

Fluids HW - Density, SG, Pressure and Buoyancy

⚠ This is a preview of the draft version of the quiz

Started: Nov 4 at 9:26am

Quiz Instructions

Question 1

1 pts

A clump of modeling dough has a specific gravity $SG_{\text{dough}}=1.21$. What is its density? kg/m^3

Question 2

1 pts

The dough will ____ in water. The dough will ____ in corn syrup (ρ of corn syrup= 1400 kg/m^3).

- sink, float
- float, float
- sink, sink
- float, sink

Question 3**1 pts**

A cube of wood has a length of 6.50 cm and a mass of 144 g.

What is the density of the wood? kg/m³

Question 4**1 pts**

Select all of the following that apply to the block of wood. A cube of wood has a length of 6.50 cm and a mass of 144 g.

- The block is less dense than water.
- The block is more dense than water.
- The block will sink.
- The block will float.
- The block has a specific gravity greater than that of water.
- The block has a specific gravity less than that of water.

Question 5**1 pts**

Because the hydrostatic pressure of a fluid at two different places at the same height is constant, fluid systems can act as simple force multipliers. This fact is used in hydraulic (containing fluid) systems, where pistons are used to turn small forces into large forces that can move heavy objects. For example, how large in diameter D_w does a piston need to be for a woman with a weight $W_w=750\text{N}$ to stand on it and lift a elephant with weight $W_e=7500\text{N}$ standing on a piston with diameter $D_e=5.0\text{m}$?

meters

Question 6**1 pts**

A piece of metal is completely submerged at the bottom of a pail of water. Which of the following forces is NOT present?

- acceleration due to gravity
- weight (force gravity)
- normal force
- buoyant force

Question 7**1 pts**

An upward force on an object that is applied by a fluid onto an object with which it is in contact is known as

- buoyant
- normal force
- magnetic
- tension

Question 8**1 pts**

A chunk of lead is floating in a pool of mercury. What percent of the lead chunk's volume is above the mercury?

SG lead=11.34

SG mercury=13.59

Question 9**1 pts**

The year is 2840. Marissa the astronaut recently got a new job as a planetary explorer. She's been tasked to travel around the universe and determine how strong the force of gravity is on uncharted planets' surfaces. Marissa develops a simple device to do this. In her spaceship, she connects a pressure gauge on the very bottom of a graduated cylinder and fills it with 2m deep of water. She then reads off the absolute pressure on her gauge and determines that planet's 'g', its acceleration due to gravity. Her spaceship is pressurized to 101,325Pa.

Determine the acceleration due to gravity in m/s^2 on this foreign planet.

Measured Pressure = 105,125 Pa

Question 10

1 pts

A chunk of sodium is placed in a pool of water. The density of sodium is 971 kg/m^3 . Before it begins to react, what percentage of the sodium chunk is above water?

Not saved

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