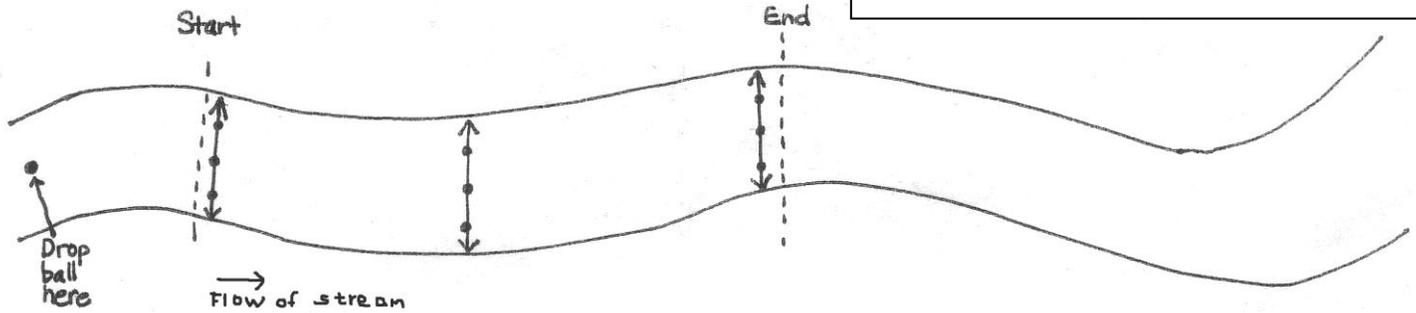


# CALCULATING AND MEASURING STREAM FLOW

Ver 0605

<b>Date:</b> <b>Location:</b> <b>Recorder's name:</b>
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## Measuring

1. Find a fairly straight stretch of river where the water flows fast and the bottom is relatively flat. Measure a 3-meter section, marking where it begins and ends. Record this as the distance in column A.
2. Drop a ping pong ball in the center of the river at least one meter upstream of the starting point. When the ball reaches the start point, begin timing in seconds. When the ball reaches the end point, stop the timer. Record the amount of seconds in column B. Repeat this step two more times. (If the ball gets lodged in a rock or stuck in an eddy, begin the trial over.)
3. Measure the width of the river at the start point, at the end point, and at a point midway between the start and end. Record these measurements in column D. (See lines with arrows, above.)
4. Measure the depth of the river 3 times along each width line for a total of nine depth measurements. Record these measurements in column F. (See dots on lines with arrows, above.)

A	B	C	D	E	F			G
Distance (meters or feet)	Time (sec.)	Average Time (sec.)	Width of River at 3 points	Average Width of River	Depth of River at 9 points			Average Depth of River

## Calculating

5. Calculate the averages for columns B, D and F and record the averages in columns C, E and G.
6. Now, divide the distance (column A) by the average time (column C) to obtain the velocity. Record this number in the equation below.
7. Multiply the average width (column E) by the average depth (column G) to obtain the area. Record this number in the equation below.
8. Multiply the velocity by the area to obtain the streamflow and record that in the equation below.

$$\frac{\text{distance}}{\text{average time}} \times \text{average width} \times \text{average depth} = \text{streamflow}$$

9. To calculate the final adjusted streamflow, you must multiply your result by a factor which takes into consideration the uneven surface bottom of your river or stream. For streams with rocky bottoms use a factor of 0.8, but for smooth bottomed streams, use a factor of 0.9.

$$\text{streamflow from} \times \text{factor of 0.9 or 0.8} = \text{Final Adjusted Streamflow}$$

