Bucking Trends

The design of each U.S. bill is hard to copy, and the paper and ink that are used to print the money are specially designed and prepared. Besides being difficult to counterfeit, a bill's design has to accurately represent its nation's identity. Design a bill of your own, and then test it against other materials to see any differences.

Materials for each group:
- sheet of white paper
- microscope or hand lens
- neodymium magnet
- black light
- scissors
- wood pulp paper
- lightweight cotton cloth
- $1 bill

Part I
Do this part individually.
Choose a country to represent, and on a separate sheet of paper create your own version of a new, counterfeit-deterrent bill for that country. Make your bill the same size as an actual U.S. dollar bill. Use whatever security features you think are important to prevent counterfeiting, and add whatever portraits or symbols you think would best represent your chosen nation.

Part II
Do this part in groups.
Now that you have created your bill, cut it out and test it against same-sized cutouts of wood pulp paper, lightweight cotton cloth, and an actual U.S. dollar bill. Once you have done the tests, create ones of your own to determine how different materials withstand the wear and tear a bill goes through during its lifetime.

Questions
Answer on a separate sheet of paper.
1 What other "invisible" security measures could be added?

2 What similarities exist between the materials you tested? What differences?

3 Which sample is your actual U.S. bill most like? Why?

4 Why does the material used for the U.S. bill seem like a good choice? Why might the Treasury Department not have chosen the other materials?

test	reason for test	observation			
		your designed cutout bill	cutout of wood pulp paper	cutout of lightweight cotton cloth	actual U.S. bill
look at each under a microscope or hand lens	to check for features within the material				
place a neodymium magnet near each	to check for magnetic ink				
place each under a black light	to detect which materials will fluoresce				
your test:					
your test:					