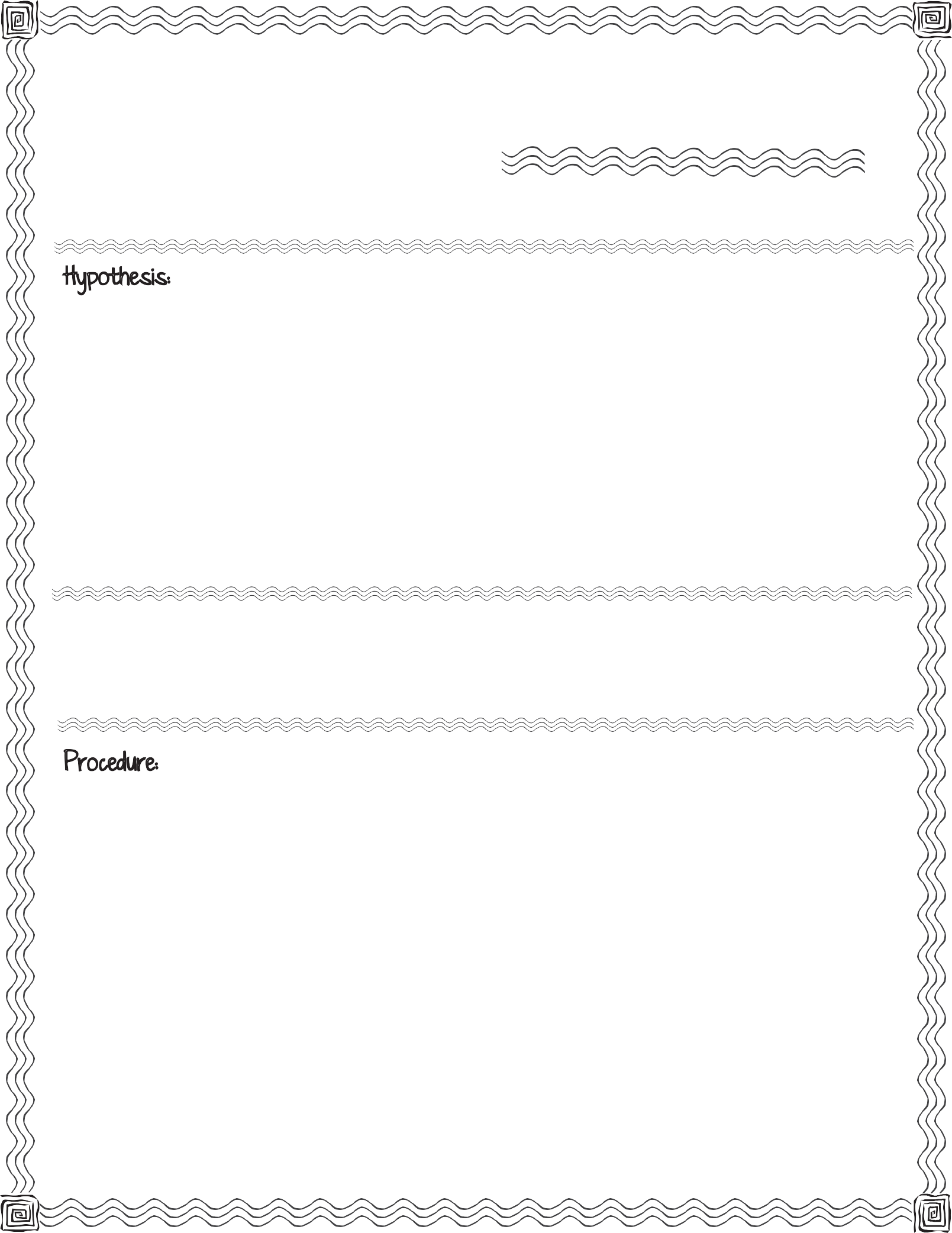
Muscle Sand

*Name:*

###### A Forces Investigation



*First, read the procedure below. Then write your hypothesis for what you think will happen when you try to poke a wooden rod through tissue paper covering a hollow paper towel roll. Write a second hypothesis for what you think will happen when you try to poke a wooden rod through tissue paper covering a paper towel roll filled with sand.*

*paper towel cardboard tube, sand, tissue paper, rubber band, wooden dowel (12 inches long)*

*Cut two 8 inch by 8 inch squares out of the tissue paper.*

*Cover the end of the cardboard tube with one of the squares of tissue paper. Tightly secure the tissue paper with the rubber band.*

