

Fluids Review Homework 2

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

Started: Nov 4 at 9:28am

Quiz Instructions

Question 1

1 pts

What is the mass in kg of a spherical, solid iron wrecking ball of radius $r=22.0$ cm?

- 386
- 188
- 350
- 544

Question 2

1 pts

You are originally 2.0 m below the surface of a pool.

If you swim to 4.0 m below the surface, what will happen to the absolute pressure on you?

- The absolute pressure quadruples.
- The absolute pressure exactly doubles.
- The absolute pressure less than doubles.
- The absolute pressure more than doubles.

Question 3**1 pts**

What amount of pressure in Pa does a 75.0 kg man exert on the ground if the bottom of each of his shoes covers an area of 250 cm²?

- 14700
- 16800
- 12000
- 13500

Question 4**1 pts**

If the man lifts one of his feet, what happens to the pressure he is exerting on the ground?

A 75.0 kg man's shoe covers an area of 250 cm²

- The pressure will double.
- The pressure will be divide in half.
- The pressure will decrease, but not by half.
- The pressure will not change.

Question 5**1 pts**

A hydraulic car lift has a pump piston with radius $R_1 = 0.015$ m and a resultant piston with radius $R_2 = 0.12$ m. The combined weight of the car and the plunger is $W = 2500$ N. Assume that the height of the piston and plunger are the same.

How much force in N is required on the pump piston to keep the car in equilibrium?

- 37
- 35
- 39
- 41

Question 6**1 pts**

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

- 610
- .610
- 1210
- 1.120

Question 7**1 pts**

A clump of modeling dough has a specific gravity $SG_{\text{dough}}=1.21$.

The dough will ____ in water. The dough will ____ in corn syrup ($\rho_{\text{cs}}=1400\text{kg/m}^3$).

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

Question 8**1 pts**

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

What is the density of the wood in kg/m^3 ?

- 324
- 524
- 724
- 1124

Question 9**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?

- weight
- normal force
- magnetism
- buoyant force

Question 10**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

- the buoyant force.

- the turbulent force.
- the fluid force.
- the tension force.

Question 11**1 pts**

A fishing weight is sinking toward the bottom of a lake.

As the fishing weight sinks deeper and deeper, the buoyant force on it _____.

- decreases
- increases
- remains constant

Question 12**1 pts**

How many people with mass M person = 70 kg can a raft made of N logs = 10 pine wood logs with diameter $D = 25$ cm and length $L = 4$ m support on salt water without sinking?

- 12
- 15

- 13
- 16
- 14

Question 13**1 pts**

Suppose we strapped two steel pontoons onto the raft.

Each pontoon weighs 200 kg and contains 1.0 m^3 of empty vacuum.

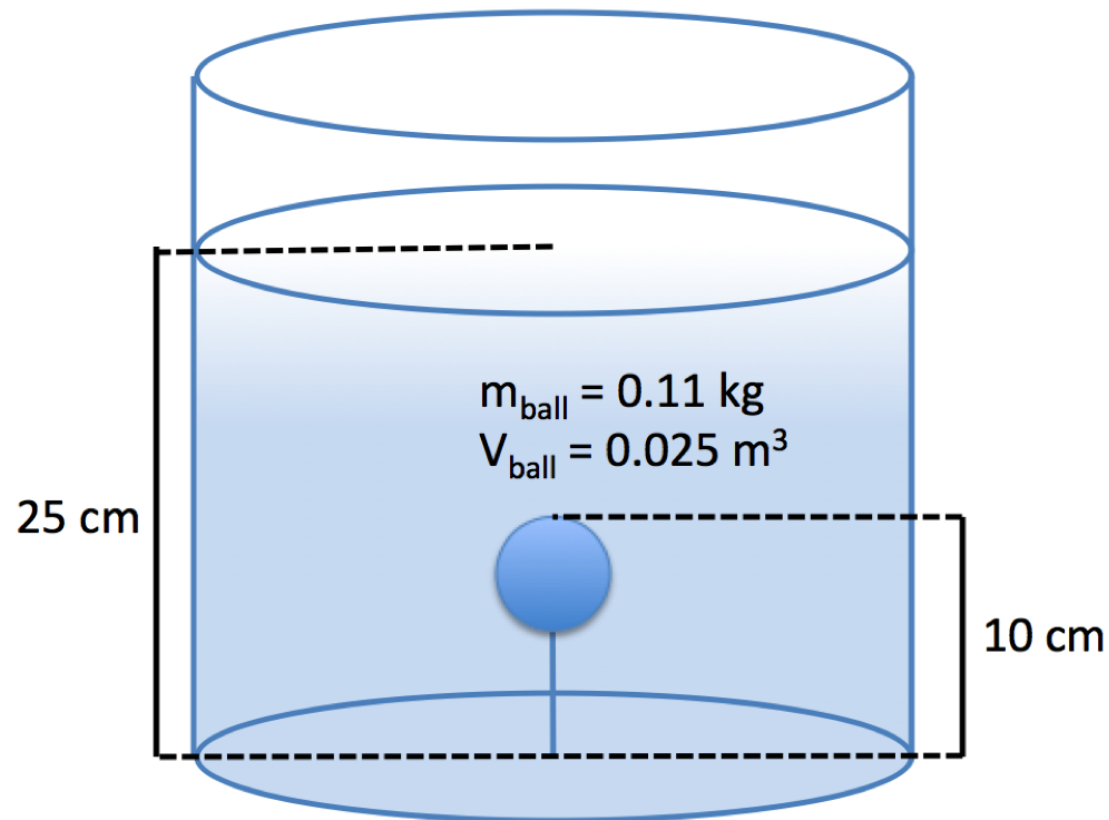
How many 70 kg people can float on our new raft without sinking?

