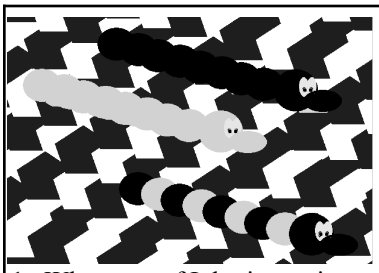
Name_____

Biology End of Year Final. Your final Nelson Test. Le test de Fin. El examen final. Ultima exem. Et laetitiam exultabunt.



1. What type of Inheritance is this?

2. What would the Genotypes of each of the worms be?

3. If the all black worms and the all white worms were easier to see and catch, and the black and white mixed worms were better able to survive, would the all black genes and the all white genes go extinct? Prove it:

4. Make a Punnett Square for a white worm and a black and white mixed worm:

If a long haired dog was crossed with a short haired dog what would the offspring look like with the following inheritances.

5. Dominant vs Recessive

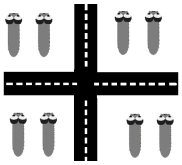
6. Incomplete Dominance

7. Codominance

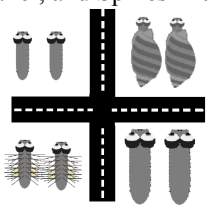
Study the following scenario:

A species of slug lives in a valley

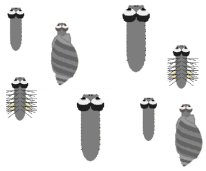
An intersection is built separating the slug population into 4 groups. They cannot cross the roads because they are too slow.



Over time (couple hundred years) beneficial mutations happen in three of the populations. Shells in one, Larger size in another, and Spikes in another.



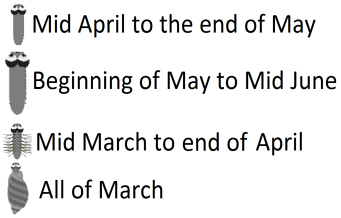
The city finds a better option for travel and the road is abandoned. The slugs can now interact again. Answer the questions that follow:



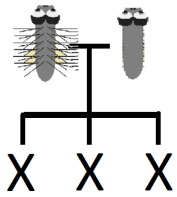
As the populations interacted this is what happened:

a

The mating seasons:

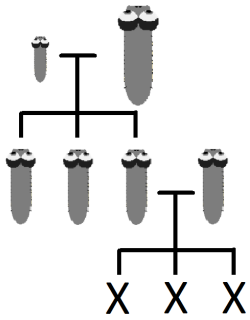



b

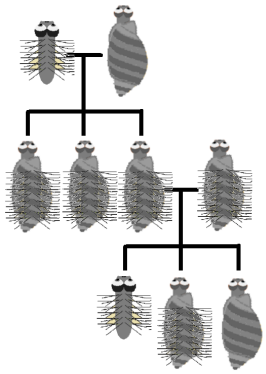



Fertilization never takes place.

c




d



8. How many different species are there now?_____

9. List 3 examples of Speciation and tell what kind of Reproductive Isolation led to each of them.

_____

_____

_____

10. What type of inheritance is shown in box c _____and d_____.

11. Describe what is happening in boxes b, c, and d and how they relate to evolution:

b)_____

c)_____

d)_____

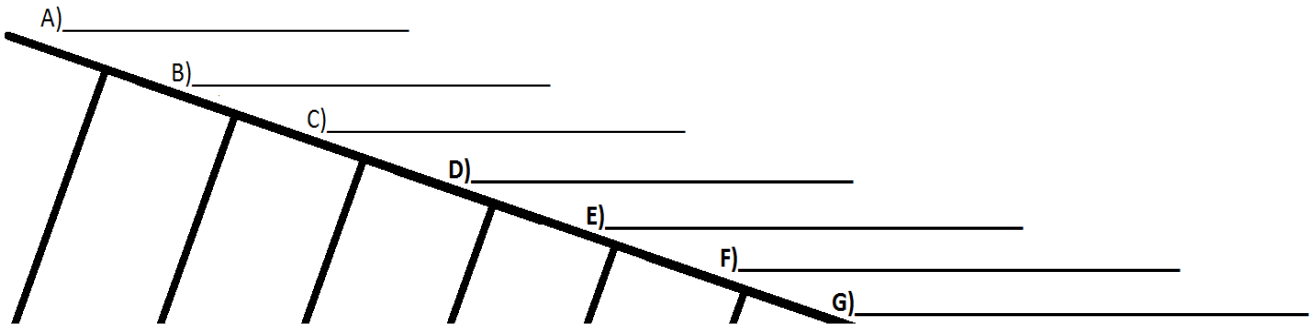
12. How do Speciation and Reproductive Isolation relate to each other?_____

13. With reference to a flying bird's wing, which structures below would be Homologous, Analogous, and Vestigial? How do you know?