*While one person holds the tube, have a second person put the stick through the tube and poke a hole in the tissue paper.*

*Replace the tissue paper with the second square of tissue paper. Secure with rubber band.*

*Fill the cardboard tube with sand.*

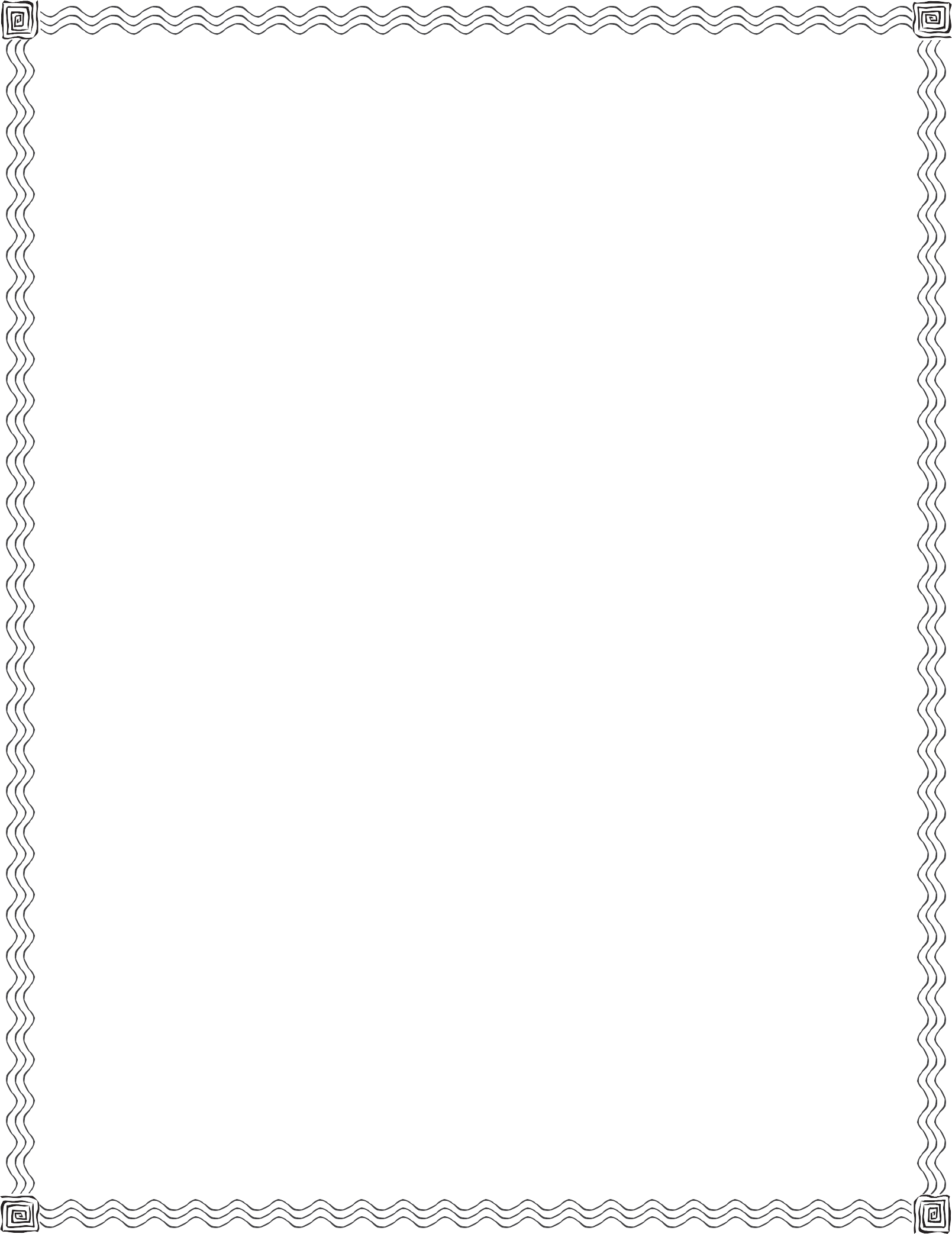
*While one person holds the tube, have a second person push the stick into the sand and poke a hole in the tissue paper. Record results.*

*Record what you observe when you poke the tissue paper covering the empty cardboard tube.*

*Record what you observe when you poke the tissue paper covering the cardboard tube filled with sand.*

*Compare your hypothesis to the real outcome:*

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