

2008 TAKS Week Homework

Per 6 - Due Monday, 4/27

Per 1 - Due Tuesday, 4/28

Per 8 - Due Wednesday, 4/29

Per 4 - Due Thursday Morning, 4/30 BEFORE THE TAKS TEST OR IT WILL BE LATE!!!!

- From Thermodynamics Notes: ConDuction, ConVection, or Radiation?
 - You pick up a hot piece of metal and get burned.
 - You put your hand above a pan of hot water and feel the steam rising to your hand.
 - You feel the heat from a brick wall when you put your hand next to the wall, but not touching it.
 - Why the upstairs of a house is warmer.
 - How the water in the very bottom of a pan heats up.

You should be able to do all of this. Show your work or no credit.

- A 5 kg object originally at rest is pushed for 16 meters by 10 Newtons for 4 seconds. After the push the object is going 8 m/s. Answer the following.
 - What variable is 6 kg?
 - What variable is 10 N?
 - What variable is 4 sec?
 - What variable is 8 m/s?
 - What kind of energy did it have after it was pushed?
 - What is the weight of the object?
 - Calculate the kinetic energy of the object after it was pushed.
 - Calculate the momentum of the object after it was pushed.
 - Calculate the work done on the object by the force.
 - After it is pushed it is let go. How far will it go in 2 seconds?
 - Find the acceleration of the object during the 4 seconds it was pushed.

17. A) What is the correct way to heat a test tube over a Bunsen burner?

B) What two pieces of safety gear should you be wearing?

18. What is the correct way to measure a graduated cylinder?

19. A test has 22 questions. If you got 15 questions right, what percentage of the test did you get correct?

20. What is the **percent** of fat content by mass of a food with a net mass of 29 grams and with 10 grams of fat?

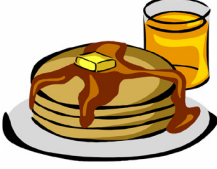
21. Given the data in the table at the right, which group measured the speed of the car most consistently?

	Group A	Group B	Group C	Group D
Trial 1 (in m/s)	3.2	2.9	2.5	3.0
Trial 2 (in m/s)	4.3	3.5	4.2	3.8
Trial 3 (in m/s)	2.8	3.2	2.8	3.3
Trial 4 (in m/s)	3.9	3.4	3.5	3.5


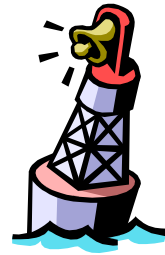
22. Viscosity, buoyancy, or density? (*Use the notes above.*)

Viscosity How slowly a liquid pours.

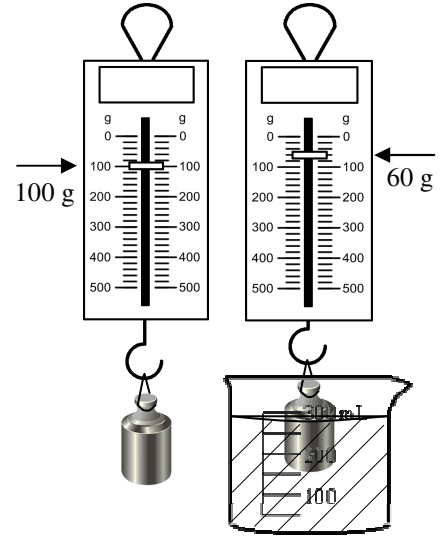
Syrup pours very slowly, so it is very viscous.



Water pours quickly, so it is not viscous.

A warning buoy is buoyant (it floats).



The mass seems lighter in the liquid. The liquid pushes up on the mass, giving buoyant force.

Density: $D = \frac{m}{v}$

in g/mL or $\frac{g}{cm^3}$ ← Mass in grams (g)

← Volume in cm^3 or mL

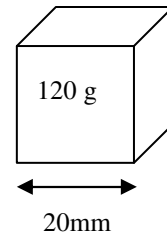
Density = Mass ÷ Volume

- A. ___ Measure of how compact a substance is.
 - B. ___ A force that helps an object float.
 - C. ___ How slow a substance flows.
 - D. ___ Ketchup has more of this than oil, because ketchup pours more slowly.
 - E. ___ When you are submerged in water, you feel lighter because of this force pushing up on you by the water.
 - F. ___ Styrofoam floats because this is less than a rock.
23. Use the diagram at the above right to answer the following.
- A. Converting to kg: 100g = _____ kg. 60 g = _____ kg.
 - B. How much buoyant FORCE is the water giving the object?

24. Density is m_____ d_____ by v_____.

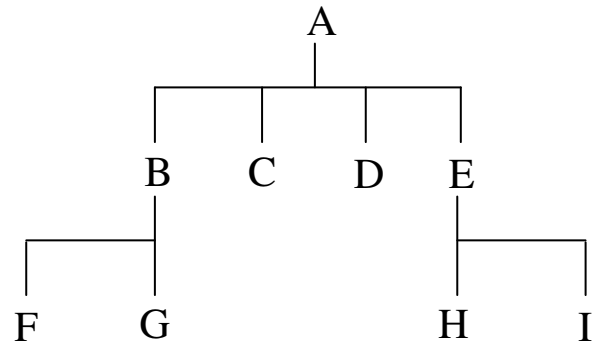
25. You may be asked to do a density problem Here's how it breaks down.
- A. Calculate the volume of the cube. Give your answer in mm^3 .

