EPS 100 Stapleton Name: Key

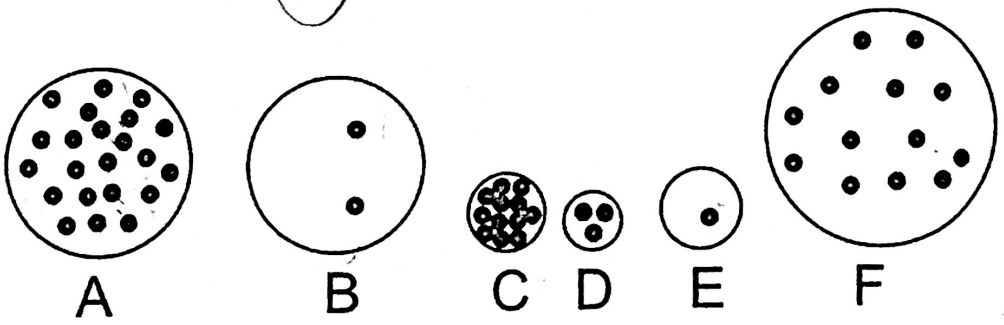
~~Lab~~: Physical Properties and Air Pressure

~~Practice~~ Practice Quiz

Part I (Mass, Volume, Density, Weight) :

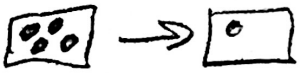
The objects below are mostly empty space. The circle is the edge of each object. The dots inside represent all of each object's mass. The empty space inside the objects has no air or mass of any kind. All of the objects are in similar locations on the same planet.

1. Which object has the most mass? A
2. Which object has the least mass? E
3. Which object has the most volume? F
4. Which object has the least volume? D
5. Which object is most dense? C
6. Which object is least dense? B
7. Which object has the most weight? A
8. Which object has the least weight? E



Part II (changes in mass, volume, density, and weight): For the following questions, tell whether each property increases, decreases, or stays the same. Choose the correct symbol, either +,-, or =.

9-12. An object's size doesn't change, but stuff is removed from it.



9. mass + - =
10. volume + - =
11. density + - =
12. weight + - =

13-16. The particles inside an object become more crowded, but the amount of stuff in the object doesn't change.

13. mass + - =
14. volume + - =
15. density + - =
16. weight + - =

Part III: How heating and cooling can affect pressure, volume, and density

A sealed jar has air inside. The jar cannot change its size, and no air can enter or leave. What will happen when the jar and the air inside are **cooled down**?

17. What will cooling do to the motion of the molecules in the jar?

Slow them down

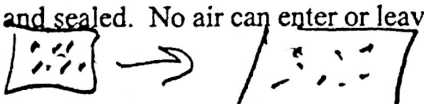
18. When the jar is cooled, what will happen to the pressure inside the jar?

Less pressure

19. What is creating the pressure that is inside the jar?

Molecules pushing against the jar (and one another)

A plastic Ziplock bag is filled with air and sealed. No air can enter or leave the bag. What will happen to the bag of air when it is **heated up**?



20. How does heating affect the overall mass of the bag and its air? (increase, decrease, or no change)

21. How does heating affect the overall volume of the bag and its air? (increase, decrease, or no change)

22. How does heating affect the pressure inside the bag? (increase, decrease, or no change)

23. How does heating affect the overall weight of the bag and its air? (increase, decrease, or no change)

24. How does heating affect the overall density of the bag and its air? (increase, decrease, or no change)

Part IV: How compression and expansion can affect temperature

Consider a 2-liter bottle full of air. You squeeze and release the bottle.

25. What happens to the temperature of the air in the bottle when you release?

Cools down

26. Explain why releasing changes the temperature in this way.

The air molecules push the walls away, giving their energy to the walls, so they lose energy and slow down.

27. What happens to the temperature of the air in the bottle when you squeeze it?

Heats up

28. Explain why.

You push the air molecules, making them go faster (you lose energy, and they gain it)