

“WHAT GOES IN MUST COME OUT”

Teacher Name _____

Date: _____ MM/DD
M T W R F

Summary

In a physical process, conservation of mass is the statement that matter is neither created nor destroyed in the process. Because the Corsi-Rosenthal cube does not create or destroy air molecules, the air flow going into the box should be equal to the air flow coming out.

First, estimate the air flow coming out of the box by sampling the air speed at a bunch (>10) of points right over the surface of the fan, and calculate an average speed. Multiple average speed by the area of the fan's opening to estimate the air flow (in cubic feet per minute) coming.

Next, do the same thing for all four inlet sides to the filters, and compare the flow going in with the flow coming out.

Connection(s)

Previous Learning:

Calculating averages, measuring areas, unit conversions





Instructional Plan

(Note: WC...whole class; CL...cooperative learning structure; PR...cooperative learning pair; IND...individual work)

- Introduction of conservation of mass WC CL PR IND
- Estimate the air flow coming out of the fan WC CL PR IND
- Estimate the air flow going into all four filters WC CL PR IND
- Discuss any possible reasons for discrepancies WC CL PR IND
- Reflection questions WC CL PR IND
- _____ WC CL PR IND
- _____ WC CL PR IND

Reflection...

Instructional Resource(s)

-  Box fan filter _____
-  Anemometer _____
-  Ruler or tape measure _____
-  _____

What about any particles captured by the filters, shouldn't those contribute to the flow? [ans: yes, but they make up a tiny fraction of the total flow and would be immeasurable by this method]