- B. Since $1\text{ mm}^3 = 1\text{ mL}$, how many mL is the cube?
- C. Calculate the density of the cube in g/mL.



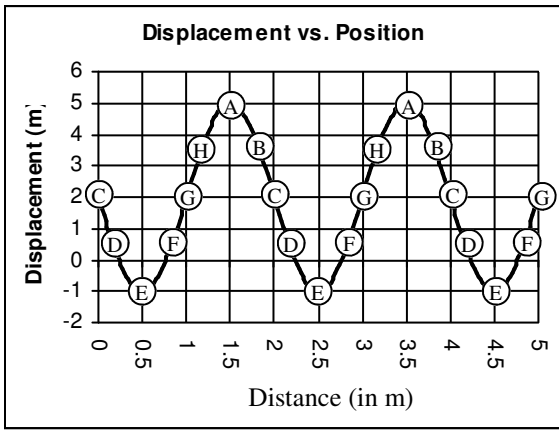
- 26. A. True or false: heavy things sink.
 - B. Give an example to support your answer.
27. A. Which is more dense: liquid water or solid water?
- B. Why?

28. The diagram at the right shows represents a phylogenetic tree (a family tree). Each letter shows a different organism. Organism A is the ancestor of B, C, D, and E, meaning Organism A mutated into B thru E. Also, B is the ancestor of G and F. A) Which is most related to G?



- B) Which letter represents the organism that eventually mutated into all of the others?

This is for those of you that still cannot see the repetition of harmonic motion. Notice that the wave motion repeats



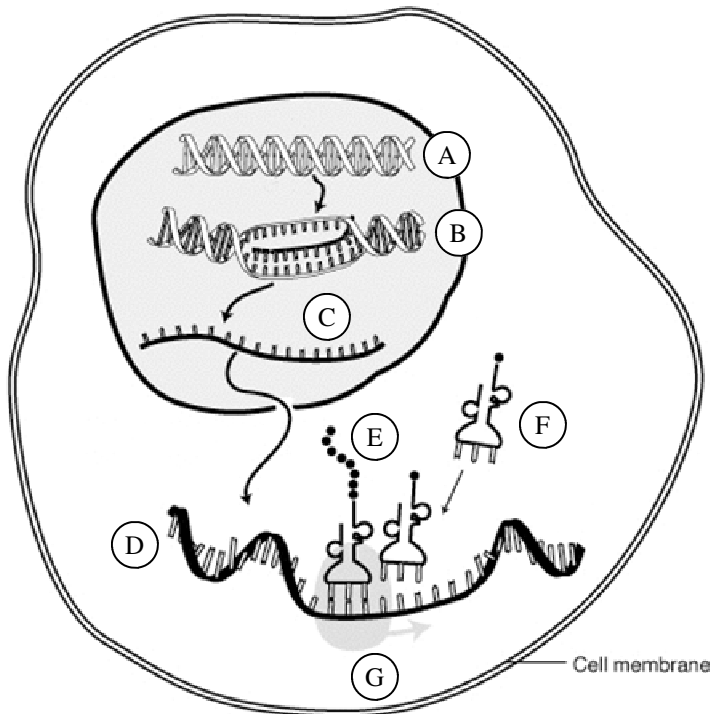
(it should be obvious, in this example). Also notice that the horizontal distance between any two of the same letters (A to A, B to B, etc) is the same.

29. The wavelength is the distance between two exact points of successive (one after the other) waves.
 A. What is the wavelength of this wave?

This wave is oscillating (vibrating over-and-over) up and down. The amplitude is defined as the maximum displacement (straight line distance) from its equilibrium (centermost) position. As the wave loses energy (amplitude) it will calm down and be at its equilibrium position.

- B. What is the wave's equilibrium position?
 C. What is the amplitude of this wave?
 D. How many cycles are shown on the graph?

30. The picture at the left shows the steps in protein synthesis in an animal cell.



- A. The double coiled molecule at letter A is called the _____.
- B. The double coiled molecule is unzipping and giving its code to the single stranded molecule at letter B called the _____.
- C. The process in which molecule A becomes molecule C is called t_____.
- D. Molecule F is called the _____.
- E. When D becomes F is called t_____.
- F. Letter E shows the chaining of amino acids to make a p_____.
- G. Two of the major organelles are shown in grey.
 i. C is in the _____.
 ii. G shows the _____.

31. Fill in the nitrogen bases on the graphic at the right.

32. Which kind of symbiosis: Mutualism; Commensalism; Parasitism; Predation.

A. A bird eating a worm is an example of:

B. A human is cultivating a garden. After the human digs up dirt, birds swoop down and eat worms that have been turned up by the humans. The relationship between the human and the bird is:

DNA	RNA	DNA	DNA
C		T	
A		A	
G		C	
A		C	
T		G	