

Lab 3: Accidental Lab Flood

Student Names (Please Print)

_____	_____	_____
_____	_____	_____

Scenario

Someone forgets to turn off a classroom tap, it's left fully open. Estimate how long it would take to fill the room to the ceiling.

Instructions

1. Plan what to measure. Decide which quantities you need (e.g. space dimensions, tap flow, anything else you judge relevant).
2. Collect data. Measure using appropriate tools and record units with every value.
3. Convert to consistent SI units.
4. Compute the fill time. Show a clear chain from:
measurements $\rightarrow$ volume $\rightarrow$ flow rate $\rightarrow$ time.
Report the result in hours and minutes.
5. Unit analysis. Demonstrate dimensional correctness at each step by carrying units through and canceling them.

Discussion

1. Compare the total water volume to familiar references (bathtubs, household water use, small pool, etc.).
2. Briefly estimate potential cost given a typical water rate (state your source or a reasonable assumption).
3. Identify the largest source of uncertainty in your estimate and how you'd reduce it.

Conversions Table

1 ft = 12 in
1000 L = 1m³
1 US gal = 3.785 L

Lab 3: Accidental Lab Flood

Assumptions

State and justify what is included/excluded (e.g., furniture volume, leakage, ceiling plenum, sink basin). Indicate whether each assumption makes the fill time larger or smaller.

Dimensioned Sketch of the Volume

Clear dimensions, Consistent units.

Lab 3: Accidental Lab Flood

Calculations

Lab 3: Accidental Lab Flood

Final Answer

State how many significant figures you kept and why. Compare volume to familiar a reference; Bath tubs, Swimming pools, etc.