Question 1

Ellen uses a mortar and pestle to crush pieces of an onion.
She adds a solution to the onion.
She then filters her crushed onion into a falcon tube.
She adds a layer of rubbing alcohol to the top of the tube.
Ellen then shakes the tube and long, white strings float to the top of the alcohol.
What are the white strings?

This is the same as the strawberry DNA extraction experiment.

A. Unwound chromosomes
B. Genetic information of the cells
C. DNA (deoxyribonucleic acid)
D. All of the above
E. None of the above

Question 2

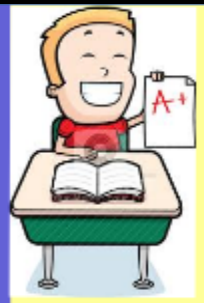
Kristine reads an article in a magazine. The article is about genetics. Where does the article report that DNA is found in a cell?

A. Outside of the cell membrane

B. Outside of the cell wall

C. Inside of the chloroplast of a cell

D. Inside of the nucleus of a cell



Question 3

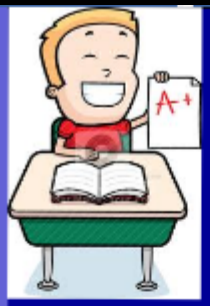
Wendy is studying the fur color of a group of bears. She knows that brown bears have all inherited at least one dominant allele (B) from their parents.
Black bears did not inherit any dominant alleles from their parents.
Which statement is true?

A. The black bears inherited one recessive and one dominant allele from each parent.

B. The black bears inherited two recessive alleles from the father.

C. The "brown fur" trait is the recessive trait.

D. The black bears inherited one recessive allele from each parent.



Question 4

Micky is using a model to perform a genetic cross. The alleles of the parents are shown below:

BB x bb

Which combination of alleles will all of the offspring inherit?

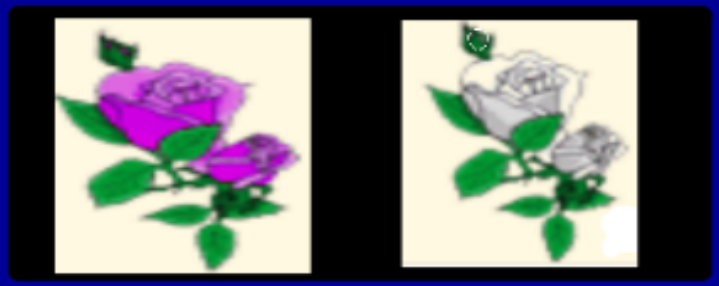
A. BB
B. Bb
C. BBbb
D. bb

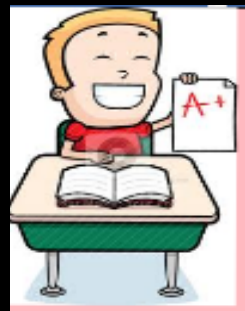
Dominant & Recessive

Question 5

Oliver is working with plants that have either purple or white flowers. The purple allele is dominant (P). The white allele is recessive (p). How many allele combinations for flower color can be found in these plants?

A. 1
B. 2
C. 3
D. 4





Question 6

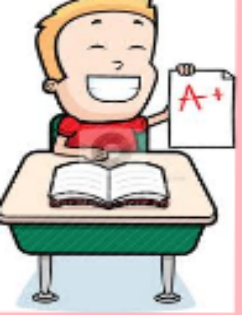
Margaret looks around the classroom. She notices that all of the students in her class have different facial features. Why do all of the students have unique traits?

A. Only dominant traits have been inherited by the students.

B. Only recessive traits have been inherited by the students.

C. All of the students have inherited different combinations of traits from their parents.

D. The class is made up of ten girls and nine boys.



Question 7

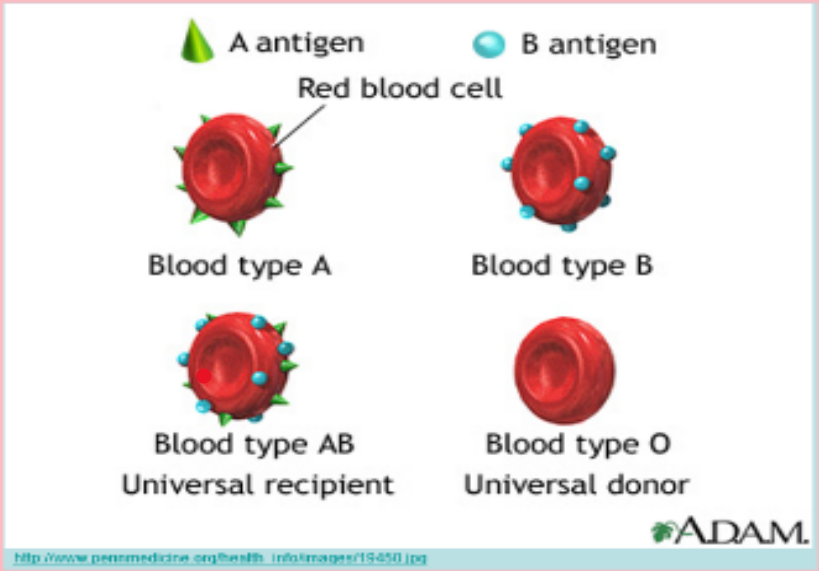
Pam is learning about blood type. She finds that alleles from each parent are expressed in an offspring's blood type. What type of inheritance is blood type an example of?

