

Name _____

The Fluids Physics “Real World” Review Challenge!

Event One: Calculate the volume of a bowling ball

- ⊙ I can include the buoyant force on a free body diagram and include it in net force calculations using $F_B = \rho g V$.



Event Two: Calculate the gauge pressure of a school water fountain

- ⊙ I can apply the equation of continuity to calculate or relate velocities and areas.
- ⊙ I can apply conservation of energy to fluid flow and make calculations of velocity, pressure or height using Bernoulli's Law.

Event Three: Prove or disprove your phavorite phluids MC/Conceptual question!

- ⊙ I can include the buoyant force on a free body diagram and include it in net force calculations using $F_B = \rho g V$.
- ⊙ I can use the density of the object and the density of water to calculate the percentage of an object submerged, or the specific gravity using $\% \text{ submerged} = SG = \frac{\rho_{\text{object}}}{\rho_{\text{water}}}$

Event Four: How many coins can you float on the Styrofoam block before it is fully submerged?

- ⊙ I can use the density of the object and the density of water to calculate the percentage of an object submerged, or the specific gravity using $\% \text{ submerged} = SG = \frac{\rho_{\text{object}}}{\rho_{\text{water}}}$

Event Five: What density of salt water will let you float an egg?

- ⊙ I can include the buoyant force on a free body diagram and include it in net force calculations using $F_B = \rho gV$.
- ⊙ I can calculate the density of an object using $\rho = \frac{m}{V}$.

Event Six: What is the velocity of the water leaving the nozzle on the science sinks?

- ⊙ I can apply the equation of continuity to calculate or relate velocities and areas.
- ⊙ I can calculate the volume flow rate using Volume/t

Event Seven: How many paperclips would cause the helium balloon to hover in equilibrium? ($\rho_{\text{He}} = .18 \text{ kg/m}^3$, $\rho_{\text{air}} = 1.2 \text{ kg/m}^3$)

- ⊙ I can include the buoyant force on a free body diagram and include it in net force calculations using $F_B = \rho g V$.

Event One: Calculate the volume of a bowling ball

Materials: Spring Scale, bucket of water, bowling ball

© I can include the buoyant force on a free body diagram and include it in net force calculations using $F_B = \rho gV$.

Event Two: Calculate the gauge pressure of a school water fountain

Materials: meter stick, ruler, water fountain

- ⊙ I can apply the equation of continuity to calculate or relate velocities and areas.
- ⊙ I can apply conservation of energy to fluid flow and make calculations of velocity, pressure or height using Bernoulli's Law.

Event Three: Prove or disprove your favorite fluids MC/Conceptual question!

Materials: Beakers, water, graduated cylinders, various objects, foil, masses, various containers, ruler, and ice.

- ⊙ I can include the buoyant force on a free body diagram and include it in net force calculations using $F_B = \rho g V$.
- ⊙ I can use the density of the object and the density of water to calculate the percentage of an object submerged, or the specific gravity using $\% \text{ submerged} = SG = \frac{\rho_{\text{object}}}{\rho_{\text{water}}}$

Event Four: How many coins can you float on the Styrofoam block before it is fully submerged?

Materials: Water, Styrofoam, ruler, scale, various coins/or masses

- © I can use the density of the object and the density of water to calculate the percentage of an object submerged, or the specific gravity using $\% \text{ submerged} = SG = \frac{\rho_{\text{object}}}{\rho_{\text{water}}}$
- © I can include the buoyant force on a free body diagram and include it in net force calculations using $F_B = \rho g V$.
- © I can calculate the density of an object using $\rho = \frac{m}{V}$.

Event Five: What density of salt water will let you float an egg?

Materials: Salt water, stirrer, scale, egg, graduated cylinder.

- ⊙ I can include the buoyant force on a free body diagram and include it in net force calculations using $F_B = \rho gV$.
- ⊙ I can calculate the density of an object using $\rho = \frac{m}{V}$.

Event Six: What is the velocity of the water leaving the nozzle on the science sinks?

Materials: ruler, stop watch, beaker, sink, water, nozzle

- ⊙ I can apply the equation of continuity to calculate or relate velocities and areas.
- ⊙ I can calculate the volume flow rate using Volume/t

Event Seven: How many paperclips would cause the helium balloon to hover in equilibrium?

Materials: He balloon, paperclips, scale, ruler, meter stick.

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