FE SCIENCE

5

1. Cells are the basic unit of living things:

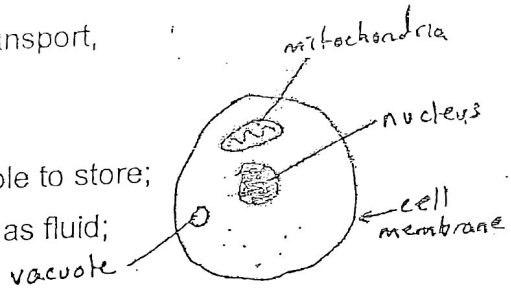
   cells → tissues → organs → systems → organisms.

2. Organisms must carry out the following life processes: nutrition, transport, respiration, excretion, regulation, reproduction, and growth.

3. All cells have the following organelles:

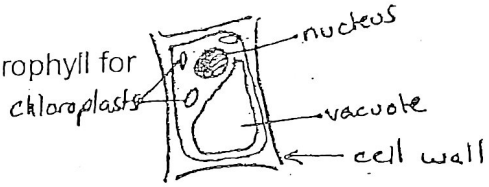
   nucleus to controls activities; mitochondria to give energy, vacuole to store;

   cell membrane to control what gets in and out of cell, cytoplasm as fluid; ribosome to make proteins.

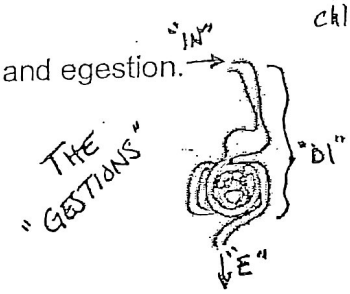


4. Only plant cells have the following organelles:

   Cell wall for supports and chloroplasts – which contains chlorophyll for photosynthesis.



5. Nutrition consists of ingestion, digestion and egestion.



6. The following nutrients are important:

   proteins – growth and repair

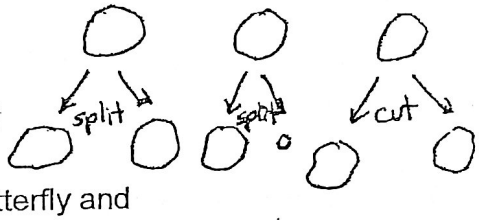
   carbohydrates - quick energy,

   fats and oils – stores energy

   vitamins and minerals – assists in the life processes.

7. Sun is the main source of energy for plants, animals and humans.

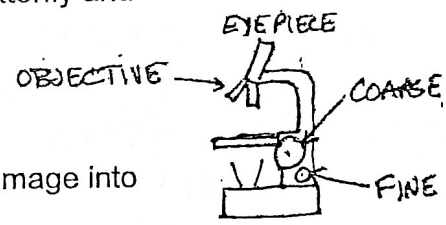
8. Three types of asexual reproduction are: binary fission, budding, and regeneration.



9. *Metamorphosis is the life cycle* of organisms such as the frog, fly, butterfly and humans.

10. A compound microscope uses two lenses to view small objects.

    Eye piece X objective lens = total magnification.



11. The coarse knobs moves image into view and the fine knob brings image into focus.

12. A stain is used to see clear objects in the field of view.

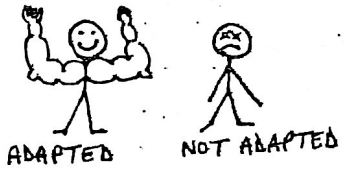
13. Cancer is abnormal cell division.

14. A response to a stimulus is the way we respond to a change.

15. Responses can be involuntary.

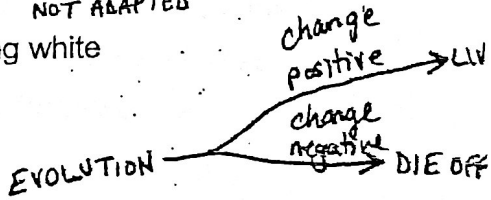
16. Physical adaptations enable us to survive.

    ex. birds having hollow bones or owls seeing at night.

