MCCALL OUTDOOR SCIENCE SCHOOL

## Measure the CFS of a creek!

CFS means cubic feet per second ( $\mathrm{ft} 3 / \mathrm{s}$ ). It is a common way to measure how much water is flowing in a stream at a given time. One cubic foot is about the size of a basketball. CFS can change seasonally depending on things like snowmelt, dam discharge, and rain.

To measure CFS for yourself, choose a small stream where you can safely stand in the water. If the water is deep or strong, it's better to pick somewhere else. Make sure you are measuring the whole channel-if there is an island, you won't get all the water! Complete the worksheet below to find the CFS.

Materials needed: worksheet and pencil, clipboard or rigid surface, ruler, tape measure or string, stick, stopwatch

## Part A:

My interval (the distance between depth measurements) was $\qquad$ inches. If the stream is narrow, you can do every 3 or 6 inches. If it is very wide, you could do every 8 or 12 inches.

| Interval <br> (inches) |  |  |  |  |  |  |  |  |  |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| Depth <br> (inches) |  |  |  |  |  |  |  |  |  |



Part B:
Multiply the depth by the interval to find the area of each section from Part A.

| Area <br> (in2) |  |  |  |  |  |  |  |  |  |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |

Add all the section areas together to get the area of the whole cross-section. Even though these rectangles are not quite the shape of the riverbed, this should average out to give you a close approximation.

The area of my river cross-section was $\qquad$ square inches.

How do we get from square inches to square feet? There are 12 inches per foot, so there are 144 square inches per square foot. Divide your cross-section above by 144 to get the area in square feet.

The area of my cross-section was $\qquad$ square feet.

## Part C:

But now we need one more dimension to get to cubic feet per second: how far the water travels in one second.

I timed my stick as it floated $\qquad$ feet. It took $\qquad$ seconds.

To figure out how many feet per second that is, divide the distance the stick traveled by the number of seconds it took.

My stick moved $\qquad$ feet per second.

## Part D:

Almost there! Now we just need to multiply your final answer from Part B (area in ft 2 ) by your final answer from Part C (speed in $\mathrm{f} / \mathrm{s}$ ).

## This stream is flowing at <br> $\qquad$ cubic

 feet per second (ft3/s or CFS).