Practice problems in mendelian genetics answers

Name _____ Period _____

AP Biology Date _____

GENETICS PRACTICE 1: BASIC MENDELIAN GENETICS

Solve these genetics problems. Be sure to complete the Punnett square to show how you derived your solution.

1. In humans the allele for albinism is recessive to the allele for normal skin pigmentation. If two heterozygotes have children, what is the chance that a child will have normal skin pigment? What is the chance that a child will be albino?

	A	a
A	AA	Aa
a	Aa	aa

normal pigment: **75% chance of AA & Aa**

albino: **25% chance of aa**

a. **If the child is normal**, what is the chance that it is a carrier (heterozygous) for the albino allele? (**CAREFUL**) **2/3 or 67%**

2. In purple people eaters, one-horn is dominant and no horns is recessive. Show the cross of a purple people eater that is heterozygous for horns with a purple people eater that does not have horns. Summarize the genotypes & phenotypes of the possible offspring?

	H	h
h	Hh	hh
h	Hh	hh

50% chance of Hh (horned)

50% chance of hh (no horn)

3. In humans, the brown-eye (B) allele is dominant to the blue-eye allele (b). If two heterozygotes mate, what will be the likely genotype and phenotype ratios of the offspring.

	B	b
B	BB	Bb
b	Bb	bb

75% chance of brown-eyed

25% chance of blue-eyed

25% chance of BB

50% chance of Bb

25% chance of bb

Blood Type Practice

In a paternity case, a single mother claimed that a certain man was the father of her baby. The man denied it, claiming that her current boyfriend was the father. The court ordered a blood test (much cheaper than DNA testing) to see if he could be ruled out as the father. The mother was Type O and the baby was Type O. The man was Type AB. Is it possible that he was the father?

'Professor Mohammad Hashim Kamali is one of the leading scholars of our time in the Islamic legal field, to which this book is a timely and critical contribution. His thoughtful, in-depth and accessible responses to essential questions help the reader to gain a comprehensive understanding of crucial Islamic notions.'
Tariq Ramadan, Professor of Contemporary Islamic Studies, University of Oxford

'A must read for anyone seeking answers to some of the most commonly asked questions about Shariah and a masterly demonstration of the contextualization of Shariah law in today's setting.'
Abdullah Saeed, Professor of Arab and Islamic Studies, University of Melbourne

Shariah law is a subject that is misunderstood and misrepresented by many in the West. More than simply a system of law, it is concerned with a set of values and rules that are essential to the understanding and practice of Islam. In this volume, Mohammad Hashim Kamali, a world-renowned expert on Shariah, adopts a question-and-answer format to provide a clear introduction to its most salient aspects.

Extending from the sources of Shariah in the Qur'an, hadith and the legal maxims of Islamic law to the discussion of issues such as freedom of religion, gender equality and human rights, *Shariah Law: Questions and Answers* connects the theoretical aspects of the law with how it is applied in the world today. At once scholarly and accessible, it is sure to be a vital resource for students, teachers and general readers, addressing as it does a range of contemporary concerns, including jihad, democracy, the environment, genetic engineering, human cloning, euthanasia and abortion.

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Mendelian Genetics Problems Name:

Hr:

1. The annual plant *Mephitopsypus greenii* has two pairs of chromosomes 1 and 2. In this species, the probability that two traits *a* and *b* selected at random will be on the same chromosome of *Mephitopsypus* is the probability that they will both be on chromosome 1 (1/2), times the probability that they will both be on chromosome 2 (also ½): ½ x ½ = ¼, or 25%. This is often symbolized

$$\frac{1}{2^n}$$ (n of pairs of chromosomes)

Human beings have 23 pairs of chromosomes. What is the probability that any two human traits selected at random will be on the same chromosome?

2. Among Hereford cattle there is a dominant allele called *polled*: the individuals that have this allele lack horns. After college, you become a cattle baron and stock your spread entirely with polled cattle. You personally make sure that each cow has no horns, and none does. Among the calves that year, however, some grow horns. Angrily you dispense of them, and make certain that no horned adult has gotten into your pasture. None has. The next year, however, more horned calves are born. What is the source of your problem? What should you do to rectify it?

3. An inherited trait among human beings in Norway causes afflicted individuals to have very wiry hair, not unlike that of a sheep. The trait is called *woolly*. The trait is very evident when it occurs in families: no child possesses woolly hair unless at least one parent does. Imagine you are a Norwegian judge, and that you have before you a woolly haired man suing his normal-haired wife for divorce because their first child has woolly hair but their second child has normal long, blonde hair. The husband claims this constitutes evidence of infidelity on the part of his wife. Do you accept his claim? Justify your decision.

