**Videos 10I – Continuity Name**



Concept 0

Volume flow rate = Av

Example - What is the volume flow rate of air moving at 1.30 m/s down a hallway that measures 3.20 m by 4.10 m? What time will it take to change the air in a room that measures 10.2 m x 14.0 m x 5.20 m?

Concept 1

A1v1 = A2v2

A = Area (m2)

v = Velocity (m/s)

A 12.0 cm inner diameter pipe with water flowing at 1.18 m/s narrows to 5.00 cm inner diameter. What is the velocity in the narrow part? What is the volume flow rate in m3/s?

Whiteboards:

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| 1. Water is going at 1.45 m/s down a fire hose with a 6.20 cm inner diameter. If the water leaves the hose at a speed of 17.3 m/s, what is the inner diameter of the nozzle? (1.79 cm)  | 2. All the air going down a 3.0x4.0 m hallway goes through a doorway that measures 74 cm by 203 cm. If the air in the doorway is going 1.8 m/s, what is the speed of the air in the hallway? (0.23 m/s) |
| 3. A hydraulicking monitor or giant discharges water at 44.0 m/s from a 3.0 cm diameter nozzle. What is the flow rate in m3/s, and what is the velocity in the 12 cm diameter supply pipe?What recoil force does it exert? (0.031 m3/s, 2.75 m/s, 1400 N, don't worry about the force so much) |