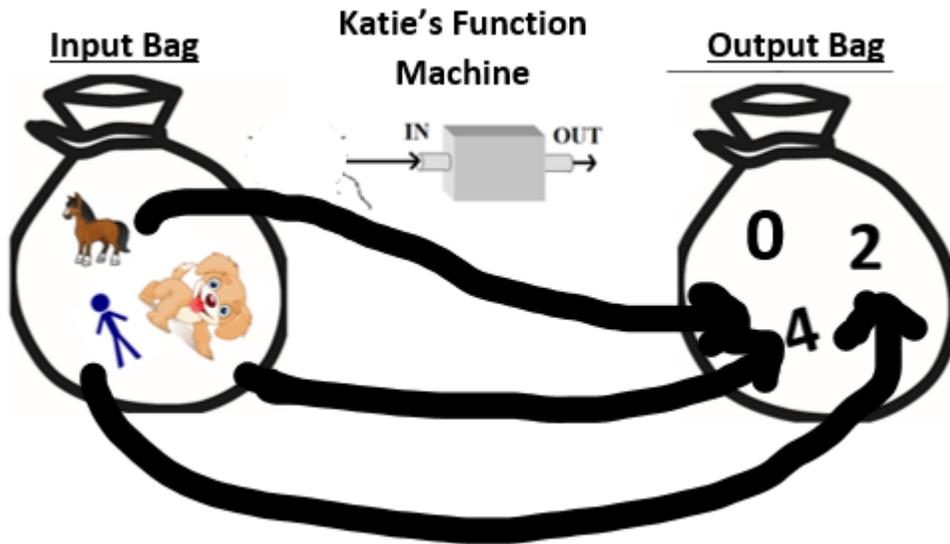
12. Above are Travis' function machine and Katie's function machine. Can Katie's machine work after Travis'? Why or why not?

13. Can Travis' machine work after Katie's machine? Why or why not?



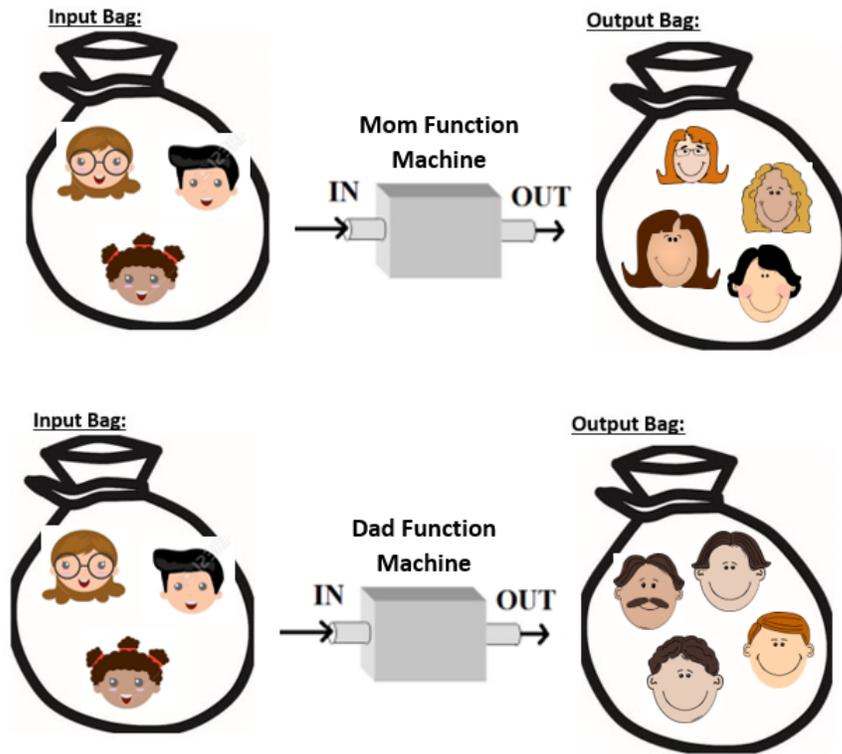
14. Above are Bonnie's function machine and Travis' function machine. Can Bonnie's machine work after Travis'? Why or why not?

15. Can Travis' machine work after Bonnie's machine? Why or why not?



16. Fill in the details for your function machine. Then look at Katie's function machine. Can Katie's machine work after your machine? Why or why not?

Challenge Functions:



Above are two new function machines. The first one sends any person from its Input bag to that person's mom. The second one sends any person from its Input bag to that person's dad.

1. Is the "mom" function machine a one-to-one function? If not, give an example of when two inputs would go to the same output.

2. Is the “dad” function machine to one-to-one function? If not, give an example of when two inputs would go to the same output.

3. Can the “mom” function machine work after the “dad” function machine? Why or why not?

4. Can the “dad” function machine work after the “mom” function machine? Why or why not?

5. Tim is a young boy, can we get to Tim's grandmother by using the function machines? Explain. (Hint: you can use a function machine more than once)

b. Can we get to Tim's cousin by using the function machines? Explain.

c. Can we get to Tim's uncle by using the function machines? Explain.

d. Can we get to Tim's great-great-grandfather by using the function machines? Explain.