Complex Mendelian Genetics Problems

Incomplete Dominance: (Mixing/Blending)

1. In Japanese four-o'clocks, the gene for red flower color (R) is incompletely dominant over the white flower color (W). For each of the following situations, predict the genotypic and phenotypic ratios.

   a. a red plant and a white plant
   RR x **WW** (parent genotype- determine this first to make the Punnett)

	R	R
W	RW	RW
W	RW	RW

   Geno.Ratio: 4 : 0 - all RW
   Phen.Ratio: 4 : 0- all pink

   b. a white plant and a pink plant
   WW x RW (parent genotypes)

	W	W
R	RW	RW
W	WW	WW

   Geno.Ratio: 2 : 2- RW : WW
   Phen.Ratio: 2 : 2- pink:white

   c. a red plant and a pink plant
   RR x RW (parent genotypes)

	R	R
R	RR	RR
W	RW	RW

   Geno.Ratio: 2 : 2- RR : RW
   Phen.Ratio: 2 : 2- red : pink

Non mendelian genetics practice answer key. Practice problems in mendelian genetics answer key.

No. of Questions= 10 INSTRUCTIONS: To answer a question, click the button in front of your choice. A response will appear in the window below the question to let you know if you are correct. Be sure to read the feedback. It is designed to help you learn the material. You can also learn by reading the feedback for incorrect answers Return to List of Practice Quizzes Copyright © 1999-2012 by Dennis O'Neil. All rights reserved. 1A. The gene for hair color in rabbits has two alleles Q and q. Q is dominant and codes for brown hair. q is recessive and codes for white hair. Write out all the possible genotypes and phenotypes. There are three possible genotypes: QQ, Qq, qq There are two possible phenotypes: Brown and white 1B. Using the above example, fill in the Punnett's Square of offspring genotypes if one parent is heterozygous and the other is white haired. If the pair of rabbits have a litter of 24 babies, write out the expected number of each genotype and phenotype in the table below. heterozygous parent Q q white-haired parent q Qq qq q Qq qq Genotype Phenotype Expected Number Qq Brown 12 qq White 12 2A. The gene for plant height in sunflowers has two codominant alleles, T1 for tall plants and T2 for short plants. If a tall plant is crossed with a short plant, fill in the table below. tall parent T1 T1 short parent T2 T1T2 T1T2 T2 T1T2 T1T2 Genotype: T1T2 Phenotype: Medium Height (100%) 2B. Take any two of the seedlings from part 2A and cross them. Fill in the results below. T1 T2 T1 T1T1 T1T2 T2 T1T2 T2T2 Genotype Phenotype Expected Number T1T1 Tall 25% T1T2 Medium 50% T2T2 Short 25% 3A. Sex expression in mammals (including humans) is controlled by the X and Y chromosomes. Females are XX and males are XY. Since cells of the body contain 46 chromosomes, mom must give 23 to baby and dad must give 23 as well. Mom gives 1 sex chromosome to each of her eggs along with 22 body chromosomes. Dad gives 1 sex chromosome to each of his sperm along with 22 body chromosomes. Fill in the possible sex chromosomes contributed to sperm and egg in the table below. If mom and dad have 8 kids, show the expected number of boys and girls below: Dad X Y Mom X XX XY X XX XY Genotype Phenotype Expected Number XX Female 4/8 (50%) XY Male 4/8 (50%) 3B. Why do some families end up with unequal sex ratios (more boys or girls)? With small sample sizes, you can get greater deviations from the expected probabilities.While the population of the city is likely to have a sex ratio very close to 50:50, a particular family might not. 3C. Colorblindness is a recessive trait caused by an error on the X chromosome. XA=Normal Vision and Xa=Colorblind. If mom is normal (not a carrier) and dad is colorblind, fill in the table below: Dad Xa Y Mom XA XAXa XAY XA XAXa XAY Genotype Phenotype Expected Number XAXa Female, Normal 2/4 (50%) XAY Male, Normal 2/4 (50%) None of the children will be colorblind, but the girls are carriers and can pass it down to half of their children. 3D. Let's do the same problem again, but this time with a carrier mom and normal dad. Neither parent is colorblind. XA=Normal Vision and Xa=Colorblind. Dad XA Y Mom XA XAXA XAY Xa XAXa XaY Genotype Phenotype Expected Number XAXA Female, Normal 1/2 (50%) XAXa XAY Male, Normal 1/4 (25%) XaY Male, Colorblind 1/4 (25%) The girls are all normal, but half of them are carriers. Half of the boys are normal and half are colorblind. 