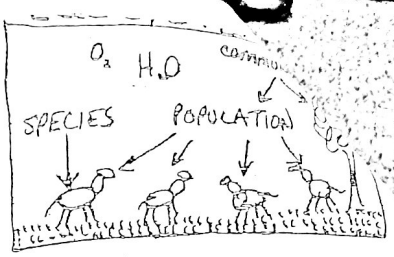


17. Animals adapt to their environment or habitat like a polar bear having white fur or cactus with waxy skin.

18. Changes in an organism's environment can cause them to become endangered or extinct.



Ms. Rash



19. An ecosystem is where living and non-living interact. Sun = source.
    Species → population → community → ecosystem.

20. Organisms get energy from the food they eat.

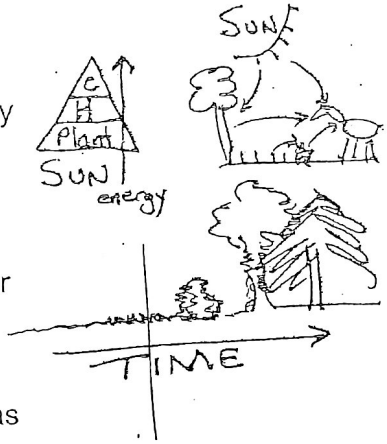
    Producers are plants

    Consumers eat producers.

    Herbivore eats plants,

    Carnivores eats animals

    Omnivore eats plants and animals.



21. More than one food chain makes a food web. Food pyramid shows energy being passed with plants/ most energy on bottom.

22. The three symbiotic relationships are mutualism, commensalism, and parasitism.

23. An ecological succession is when one community is replaced with another until climax community is achieved.

24. Renewable resources (can be recycled) water, solar, wind, and soil.

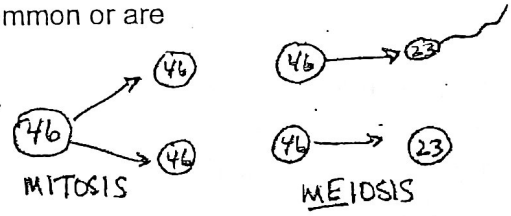
    Non-renewable resources (can't be recycled) fossil fuels ex. Coal, oil, gas

25. Living things are classified based upon their properties.

    King Phillip came over from Great Spain

    Kingdom → Phylum → Class → Order → Family → Genus → Species.

    The further you go done the groups, the more they have in common or are related.



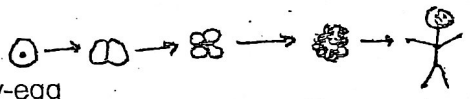
26. Two types of cell division are asexual and sexual reproduction.

27. Mitosis – cell division with same number of chromosomes.

    Meiosis – cell division with half the number of chromosomes.

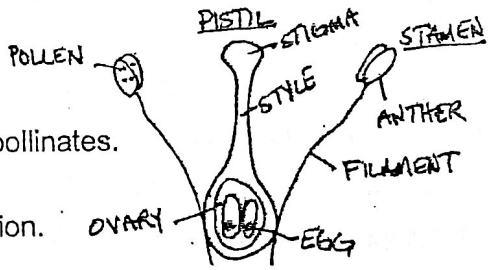
28. Sperm + egg = zygote through fertilization.

    Zygote → embryo through cleavage and differentiation.



29. Female parts of the flower: pistil → stigma + style + ovary-egg

    Male parts: stamen → anther + filament and pollen (sperm)



30. Pollination – when pollen fertilizes the egg.

    Self-pollination – flower has both male and female parts-self pollinates.
    Cross-pollination – flower pollinates another flower.

31. Seed dispersal spreads the seeds by wind, animal, and explosion.

32. A trait is determined by the genetic material on your genes.

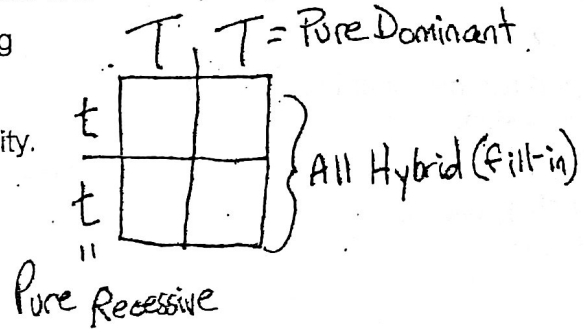
    Dominant – trait that is showing

    Recessive – not showing.

    Punnet square shows probability.

