FINAL TEST: fluid static

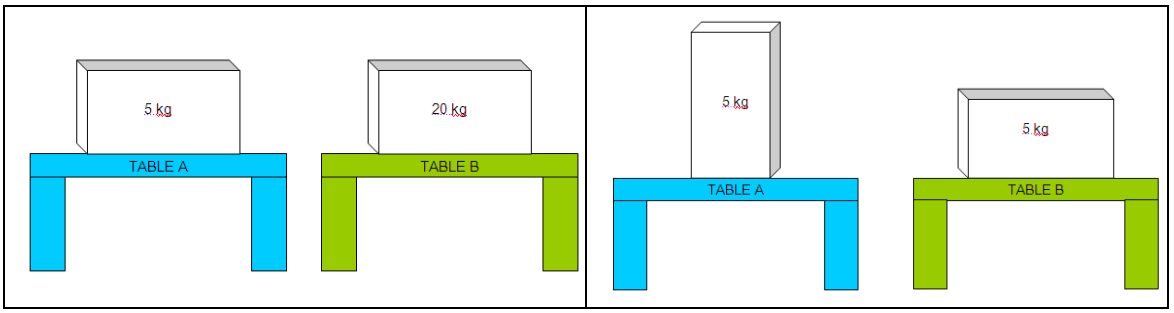
- Time to solve the test: **50 min.**
- No book or personal notes are allowed.
- A calculator is allowed, as long as it is not programmable and not on a phone.

Name:_____
Class:_____
Date: _____

1. What is pressure? Complete this sentence with three words.

_____ is the relationship between the _____ and the _____ where this force is applied.

2. Which table supports more pressure? Why?



_____

_____

_____

3. Explain the following sentences.

a) Stiletto heels are more likely to mark floors.

_____

_____

b) Eskimos wear snowshoes.

_____

_____

4. When a person floats in a swimming pool, he or she experiences an upthrust. What causes this effect?

_____

_____

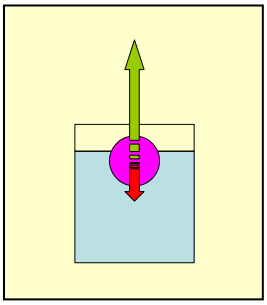
5. This is Archimedes' principle:

When a body is immersed in a fluid, it experiences an upward buoyant force equal to the weight of the displaced fluid.

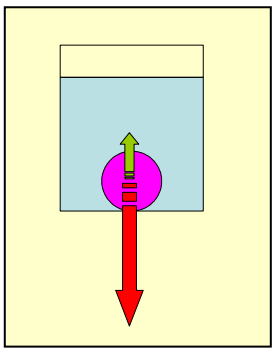
Make a drawing to illustrate this principle and explain the formula.

	FORMULA:

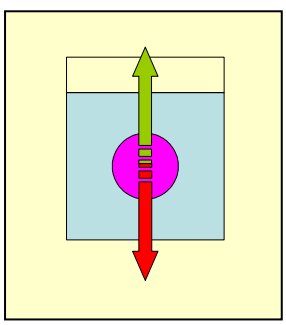
5. Complete the sentences:



The body floats because its weight is lower than _____.



The body _____ because _____ _____.



The body _____ but it _____ _____ because its weight is equal to the upward buoyant force.

6. Does it sink or does it float? Why? Write complete sentences.

A spoon sinks.

7. Say whether these sentences about atmospheric pressure are true or false. Correct the false sentences.

	TRUE or FALSE?
There is a balance between all the forces.	
Atmospheric pressure acts perpendicularly only in one direction.	
Atmospheric pressure is the balance of the gases at any point in the Earth.	
Atmospheric pressure at sea level is lower than at the mountain.	
Atmospheric pressure is the weight of the gases at any point in the Earth.	

8. Solve the following problems.

1) A box weighs 100N, and its base has an area of $2m^2$. What pressure does it exert on the ground?

2) If atmospheric pressure is 100 000 Pa , what force is exerted on a wall of area $10m^2$?

3) A hot air balloon has a volume of 200m^3 . It has a total weight of 2200 N and keeps to the ground by a vertical rope. Given the density of air is 1.2kgm^{-3} find the upthrust acting on the balloon.

4) A basketball float in a bathtub of water. The ball has a mass of 0.5kg and a diameter of 22cm. What is the:
(a) upthrust or buoyant force?
(b) volume of water displaced by the ball?

5) Heidi has a swimming pool that she fills with water and oil. The water is at the bottom of the pool and has a depth of 2 meters. The oil is 1 meter thick, and since its density is 920 kg/m^3 floats on top of the water. What is the pressure difference between the surface of the oil and the bottom of the pool?