Butterfly_____ Bat_____

Kiwi Bird_____ Penguin_____

14. Make a Cladogram with the following organisms:
Clown Fish, Great White Shark, Blue Whale, Blue Bird, Snake, Crocodile, Hippopotamus

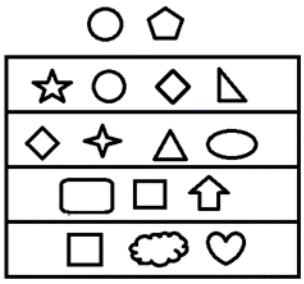



Based on your Cladogram, what type of structures are the Shark's fin and the Whale's fin?_____

What type of structures are all the limbs?_____

What type of structure is the snake limbs?_____

15. The fossil record can help us infer how organisms may have changed over time. Make an inference about the ancestory of the circle and list the evidences that led you each inference.



i._____

ii._____

iii._____

iv._____

16. How far back might the circle and the pentagon be related?_____

17. List the 5 Kingdoms of Classification and 3 Characteristics for each of them.

1._____

2._____

3._____

4._____

5._____

18. Which Kingdom is no longer a Kingdom? What are the new options that are being discussed?

Below are 5 organisms and their classification. Use them to answer the questions that follow:

19. How does classifying organisms show evoluationary relationships?

| Wolf Classification | Clown Fish Classification | Mantis Classification | Fox Classification | Dog Classification |
|---|---|---|---|---|
| Kingdom Animalia | Kingdom Animalia | Kingdom Animalia | Kingdom Animalia | Kingdom Animalia |
| Phylum Chordata | Phylum Chordata | Phylum Arthropoda | Phylum Chordata | Phylum Chordata |
| Class Mammalia | Class Actinopterygii | Class Insecta | Class Mammalia | Class Mammalia |
| Order Carnivora | Order Perciformes | Order Mantodea | Order Carnivora | Order Carnivora |
| Family Canidae | Family Pomacentridae | Family Acanthopidae | Family Canidae | Family Canidae |
| Genus Canis | Genus Amphiprion | Genus Acanthops | Genus Vulpes | Genus Canis |
| Species lupus | Species ocellaris | Species bidens | Species vulpes | Species familiaris |

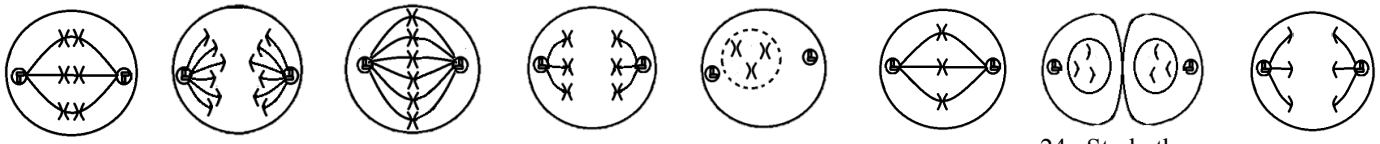
20. Which two are the most related? How can you tell?

21. How do you write the Scientific Name for an organism?

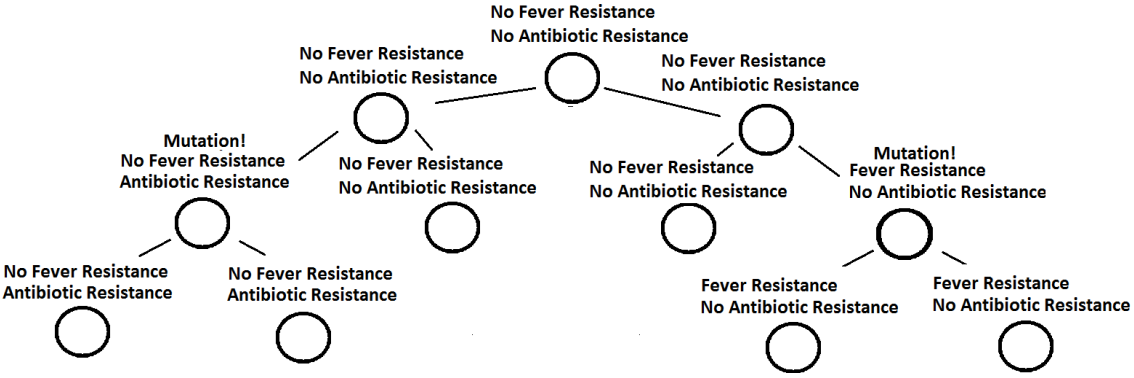
22. What are the scientific names for:

Wolf Clown Fish Mantis Fox Dog

23. Below are 8 random phases of mitosis or meiosis in the SAME organism. Label each phase.



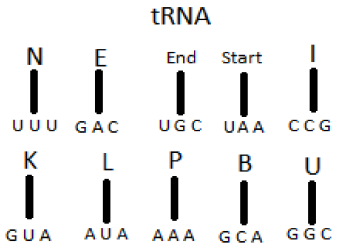
24. Study the bacterial pedigree chart below