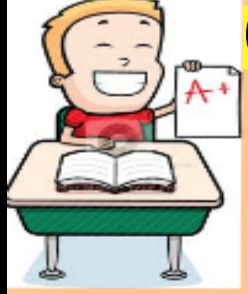
A. Co-dominance

B. Polygenic

C. Allele pair

D. Incomplete dominance





Question 8

A zoologist finds that the two alleles for the length of an animal's neck are:

G = long neck ***g*** = short neck

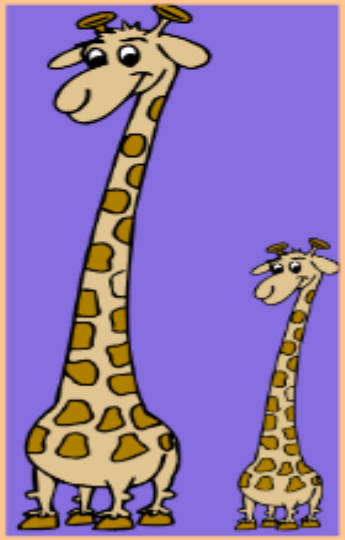
She is studying an animal that inherited the combination **Gg**
This animal has a neck of medium length. What type of inheritance took place?

A. dominant trait inheritance

B. natural selection

C. recessive trait inheritance

D. incomplete dominance



Question 9

Eore's father has large ears EE

Eore's mother has small ears ee

Eore has inherited medium sized ears. Which allele combination has Eore inherited from his parents?

A. EE
B. ee
C. Ee

Question 10

Roy learns that a cell reads and interprets genetic information. Using this genetic information, what does the cell build that will control almost all of its functions?

A. Nucleotides

B. Aleles

C. Chromosomes

D. Proteins

[redacted]

[redacted]

Question 11

Ken is given the following nucleotide sequence: C A C G C C A C A
He uses this key to read the sequence:

Codon	Amino Acid	
	Name	**Letter**
TGT	Cysteine	C
GCC	Alanine	A
ACA	Threonine	T
ATG	Methionine	G
TTT	Phenylalanine	F
CAC	Histidine	H

How does Ken interpret this nucleotide sequence?

A. FAT

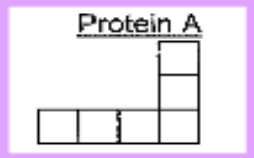
B. HAT

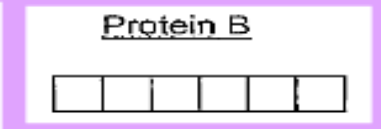
C. HAM

D. CAT

Question 12

Molly uses genetic information given to her by the teacher to build two protein models:





To function properly, each protein should be able to move through this space: 

Molly tests each protein model. She finds that Protein A cannot fit through the space, but Protein B can. Why do you think Protein A cannot fit?

A. A mutation caused the protein to have an incorrect shape.

B. Natural selection caused the protein to have an incorrect shape.

C. Protein A is made up of dominant traits only.

D. Protein A is made up of recessive traits only.

Dominant & Recessive

Question 13

There is a population of ladybugs. The green allele is dominant (*G*) and the red allele is recessive (*g*). What possible combinations of alleles are there in this population? The traits follow the dominant recessive rule.

A. GG, Gg and gg

B. GG and gg only

C. GG only

D. gg only

Question 14

Camouflage is used by rabbits to hide from their predators. Rabbits with brown fur are able to survive better in a forest than rabbits with white fur. What is this process called?

A. Incomplete dominance

B. Population variation

C. Natural selection

D. Biologic variation

Question 15

Joanne is studying a population of ladybugs. Some of the ladybugs are green and some are red. She records the number of ladybugs that she sees on the green leaves of trees for three years. Her findings are:

	Total number of ladybugs on leaves	Number of green ladybugs on leaves	Number of red ladybugs on leaves
Year1	20	10	10
Year2	40	28	12
Year3	60	45	15
Year4	80	?	?

Assuming the current trend continues, how many green and red ladybugs willJoanne most likely see in Year 4?

A. Green= 40, Red 40

B. Green= 30, Red 50

C. Green= 67 Red 16

D. The ladybugs for Year 4 cannot be determined from this data.