- 37
- 40
- 39
- 38

Question 14**1 pts**

A ball with a mass $m=0.11\text{kg}$ and a volume $V=0.025\text{m}^3$ is tethered to the bottom of a container filled with water to a depth $D=25\text{cm}$. It is suspended so that the top of the ball is a distance $L=10\text{cm}$ from the bottom of the container.

What is the tension T in Newtons in the string?



24

344

244

268

Question 15**1 pts**

Which of the following is NOT a requirement for the continuity equation to be true?

- The flow must be laminar.
- The fluid must move at a constant speed.
- The fluid must be incompressible.
- The fluid must have a low viscosity.

Question 16**1 pts**

At point 1, fluid is moving through a tube with a cross-sectional area A_1 .

At point 2, the tube has a cross-sectional area A_2 that is half of A_1 .

How does the fluid velocity V_1 compare to the fluid velocity V_2 ?

- At point 1, The fluid moves four times as fast as it moves at point 2.
- At point 2, The fluid moves four times as fast as it moves at point 1.
- The fluids move at the same velocity at both points.
- At point 1, the fluid moves twice as fast as it moves at point 2.
- At point 2, the fluid moves twice as fast as it moves at point 1.

Question 17**1 pts**

Pipe 1 with cross-sectional area $A_1=1 \text{ m}^2$ has fluid flowing through it at $V_1 = 100 \text{ m/s}$.

Pipe 2 with cross-sectional area $A_2=4 \text{ m}^2$ is attached on the end.

Determine the flow velocity V_2 in m/s through pipe 2.

- 25
- 50
- 75
- 100

Question 18**1 pts**

Which of the following are true when looking at two distinct points A and B in a pipe with respect to each other?

- When the pipe's area is halved, the velocity of the fluid doubles.
- If the flow rate at A doubles, the flow rate at B must double as well. correct
- When the pipe's diameter is quartered, the velocity of the fluid is quadrupled.

Question 19**1 pts**

Propyl alcohol flows through a pipe from point A to point B. The pressure at point A is atmospheric. The pressure at point B is 0.25 atm. Point B is 2.0 m higher than point A. The velocity at point A is 10 m/s. The density of propyl alcohol is 803 kg/m^3 .

What is the velocity at point B in m/s?

 34.2 15.8 112.9 24.6**Question 20****1 pts**

Propyl alcohol flows through a pipe from point A to point B. The pressure at point A is atmospheric. The pressure at point B is 0.25 atm. Point B is 2.0 m higher than point A. The velocity at point A is 10 m/s. The density of propyl alcohol is 803 kg/m^3 .

What is the diameter of pipe in m at point B if the flow rate is $3 \text{ m}^3/\text{s}$?

 7.5 .34

1.1 .49**Question 21****1 pts**

Which of the following are false?

- Blowing air between two sheets of paper forces them together.
- Bernoulli's principle gives that the pressure increases as velocity increases.
- Bernoulli's Equation applies to compressible gasses.
- Bernoulli's equation can be used to analyze hydrostatic fluids.

Question 22**1 pts**

Which of the following objects make use of Bernoulli's principle?

- race car
- frisbee
- helicopter
- air plane

Not saved

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