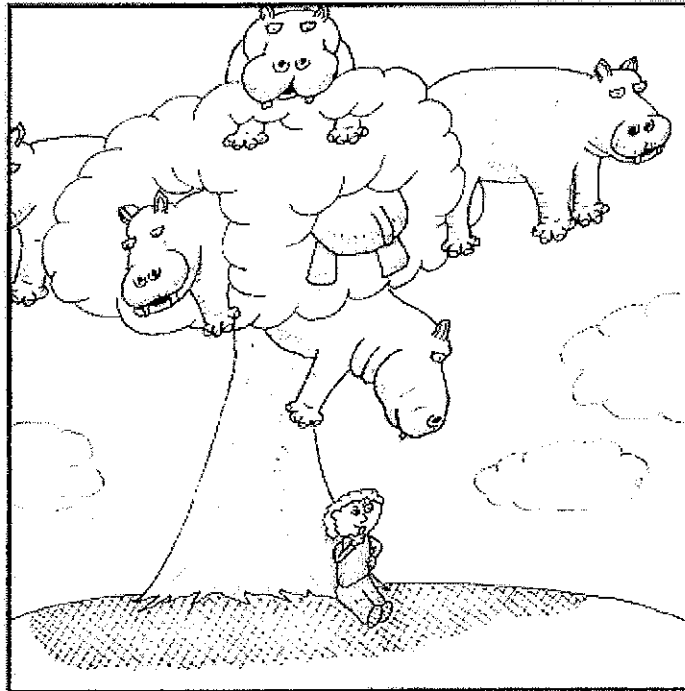


## Science 8

### Fluids and Dynamics Unit Test

Name: \_\_\_\_\_

1. You have the whole block to write the test.
2. You may use a 1 pg handwritten "cheat sheet" to assist you.
3. You may not use other notes or the textbook during the test.
4. You must write in black pen, blue pen or pencil.
5. Please answer all questions.



It was, actually, under this hippo tree where Isaac Newton's fierce physicist rival, Bernard Johns, would soon *first* discover the theory of gravity.  
...however...

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## Section 1: Fill in the Blank

Use the following words to fill in the blanks; each word will be used only once, some words will not be used at all:

Action-at-a-distance force	Fluid	Pressure
Adhesion	Heat	Respiratory system
Circulatory system	Hydraulic	Static pressure
Cohesion	Hydraulic multiplication	Surface tension
Compression	Implosion	Thermal energy
Contact force	Matter	Temperature
Deformation	Mass	Viscosity
Density	Newtons	Volume
Displacement	Pascals	Weight
Explosion	Pneumatic	

1. Anything with mass and volume is \_\_\_\_\_.
2. How much space an object takes up is called its \_\_\_\_\_.
3. The total kinetic energy from the particles in an object moving is the object's \_\_\_\_\_.
4. The energy which transfers from an object with higher temperature to an object with lower temperature is called \_\_\_\_\_.
5. Anything which flows is called a(n) \_\_\_\_\_.
6. If a solid floats on a liquid it pushes some of the liquid out of the way, this is called \_\_\_\_\_.
7. The force of gravity on an object is that object's \_\_\_\_\_.
8. If force is applied to an object and it changes its shape without changing its volume this is called \_\_\_\_\_.
9. If the pressure inside a container is extremely high this could cause a(n) \_\_\_\_\_.
10. A substance with a low flow rate has a high \_\_\_\_\_.
11. A drop of water sticks to the inside of glass, this is an example of \_\_\_\_\_.
12. A stone can skip across a lake even though it is denser than water due to \_\_\_\_\_.
13. A full 2 liter pop bottle is squeezed; this creates \_\_\_\_\_ since the water has nowhere to go.
14. A(n) \_\_\_\_\_ system uses compressed gasses.

## Section 2 Diagrams:

15. Draw and label a diagram with the 6 changes of matter: melting, sublimation, evaporation, deposition, solidification, and condensation.

Concepts to use:  
Performance Task  
Density

matter  
Mass  
Particles

Temperature  
Mixture  
Volume

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16. Create a force arrow diagram of an object resting on the ground with gravitation force and normal force labeled with arrows of appropriate length.

1/2

17. A person goes bungee jumping, they fall a certain distance and then are pulled up by the bungee cord. Create a force arrow diagram of a person being pulled up by a bungee cord, labeling gravitation, elastic and air friction forces with arrows of appropriate length.

1/3

18. Draw a diagram of a hydraulic system which uses hydraulic multiplication to transform a small force into a force large enough to lift a car.



**Section 3 Short Answer:**

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19. Give the order the following liquids would layer from top to bottom based on their densities. The density of water is not given as it is expected you know this:

Liquids	Order
A. Gasoline (0.737 g/ml)	1.
B. Iodine (4.927g/ml)	2.
C. Water	3.
D. Sunflower oil (0.920 g/ml)	4.
E. Mercury (13.59 g/ml)	5.
F. Milk (1.05g/ml)	6.



20. List three action-at-a-distance forces


13

13



21. List the four principles of the kinetic theory of matter.

1.
2.
3.
4.

22. List 3 fluids with higher viscosity than water.

4


3

23. Next to each situation put a B if the forces are balanced, put a U if they are unbalanced.

- a) A car is driving at a steady speed of 80km/hr along a highway. \_\_\_\_\_
- b) A car slows down before a red light. \_\_\_\_\_
- c) An airplane speeds up as it moves down the runway prior to take off. \_\_\_\_\_
- d) A textbook sits on a desk. \_\_\_\_\_

4

24. Give an example of two objects where one has a higher thermal energy but lower temperature than the other.

1

25. Describe in detail how you would find the density of an irregularly shaped piece of wax.

5

26. When people climb very high mountains they often bring oxygen tanks to breathe. Explain why this is necessary.

27. Explain why a balance scale would measure mass correctly on another planet while a spring scale would not.

Name: \_\_\_\_\_

1. You have the whole block to write the test.

28. Explain how an implosion could occur, use the term pressure.

29. A helium balloon floats upwards and eventually pops, explain why it pops.

30. A liquid is heated in the microwave.

a. How will this affect the viscosity of the liquid?

b. How will this affect the flow rate of the liquid?

31. Explain why clay shaped like a boat floats in water while a flat piece of clay sinks.

32. Blood pressure readings give two numbers, what does each number represent?

1/2

33. Explain what happens when you breathe in using the terms, diaphragm, lower pressure, and higher pressure.

Conductivity	Mass	Temperature
Deformation	Mass	Viscosity
Density	Newtons	Volume
Displacement	Pascals	Weight

**Section 4: Bonus, attempt only after all other questions have been completed.**

1/3

Give complete directions for constructing a Cartesian diver using a 2L pop bottle, a balloon and some paperclips. Explain how it works.

1/2



12

12

