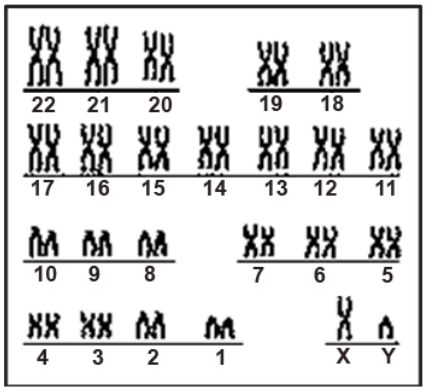
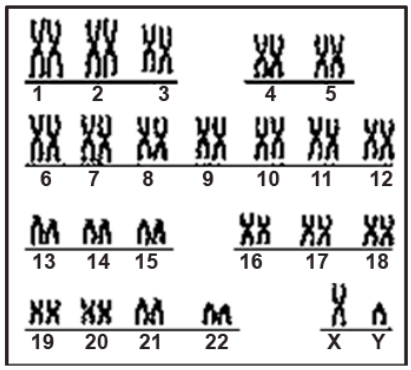
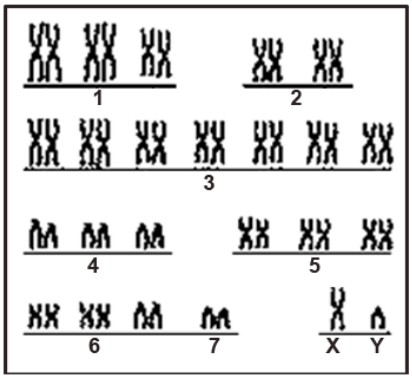
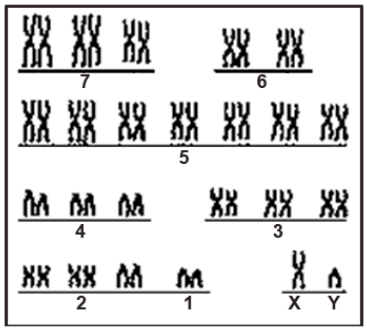
1- Which figure is the most valid to express the karyotype of the human male?



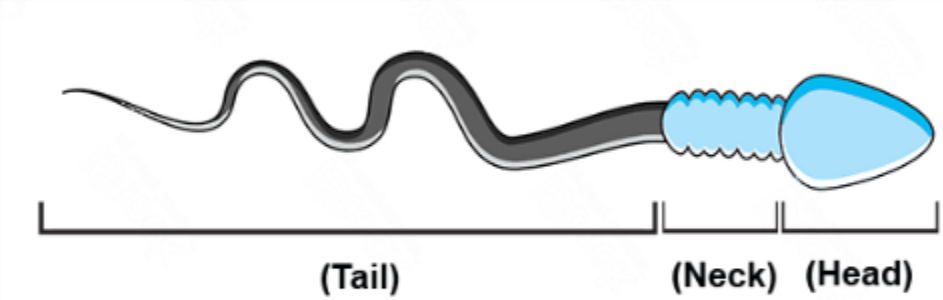






2- W

The following diagram illustrates the structure of human sperm,



which is/are the sexual chromosome(s) found in the head?

- Either chromosome (X) or (Y).
- Both chromosomes (X) and (Y).
- Always chromosome (X).
- Always chromosome (Y).

3- Two strains of the pea flower plant were crossed together; one of which is pink flower and the other is white flower.
The ratio of the colour of the resulting plant flower is (3) pink : (5) white
What are genotypes of the parents?

- AaBb × aaBb
- aabb × AABB
- aaBb × AABB
- AaBB × aaBb

4- A normal man married a woman with Down's syndrome.
Which one of the following individuals can't be their child?

- Female with Down's syndrome.
- Normal male.
- Male with Klinefelter's syndrome.
- Normal female.

5- The increase of phenyl Keaton in urea (PKU) is a genetic disease, and it was observed that the people who carry that gene did not show its symptoms by following a special diet.
What do you deduce from this phrase?

- The gene causing the disease (PKU) is a recessive gene.
- The gene causing the disease (PKU) has a weak effect.
- Following a healthy diet cures all genetic diseases.
- The effect of (PKU) gene depends on environmental factors.

6- A young man married a woman (both are normal) and had a girl who will not reach puberty and suffers from congenital defects in heart and kidneys.
Which of the following is the chromosomal structure of the mother?

- (44+XX)
- (23+XX)
- (45+XX)
- (22+XX)4

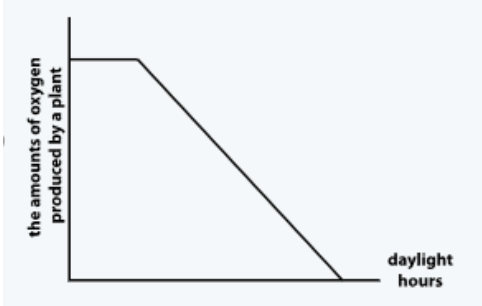
7- A woman has blood group (A) and her husband has blood group (B).
Which genotype of blood group could not be inherited by any of their children?

