

# ^T. I Archimedes' *III* Principle

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NAME

## Observations and Data

Table 1

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Weight of 500-g mass in air

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Weight of 500-g mass immersed in water

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Volume of water in beaker

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Volume of water in beaker with 500-g mass immersed

Table 2

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Volume of water in beaker

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Volume of water with 100-g mass immersed

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Volume of water with 100-g mass in polystyrene cup

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## Analysis

1. Calculate the buoyant force of water acting on the 500-g mass.
2. Using the values from Table 1, calculate the volume of water displaced by the 500-g mass. Calculate the weight of the water displaced. Compare the weight of the volume of water displaced with the buoyant force acting on the immersed object that you calculated in Question 1. If the values are different, describe sources of error to account for this difference.
3. What happened to the water level in the beaker when the 100-g mass was placed in the polystyrene cup (boat)? Propose an explanation, which includes density, for any difference in volume you found in Steps 5 and 6.

## Application

Tim and Sally are floating on an inflatable raft in a swimming pool. What happens to the water level in the pool if both fall off the raft and into the water?