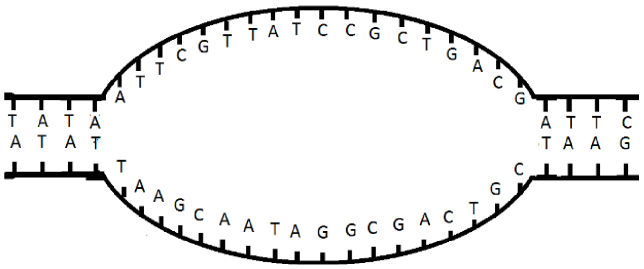

Assuming no conjugation, what would be the possibility of crossing an Antibiotic Resistant cell with a Fever Resistant cell and getting one with both good traits? Explain:

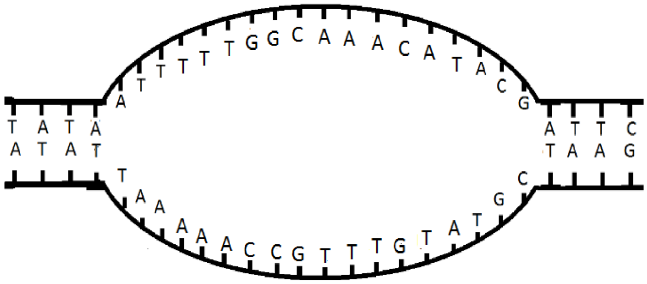
If a bad mutation takes place, what are the chances of the offspring getting it? Explain:

20. Below are Homologous Chromosomes. Copy each gene for Eye Color. Remember that copying a Gene is not exactly like copying the entire DNA. Copy the BOTTOM part.




What is needed in order to read the codes below?_____



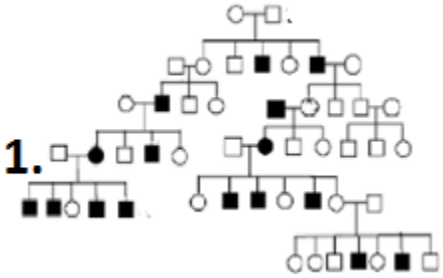

What is the Copy_____
What is the copy called?_____
What is needed in order to read the Copies you just made?_____
What is the Trait_____

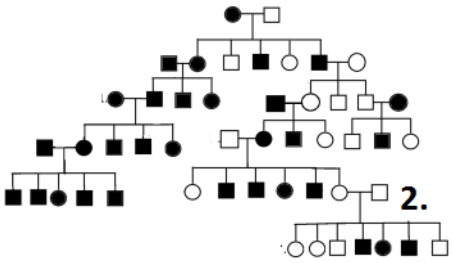
What is the Copy_____
What is the Trait_____

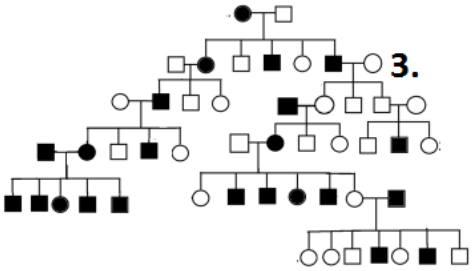
What is the Genotype of this individual?_____How can you tell?_____

What will the Offspring's Phenotype look like if it is inherited as:
Dominant vs Recessive_____ Incomplete Dominance_____
Codominance_____

21. In the Pedigree Charts Below, is the trait dominant, recessive or sex-linked. Write a Punnett Square for the Labeled crosses:




22. Insulin is a Protein needed in the blood to help get sugar in to cells. Insulin is made in pancreatic cells and then is shipped out of the cell and into the blood. List the organelles (at least four) and macromolecules (at least 3, list the type of Macromolecule and the specific name if you can) that are involved in the synthesis of proteins. Use the table to help you with the order:

| Organelle or Macromolecule | Function |
|---|---|
| 1st Organelle | |
| 1st Macromolecule | |
| 2nd Macromolecule | |
| 2nd Organelle | |
| 3rd Macromolecule | |
| 3rd Organelle | |
| 4th Organelle | |
| What is the Process by which it leaves the cell | |

Are there any other structures that you would like to add? List them below:

23. Write the equation for Photosynthesis and then write the structure or tissue in the plant that each reactant or product must go through to get to or from the leaves.

| Write the Reactants of Photosynthesis below: | What structure gets it to the leaves? |
|---|---|
| Energy: | |
| Reactant 1: | |
| Reactant 2: | |

| Write the Products of Photosynthesis below: | What structure transports it out of the leaves? |
|---|---|
| Product 1: | |
| Product 2: | |

24. Write the equation for Cellular Respiration and then next to each reactant and product write which organ system provides it or removes it. Include how it gets to and from the cells.

| Write the Reactants of Cellular Respiration below: | What organ systems provides it for the cells? Include how it gets to the cells: |
|---|---|
| Reactant 1: | |
| Reactant 2: | |

| Write the Products of Cellular Respiration below: | What organ systems removes it from the cells? Include how it gets to that organ system: |
|---|---|
| Product 1: | |
| Product 2: | |

Where is the energy now and what form of energy is it?