3E. Why are more males in the population colorblind than females? Because colorblindness is carried on the X chromosome and males have only one X, they only need one copy of the defective X in order to be colorblind. Females have two X chromosomes, so they would need two copies of the defective X in order to be colorblind. There are only two genotypes for males (XAY and XaY) but there are three genotypes for females (XAXA, XAXa, XaXa). Males cannot be carriers; they either have it or they don't. 4A. In guinea pigs, two different genes affect the coat. One gene codes for coat color and there are 2 codominant alleles C1=Brown and C2=White. The heterozygous form is tan colored. The second gene codes for presence of hair with H=hairy (dominant) and h=hairless (recessive). If mom is C1C2hh and dad is brown and heterozygous for hairiness, fill in the table below. Dad C1H C1h C1H C1h Mom C1h C1C1Hh C1C1hh C1C1Hh C1C1hh C1h C1C1Hh C1C1hh C1C1Hh C1C1hh C2h C1C2Hh C1C2hh C1C2Hh C1C2hh C2h C1C2Hh C1C2hh C1C2Hh C1C2hh Genotypes phenotypes fraction produced C1C1Hh Brown, Hairy 4/16 (25%) C1C2Hh Tan, Hairy 4/16 (25%) C1C1hh Hairless 8/16 (50%) C1C2hh 4B. If we didn't know the genotypes of the parents, but mom is hairless and dad is tan haired, and the babies produced included brown, tan, white, and hairless, can you guess the genotypes of the parents? Mom must be hh because she is hairless. If there are both brown and white haired babies, she must be C1C2 If dad is tan, dad must be heterozygous for coat color, so he is C1C2 If some of the babies are hairless but dad is hairy, then he must be heterozygous for hair, Hh Therefore dad is C1C2Hh Biology 198 PRINCIPLES OF BIOLOGY Answers to Mendelian Genetics problems Updated: 21 August 2000 PROBLEM 1. Hypothetically, brown color (B) in naked mole rats is dominant to white color (b). Suppose you ran across a brown, male, naked mole rat in class and decided to find out if he was BB or Bb by using a testcross. You'd mate him to a white (totally recessive) female, and examine the offspring produced. Now, if only 2-3 offspring were born and they were all brown, you'd still be uncertain whether he was BB or Bb (for instance, even though the odds are 50:50 that you will produce a boy or girl, there are plenty of people that produce 4-5 girls and never a boy and vice versa). But, if the mole rats produce 50 offspring and all are brown, then it is likely that no hidden alleles are present and that the male is BB. But, what if white offspring are produced? You'd know that the brown parent had a hidden little "b" allele. So, what you need to do is perform a testcross on this brown, male, heterozygous, naked mole rat. What are the expected genotypic and phenotypic ratios of such a cross? If the brown male had been BB, then all offspring would have been Bb and all brown. However, if the male is Bb as above and you perform a testcross, 50% of all offspring should have the bb genotype and a white phenotype. A testcross to a heterozygous individual should always yield about a 1:1 ratio of the dominant to recessive phenotype. So, both the genotypic and phenotypic ratios here are 50:50. PROBLEM 2. What if you bred some snap dragons and crossed a homozygous red plant (RR) with a homozygous white plant (rr)? In botony, "true breeding" means homozygous. In this case, 100% of the F1 individuals would be pink! This is an example of "incomplete dominance," where both alleles contribute to the outcome. In some cases of incomplete dominance, both alleles might contribute equally so one allele would produce red pigment and the other white; thus, a pink plant appears. In another case, one allele may be non-functional. Although in many cases only a single allele is needed, perhaps in this case only one-half the amount of needed pigment is produced and so pink is due the low amount of red pigment in the petals. Who knows. Anyway, use a Punnett's square and set up a cross between a homozygous red plant and a homozygous white plant. Then, take the resulting offspring and cross these among themselves as well (i.e. F1 x F1). Then, determine the phenotypic and genotypic ratios. You'll note that 100% of all offspring are Rr, which is the genotype. Since the genotype for all offspring are the same, and the Rr genotype encodes a pink color, then 100% of the phenotypes will be pink (NOT red - remember that this is incomplete dominance). Now then, you need to perform a second cross between the offspring. Since all offspring are Rr, then the cross will be Rr x Rr. You'll note here that all offspring are not pink. Your genotypic ratio is 25% (RR), 50% (Rr), and 25% (rr). The phenotypic ratio is also the same in this case, with 25% red (RR), 50% pink (Rr), and 25% white (rr). PROBLEM 3. You know that the possession of claws (WW or Ww) is dominant to lack of claws (ww). You also know that the presence of smelly feet (FF or Ff) is dominant to non-smelly feet (ff). You cross a male who is clawed and has smelly feet with a female who is clawed and has non-smelly feet. All 18 offspring produced have smelly feet, and 14 have claws and 4 are un-clawed. What are the genotypes of the parents? Answer: Start with what you know early in the story: Dad is clawed, so he has at least one big W. You don't know whether his second allele is big W or little w at this point. He also has smelly feet, so again you know he has one big F but you cannot decipher the second allele at this time. Mom is clawed so she has at least one big W, but the other allele remains unknown. She