

Self Quiz Practice

NAME: KeySCORE /19

-This is not a comprehensive representation of the test, it is just a sampling of what may be on the test.

1. Which statement is correct about meiosis?
 - a. Meiosis makes diploid identical body cells
 - ☒ b. Meiosis makes haploid non-identical reproductive cells
 - c. Meiosis has the same outcome as mitosis
 - d. Meiosis only occurs in plant cells
2. What happens to chromosome number as a result of meiosis?
 - ☒ a. It halves
 - b. It doubles
 - c. It stays the same
 - d. It becomes diploid
3. A gene can have more than one form, also known as a/an , one from each parent.
 - a. genotype
 - b. protein
 - c. hybrid
 - ☒ d. allele
 - e. gene
4. Crossing over takes place between:
 - ☒ a. Sister chromatids of the same chromosome
 - b. Non-sister chromatids of homologous chromosomes
 - c. Non-homologous chromosomes
 - d. All of the above
5. What is the primary significance of crossing over?
 - a. It repairs damaged DNA
 - b. It ensures sister chromatids separate
 - ☒ c. It increases genetic variation in offspring
 - d. It reduces chromosome number to haploid

Questions: Each of the lettered choices below refers to the following numbered statements. Select the best-lettered choice. A choice may be used once, more than once, or not at all.

(A) Phenotype

(B) Heterozygous

(C) Genotype

(D) Homozygous

(E) Multiple Alleles

(F) Recessive

- B 6. Having different alleles, one dominant and one recessive.
- A 7. Appearance due to genetic makeup.
- D 8. Having two identical alleles for one given trait.
- F 9. An allele that is overpowered by a dominant allele

MONOHYBRID CROSSES

10. In pea plants, the allele for green seeds is dominant over the allele for yellow seeds. **Cross a plant that is heterozygous for this trait with a plant that is homozygous recessive for the trait.** Draw a Punnett square to show this monohybrid cross.

The symbols: Green G

Yellow g

The cross Gg X gg

Expected phenotypes: 50 % Green

50 % yellow

	G	g
g	Gg	gg
g	Gg	gg

11. Suppose you found out that a mating between a black animal and a brown animal produced all black offspring. What is the reason for this result?

- The brown allele is dominant
- ☒ The black allele is dominant
- Both animals were homozygous recessive
- Both animals were homozygous dominant

12. In dogs the allele for short hair (H) is dominant over the allele for long hair (h).

Short hair = H

Long hair = h

Two short-haired dogs are the parents of a litter of 8 puppies. Six puppies have short hair and two puppies have long hair.

What are the genotypes of the parents? (use a punnet square)

- HH and hh
- ☒ Hh and Hh
- hh and hh
- Hh and hh

	H	h
H	HH	Hh
h	Hh	hh

DIHYBRID CROSS

13. In pea plants, round seeds (R) are dominant to wrinkled (r) seeds and green (G) seeds are dominant to yellow (g) seeds.

Cross a pea plant that is heterozygous for both traits with a plant that is homozygous recessive for both traits.

The symbols:

Round = R

Wrinkled = r

Green = G

Yellow = g

The cross: RrGg X rrgg

The alleles: Parent 1: R G Parent 2: r g

R g
r G
r g

	rg	rg	rg	rg
Rg	RrGg	RrGg	RrGg	RrGg
Rg	Rrgg	Rrgg	Rrgg	Rrgg
rG	rrGg	rrGg	rrGg	rrGg
rg	rrgg	rrgg	rrgg	rrgg

Phenotypes: 1. Round Green # 4

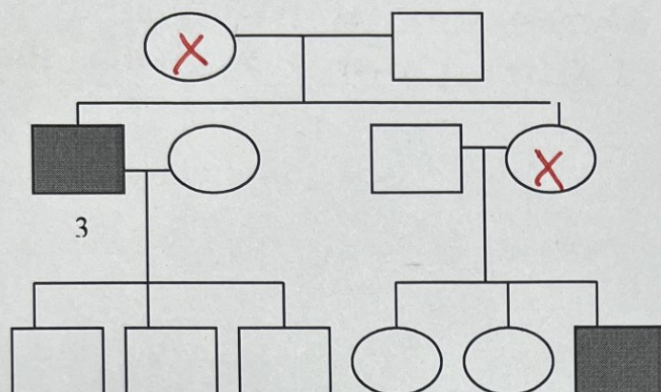
2. Round Yellow # 4

3. Wrinkled Green # 4

4. Wrinkled Yellow # 4

SEX LINKED TRAITS-

14. In the pedigree below, the shaded symbols represent people who are colorblind. Use an 'X' to mark the mothers who are carriers of colorblindness. Circle is female square is male



15. Explain why the **children** of person 3 did not inherit colorblindness.

They are all males so they only get a Y chromosome from the dad who has the affected X chromosome

16. Explain how a family pedigree can be helpful in determining the probability of having a child with a genetic disorder.

You can follow how the sex chromosomes move through the generations

Hemophilia is a sex linked trait that results in a blood clotting disorder.

N= Normal clotting, n= hemophilia

$X^N X^N$ = normal female

$X^N Y$ = normal male

$X^N X^n$ = carrier female

$X^n Y$ = male with hemophilia

$X^n X^n$ = female with hemophilia

17. Show the cross between a hemophiliac man and a woman who is a carrier. Use a Punnet square to support your answer.

- What % of males are expected to be hemophiliacs? 50%
- What % of females are expected to be hemophiliacs? 50%
- What % of females are expected to be carriers? 50%

	X^N	X^n
X^n	$X^N X^n$	$X^n X^n$
Y	$X^N Y$	$X^n Y$

18. Explain why most sex linked traits are found on the X chromosome, AND why males tend to have more sex linked disorders than females. (2pts)

Everyone has an X chromosome but not everyone has a Y. Females have 2 x chromosomes so they have a "back-up". Males only have 1 x so if that x is affected they have it.

19. Oompas can have red, blue or purple hair where purple hair is caused by the heterozygous condition. Below is a key for the genotypes.

GG	Blue hair
Gg	Purple hair
gg	Red hair

Olivia Oompa is married to Odo Oompa. Both of them have purple hair. They breed and have 100 children. Show the cross and give the probability for each hair color.

Blue
Green 25 %

Purple 50 %

Red 25 %

	G	g
G	GG	Gg
g	Gg	gg

Reflection:

After doing the self-quiz and the review sheet what do I need to work on?

What will I do to improve my understanding of the material for the test

What will I do to study for the test