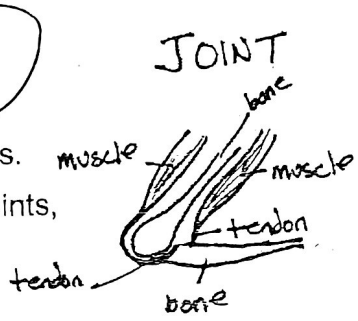
    Pure – same TT or tt

    Hybrid – Tt



33. Evolution causes great variety of living things.

ex. natural selection, genetic engineering, mutations, genetic diseases.



34. The skeletal system supports the body. Consists of bones, cartilage, joints, ligaments – bone to bone and tendons – bones to muscle.

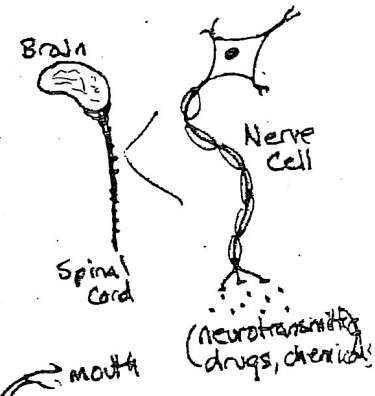
35. Muscular system – moves organs and body parts.

Voluntary - you control ex: walking.

Involuntary – no control. ex: heart beating

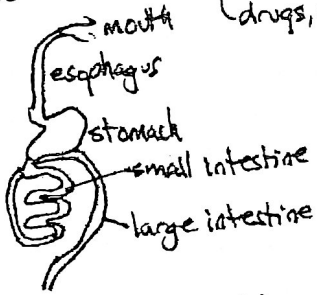
36. Regulatory consist of both nervous and endocrine together.

37. Nervous system – controls body activities. It contains the brain, spinal cord, nerves and sense organs. Neurons are nerve cells. Sensory and motor neurons.



38. Endocrine system regulates body activities with hormones secreted by the glands.

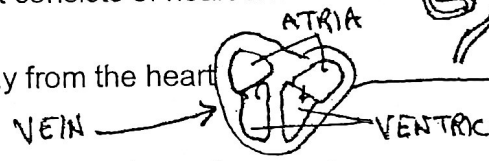
39. Digestive system breaks down food. It contains the digestive tract and the accessory organs – pancreas, gall bladder, and liver.



40. Two types of digestion are physical and chemical digestion.

41. Digestive juices: mouth – salvia, stomach – gastric juice and HCl, small intestine – intestinal juice, pancreas – pancreatic juice and liver – bile.

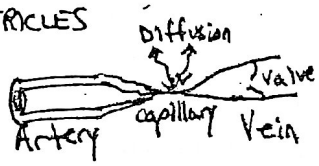
42. Circulatory system transports materials. It consists of heart and blood vessels.



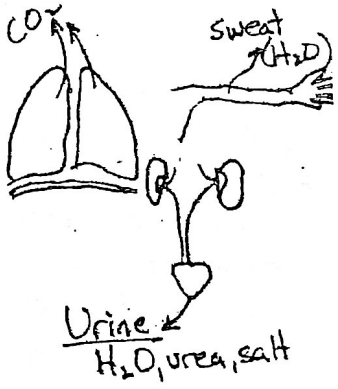
43. Blood vessels: arteries – carry blood away from the heart

veins carry blood to the heart

capillaries connect arteries to veins and is the place of gas exchange.



44. Left side of the heart gets the oxygenated blood. Lungs → left atrium → valve → left ventricle → rest of body → right atrium → value → right ventricle → lungs.



45. Respiratory system exchanges gases with the environment. It contains the respiratory tract to your lungs which end in air sacs. Gas exchange takes place between sacs (alveoli) and capillaries.

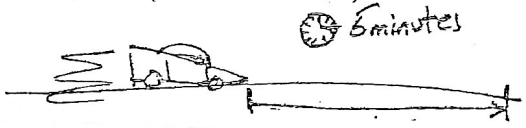
46. Excretory system removes wastes from the body. It contains the lungs, skin, kidneys – makes urine and liver- makes urea.

47. Reproductive system produces offspring. Males testes makes sperm and testosterone and female ovaries makes eggs and estragon.

