

IC3 Test Review

- Kinetic energy is the energy of Motion
- A calorie is the unit for energy provided when food molecules and oxygen react. It is also the amount of energy needed to heat 1g of water by 1°C
- Energy can never be created nor destroyed, only converted from one form to another and this is called the Law of conservation of Energy
- An Energy Conversion, the Transfer of Energy from one form to another form.
- A Chemical Reaction is when two or more reactants react to form products.
- Reactants are the parts going into, or before, a chemical reaction
- Energy is the ability to do work.
- A protein is a molecule that makes up living things, made up of carbon, hydrogen, oxygen and nitrogen, sometimes even sulfur.
- Products are the result of a chemical reaction
- Thermal, or Heat, Energy: the total kinetic energy contained in all the particles of a substance.
- A food calorie is the amount of energy needed to heat 1 Kg or 1000g of water by 1 °C.
- Carbohydrate: molecule made up of carbon, hydrogen, and oxygen which is the product of photosynthesis.
- Carbohydrates can link their subunits together to form new carbohydrate compounds such as starches, sugars, glucose,
- Protein subunits are called Amino acids.
- Molecules that store excess food energy in an organism are called Fat.
- Potential energy is the energy stored because of an object's position, condition, or makeup.
- Glucose is a simple sugar, one carbohydrate subunit, made by plants through the process of photosynthesis.
- Variable**: when factors in an experiment are manipulated, it is a measurable factor/characteristic/attribute of an individual or system used in an experiment.
- cellular respiration is the process in a cell in which food molecules are chemically combined with oxygen, and energy is released with the products of CO<sub>2</sub> & H<sub>2</sub>O.
- Dependant Variable is the variable in an experiment that is being observed, and that changes in response to the independent variable.
- Independant Variable: is the variable that you purposely manipulate (change). It is intentionally varied by the experimenter.
- The control is the group that serves as a standard of comparison. The control is exposed to the same conditions as the experimental group, EXCEPT for the variable being tested.

Show all work and units. Use only appropriate and exact units

23. How many yards are there in 1.7 miles?

$$1.7 \text{ mi} \left( \frac{5280 \text{ ft}}{1 \text{ mi}} \right) \left( \frac{1 \text{ yd}}{3 \text{ ft}} \right) = \overset{\text{optional step}}{1.7 (5280) \text{ yd}} = \boxed{2992 \text{ yd}}$$

24.  $\frac{1.2 \text{ cups}}{\text{hr}} \left( \frac{1 \text{ pt}}{2 \text{ cup}} \right) \left( \frac{1 \text{ qt}}{2 \text{ pt}} \right) \left( \frac{1 \text{ gal}}{4 \text{ qt}} \right) \left( \frac{24 \text{ hr}}{1 \text{ day}} \right) = \frac{1.8 \text{ gallon}}{\text{day}}$

25.  $\frac{17 \text{ inches}}{\text{Minute}} \left( \frac{2.54 \text{ cm}}{1 \text{ in}} \right) \left( \frac{1 \text{ m}}{100 \text{ cm}} \right) \left( \frac{60 \text{ min}}{1 \text{ hr}} \right) = \frac{17(2.54)(60) \text{ m}}{100 \text{ hr}} = \frac{25.91 \text{ meters}}{25.913 \text{ hour}} = 25.916 \rightarrow 25.92$

26. Calculate how much energy is in a piece of food when 76 grams of water goes from 22 °C to 35 °C =

$$\text{Calories} = m \Delta t = 76g (13^\circ\text{C}) = \underline{988 \text{ calories}} (= .99 \text{ Cal})$$

27. What is required for fire? oxygen fuel heat (or heat source)

Describe what happens when you exercise, in terms of:

- 28. Skin temp goes down
- 29. Breathing Faster
- 30. Heart rate faster
- 31. CO<sub>2</sub> more produced

32. Describe what is meant by sources of error  
Things that could cause your results to be off in an experiment.

33. Give examples of sources of error

Human error, wrong measurements, Heat lost, incomplete chemical reaction

34. There are 212 Calories in a Kit Kat bar. How much time would you have to jog to burn off the candy if you use 9.2 Calories per minute?

$$\frac{212 \text{ cal}}{1} \left( \frac{1 \text{ min}}{9.2 \text{ cal}} \right) = \boxed{23.04 \text{ min}}$$

35. Describe aspects of your plant experiment and how plant growth was affected by the various experimental factors that they were exposed to.

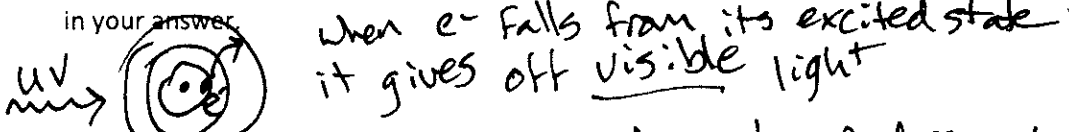
- water
- Light
- Type of light
- chemicals
- soil
- electricity

36. Describe evaporation and how it can cool surfaces. Boiler analogy the surface has enough molecules hitting each other until one near the surface has enough energy to change state and leave. By taking its energy, the avg of what is left goes down

37. Temperature is the measure of the average kinetic energy of the molecules.

38. LASER stands for Light Amplification by the Stimulated Emission of Radiation

39. How does UV light make some things give off light rather than just reflecting it? Include electrons and energy levels in your answer.



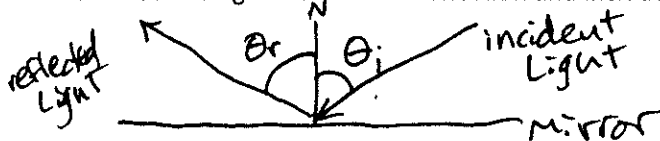
40. What are the five identifiers for skin cancer? Asymmetry Borders color diameter Evolution

41 - 45. What about each one would possibly indicate cancer?

- A. its shape is irregular, not symmetrical.
- B. borders are uneven, not the same in all parts
- C. color is not the same throughout
- D. diameter larger than 1/4 inch (pencil)
- E. evolving, or changing over time.

46. In terms of light, the moon at night is illuminated while the stars are Luminous

47. Draw a diagram of normal reflection and include the angles, the normal, incident light and reflected light.

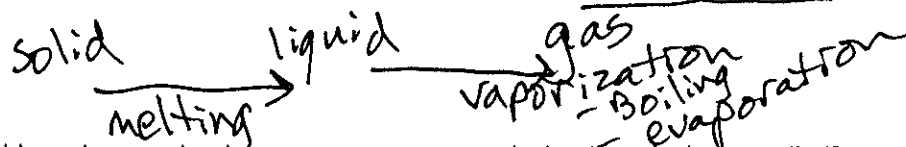


48. Describe Normal Reflection and Diffuse Reflection give examples of each.

Normal light and images are reflected, like a mirror

Diffuse only light reflected, surface is too rough - like Paper

50. When water gets hotter and hotter it will change states. What are the three common states, and what is each change called?



51. When water gets colder, what are the three common states, and what is each change called?