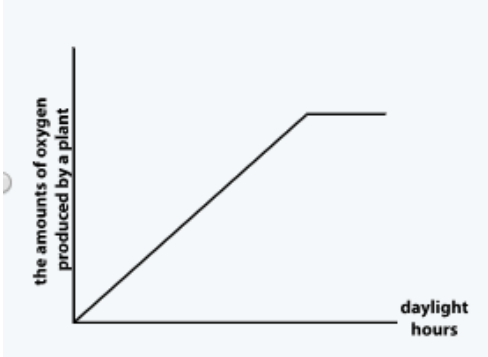
- AA
- AB
- AO
- OO

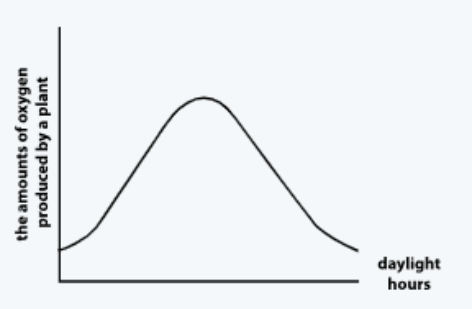
8- A man married a woman and had four girls; if the woman got pregnant again, what is the probability that the fifth child will be a boy ?

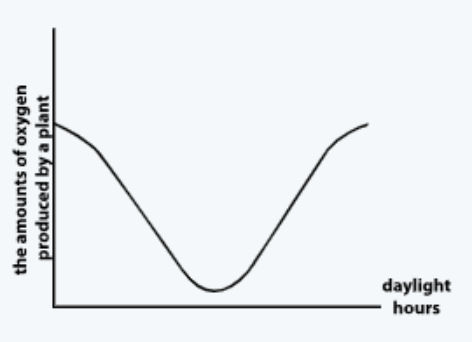
- 1/5
- 1/4
- 1/3
- ½

9- Which of the following graphs shows the effect of Chlorophyll gene on a plant during daylight hours (from sunrise to sunset)?







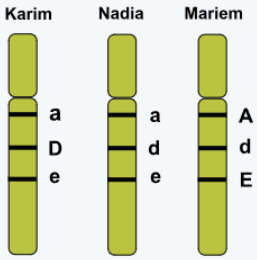


10- A woman, who carries a haemophilia gene, married a man with haemophilia disease.
What is the expected percentage of appearance of haemophilia disease in the 1st pregnancy if the fetus will be male?

- Zero %
- 50 %
- 100 %
- 25 %

11- Q

The Following figure shows the sequence of Rhesus factor genes on a part of the chromosome of three individuals (Mariem, Nadia and Karim)
A blood sample is taken from each of them, for blood analysis.

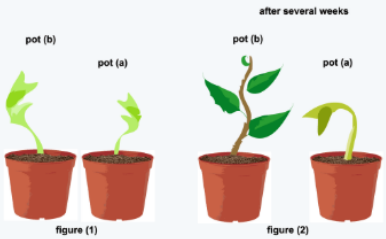


Which of them has no Rhesus factor antigen on the surface of his/ her red blood cells?

12- Q

Plant seeds were grown till germination as shown in figure (1). After several weeks of moving the plant to an illuminated place with similar conditions of soil and irrigation in both pots.

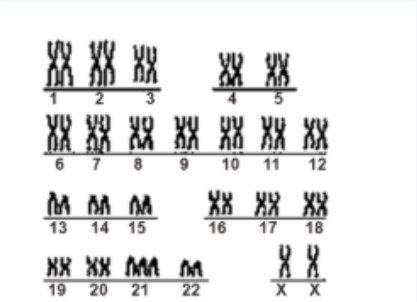
It was observed that the plant in pot (b) only is growing, while the plant in pot (a) did not grow as shown in figure (2).



Explain the growth stopping of the germinated seed in the pot(a).

13- Q

The following figure illustrates the karyotype of an individual



What is the chromosomal structure of the gametes produced by this individual?

14- If you know that long eyelashes gene in human is dominant (T) to short eyelashes gene (t).
If a man with long eyelashes married a woman with short eyelashes and had a child with short eyelashes.

What are the genotypes of these parents?

15- A man with a blood group (A) and his chromosomal structure is (44 + XXY) married a woman with a blood group (B) and her chromosomal structure is (44 + XX)
They had a child with blood group (AB).
a) Do you agree with this phrase?
.....
b) Explain your answer?
.....

16- A child suffers from acute anemia and needs blood transfusion several times; both his parents and his brother alternately donate blood to him, although each of them has a different blood group.

a- What is the child's blood group?

.....

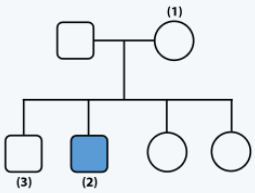
b- Which pattern of inheritance of blood groups belongs to the child's blood group?

.....

17- Q

If you know that muscle atrophy trait is caused by sex-linked lethal recessive gene carried on (X) chromosome.

The following figure represents the inheritance of this trait in a family.



If (square-shape) represents a male and (circle-shape) represents a female, while the (shaded shapes) represents the sick individuals.

Determine the genotypes of the two individuals (1) and (3)

(Concerning that the symbole of muscle atrophy gene is (a))