48. Fertilization takes place in the oviduct, then it is dropped into the uterus for development into an embryo.

PHYSICAL SCIENCE

1. Matter is anything that has mass and takes up space.
2. Mass is the amount of matter in an object.
3. Volume is the amount of space an object takes up.
4. The 4 phases of matter are solid, liquid, gas and plasma.
5. The phase changes are melting and evaporation (where it gains heat) and condensation and freezing (where it loses heat).
6. Elements are the basic building blocks of matter.
7. An atom is the smallest particle of an element.
8. A compound is two or more elements. Each element in a compound gets a capital letter. Ex: H_2O
9. The parts of an atom are protons (+), electron (-), and neutron (no charge – neutral).
10. Protons and neutrons are found in the nucleus and the electrons are found moving around the outside of the nucleus.
11. Elements are organized by their properties on a periodic table. Groups are the vertical columns and rows are the horizontal columns.
12. Metals are on the left side and non-metals are on the right side. They are separated by a staircase of metalloids. Noble gases are the last group.
13. The smallest part of a compound is called a molecule.
14. Molecules are bonded together by ionic and covalent bonds.
15. Mixtures are when two or more substances are put together and do not make a new substance. Ex: Salt water
16. A Solution is an undisturbed mixture. The two parts of a solution are solute (gets dissolved) and solvent (does dissolving).
17. Density is mass divided by volume. The density of water is 1 g/cm^3. If an object has a density more than 1 it will sink and if less than 1 it will float, called buoyancy.
18. Physical changes alter the size and shape but remains the same substance. Chemical change creates a new substance.
19. Chemical change is represented by a chemical equation. The starting materials (reactants) are on the left and the final materials (products) are on the right. Change = → Ex: $C + O_2 \rightarrow CO_2$
20. The law of conservation of matter states that matter can not be created nor destroyed, only changed from one form to another.
21. A force is a push or pull.
22. Weight is the amount of gravitational pull on an object.
23. The 3 ways to describe the motion of an object are speed (distance / time)



Speed = 2mi / 5minutes =

9

velocity (distance / time with a direction)

acceleration (final velocity – starting velocity / time).

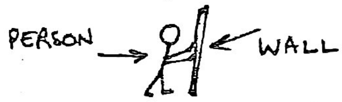
24. Newton's laws of motion:

1st – an object at rest will stay at rest and an object at motion will remain in motion, unless an outside force acts on the object-inertia

2nd- Acceleration = Force / Mass or Force = Mass X Acceleration

3rd – For every action there is an equal and opposite reaction

25. Work = Force X Distance.



26. A machine transfers mechanical energy.

27. The resistance is the force it must overcome and the effort is the force applied. Fulcrum is the pivot point.

28. The six simple machines are:

lever

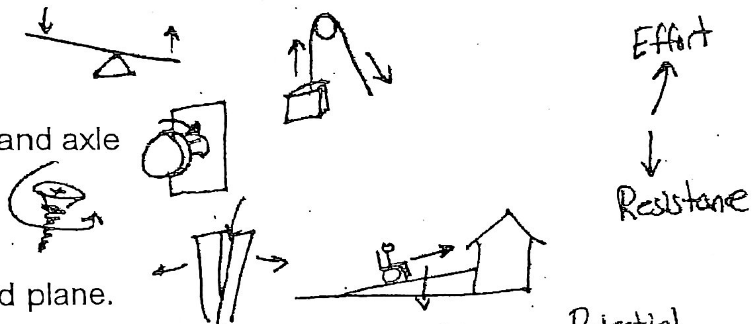
pulley

wheel and axle

screw

wedge

inclined plane.

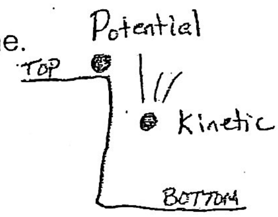


29. Friction reduces the efficiency of a machine.

30. Energy is the ability to do work.

Potential energy – stored energy

Kinetic energy – energy of motion.



31. The five forms of energy are: chemical, nuclear, heat, electrical, and light.

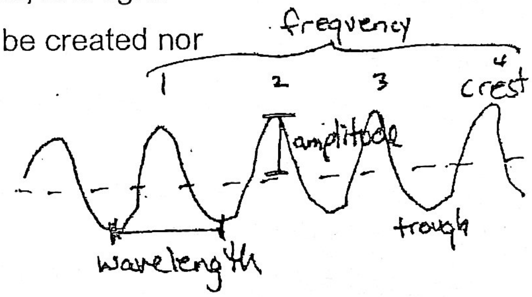
32. The law of conservation of energy states that energy can not be created nor destroyed, only changed from one form to another.

