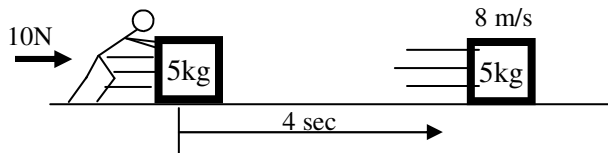


2010 TAKS Week Homework

Per 5 - Due Tuesday, 4/27

Per 1 - Due Wednesday, 4/28

1. From Thermodynamics Notes: ConDduction, ConVvection, or Radiation?
 - A. You pick up a hot piece of metal and get burned.
 - B. You put your hand above a pan of hot water and feel the steam rising to your hand.
 - C. You feel the heat from a brick wall when you put your hand next to the wall, but not touching it.
 - D. Why the upstairs of a house is warmer.
 - E. 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.

2. 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.
 - A) What variable is 5 kg? B) What variable is 10 N? C) What variable is 4 sec?
 - D) What variable is 8 m/s?
 - E) What kind of energy did it have after it was pushed?

F) Calculate the kinetic energy (*with units*) of the object after it was pushed.

G) Calculate the momentum of the object after it was pushed.

H) Calculate the work done on the object by the force.

I) After it is pushed it is let go. How far will it go in 2 seconds?

J) 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?

A. Measure of how compact a substance is.

B. A force that helps an object float.

C. How slow a substance flows.

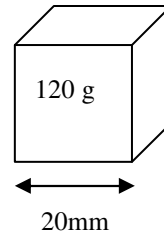
D. Ketchup has more of this than oil, because ketchup pours more slowly.

E. When you are submerged in water, you feel lighter because of this force pushing up on you by the water.

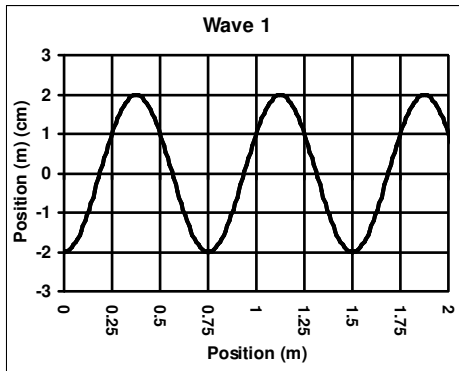
F. Styrofoam floats because this is less than a rock.

23. You may be asked to do a density problem Here's how it breaks down.

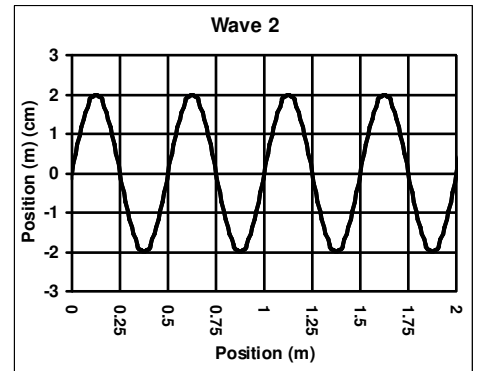
- A. Calculate the volume of the cube. Give your answer in mm^3 .
- B. Since $1 \text{ mm}^3 = 1 \text{ mL}$, how many mL is the cube?
- C. Calculate the density of the cube in g/mL .



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



- 26. A. Wave 1's wavelength =
- B. Amplitude =
- 27. A. Wave 2 wavelength =
- B. Wave 2's amplitude =
- C. If 35 crests pass a point each second, calculate wave 2's speed.



DNA	RNA
C	
A	
G	
A	
T	

DNA	DNA
T	
A	
C	
C	
G	

- 28. Fill in the nitrogen bases on the graphic at the left.
- 29. Which kind of symbiosis: Mutualism; Commensalism; Parasitism; Predation.
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.

 - A. The relationship between the human and the bird is:
 - B. The relationship between the bird and the worm is:
 - C. The relationship between the human and the worm is:

Fossil fuels like coal and oil are cheap and easy, but are very polluting (acid rain, smoke, greenhouse gases). Fossil fuels come from animals and plants that died millions of years ago. Eventually we will run out of these fuels.

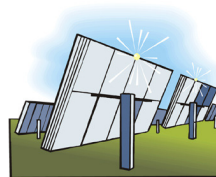


Nuclear energy uses nuclear fission—the splitting of large atoms (like uranium) into smaller atoms. It produces a huge amount of energy and no greenhouse gases, but its waste lasts for millions of years.



Hydroelectric dams turn potential energy into electricity. Cannot work on flat land. Cheap energy, but destroys fish breeding (spawning) grounds.

Solar energy turns sunlight into electricity. A solar cell is called a photovoltaic cell—photo for “light” and voltaic for “electric”. Renewable, clean, but expensive at first.



Wind turbines turn kinetic energy into electricity. Only works where there is wind and can hurt migrating birds. Like solar, it is expensive to install, but pays off in the long run.



- 30. Which kind of energy: Fossil fuels (FF); Nuclear (N); Solar (S); Wind (W) ; or Hydroelectric (H) (can be more than one)?

 - A. _____ Creates a lot of air pollution.
 - B. _____ Uses renewable sources.
 - C. _____ Has very toxic and long lasting waste.
 - D. _____ Is most common today.
 - E. _____ Uses photovoltaic cells.
 - F. _____ Is responsible for the near extinction of Northwest Salmon.
 - G. _____ Creates no pollution.
 - H. _____ Has no environmental impact at all.