33. Light and sound travel in forms of waves.

34. Wavelength is the distance from crest (top) to crest or trough (bottom) to trough.

Amplitude – is the height of the wave.

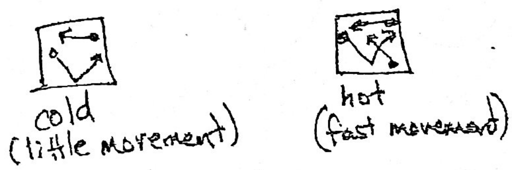
Frequency – number of waves that pass a given point in a certain time.



35.The three types of waves are transverse, longitudinal, and compression.

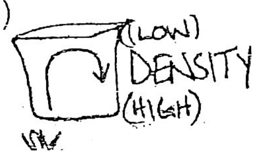
36. Heat is produced by vibrating molecules. The more heat that is added, the faster it moves. The addition of heat causes expansion and the lose of heat causes contraction. Heat travels from warm to cold.

37. The three ways heat moves:



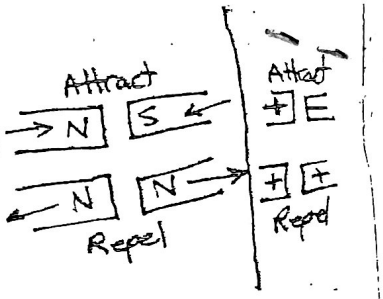
radiation – space

convection – fluid (liquid or gas)



Mr. Rashid

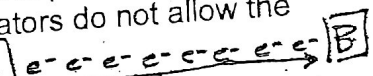
conduction- touching molecules (solid)

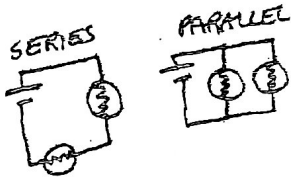


38. The law of magnetic poles states that like poles will repel and unlike poles will attract. The closer the distance, the stronger the pull.

39. The law of electric attraction and repulsion states that items with like charges repel each other and items with unlike charges attract each other.

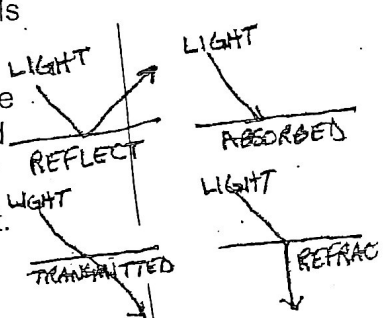
40. Electricity is produced by the flow of electrons from one point to another. Conductors allow electricity to flow through it. Insulators do not allow the electricity to flow through it.





42. The two types of electric circuits are: series circuit – single path and parallel circuit – two or more paths. If one bulb blows out, the series circuit dies and the parallel circuit still works.

43. Sound is produced by a vibrating object. The speed of sound depends on the density of the substance. The denser, the faster it moves. Sound travels faster through solids.

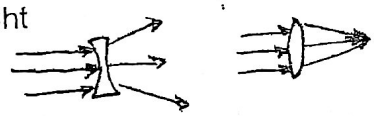


44. Light is a visible form of energy that travels in paths called rays. Light can be reflected (bounced off), absorbed (taken in and transferred), or transmitted (go right through).

45. Refraction is the bending of light. Ex: A pencil in a glass of water looks bent.

46. Dark colors and rough surfaces absorb more light.

47. Concave lens curves inward and a convex lens curves outward.



48. Electromagnetic spectrum shows the frequency and wavelengths of light waves. The longer the wavelength, the less harmful they are.

49. A calorie is the unit for measuring energy in food and fuel.

50. A watt is the rate at which energy is used over a period of time.

51. Hydroelectric energy is electricity produced by the power of flowing water.

Ex: Niagara Falls

52. Nuclear energy is energy stored in the nucleus of an atom.

Ex: splitting uranium releases heat energy. It creates thermal pollution and nuclear waste.

53. Problems with fossils fuels: pollution, acid rain, lung disease, oil spills, and the greenhouse effect.

54. Conservation means the saving of natural resources through wise use.