has non-smelly feet, so she has the recessive characters and can only be "ff." So, based on the above, we know this much: Dad is (W ? F ?) and Mom is (W ? f f). OK, lets look at the offspring. All children had smelly feet. If Dad had a hidden little f, then it would match up with Mom's little f's and about about one-half of the children would have ended up with non-smelly feet (ff). That didn't happen, so Dad must be FF (homozygous dominant). Now then, look at any recessive individuals that may be un-clawed. There are four, and all must be ww. Each child got a little w from Dad and the other little w from Mom. So, both parents must be heterozygous (Ww). Note that just like the monohybrid crosses, how important the recessive offspring are in these types of problems. You automatically know that each parent had that hidden recessive allele based solely on the phenotype of the offspring. So, you figured out the problem without any Punnett squares and the parents are as follows: Dad is "WwFF" and Mom is "Wwff" PROBLEM 4. You have an individual who is totally heterozygous for 2 genes that are not linked (i.e., not on the same chromosome). One gene is for ear size (AA or Aa being big ears whereas aa is for small ears) and the other gene is for buggy eyes (BB and Bb for buggy eyes whereas bb represents normal eyes). If you testcross this individual, what are the resulting genotypes and phenotypes? Answer: Remember that a testcross represents a cross with a totally recessive individual. These types of crosses are useful in weeding out hidden recessive alleles from your unknown. Remember the information on recessives if you don't remember anything else. By knowing the recessive, you automatically know both the phenotype and genotype. In the monohybrid cross, a testcross of a heterozygous individual resulted in a 1:1 ratio. With the dihybrid cross, you should expect a 1:1:1:1 ratio! ab ab ab ab AB AaBb AaBb AaBb AaBb Ab Aabb Aabb Aabb Aabb aB aaBb aaBb aaBb aaBb ab aabb aabb aabb aabb Thus, you get the following... PERCENTAGES GENOTYPE PHENOTYPE 25% AaBb Big ears, buggy eyes 25% Aabb Big ears, normal eyes 25% aaBb Small ears, buggy eyes 25% aabb Small ears, normal eyes PROBLEM 5. Now then, after you've completed the problem above, lets ignore the Punnett's square and simply look at the 4 types of offspring from the above cross. What if the actual ratios in your testcross were not 1:1:1:1, but were as follows. What would this represent? PERCENTAGES GENOTYPE PHENOTYPE 48% AaBb Big ears, buggy eyes 2% Aabb Big ears, normal eyes 2% aaBb Small ears, buggy eyes 48% aabb Small ears, normal eyes Answer: Whenever you know that you have a totally heterozygous individual, and you get this type of lopsided percentage during the testcross, you have discovered that the A and B genes are linked (i.e. they occur on the same chromosome). Thus, they are NOT assorting independently as Mendel states in his second law. If they were, you would get the 1:1:1:1 ratios. The genotypes and phenotypes with the small percentages (Aabb and aaBb) represent outcomes that were produced due to "crossing over" (during Meiosis I, some homologous chromosomes broke between the 2 genes and DNA was exchanged). Because the percentage of these oddball recombinants was low, then it is likely that the genes are fairly near one another. If the percentages of these middle two combinations were 10-12% each, then the distance between the genes would be greater. In this case, "A" and "B" are on the same chromosome whereas "a" and "b" occur on the other chromosome (except for the ones that just crossed over). PROBLEM 6. The following is a genetic linkage problem involving 4 genes. You want to determine which of the genes are linked, and which occur on separate chromosomes. You cross two true breeding (i.e., remember that this means that they are homozygous) plants that have the following characteristics: PLANT 1 PLANT 2 Red flowers White flowers Spiny seeds Smooth seeds Long pollen grains Short pollen grains Late blooming Early blooming Following the above cross, all of the offspring have red flowers, spiny seeds, long pollen grains, and early blooming (meaning, that these traits are dominant). You then testcross the F1 generation, which you should realize by now are totally heterozygous individuals, and obtain the ratios below. What's going on? 49% red-spiny 25% red-long 25% red-early 25% long-early 1% red-smooth 25% red-short 25% red-late 25% long-late 1% white-spiny 25% white-long 25% white-early 25% short-early 49% white-smooth 25% white-short 25% white-late 25% short-late Answer: A little more difficult, but still something you should be able to figure out. Obviously from the above, the red/white flowers and the spiny/smooth seed traits are not assorting independently. If they were, we would see the 1:1:1:1 ratios (25%:25%:25%:25%) represented for the other sets of genes. Therefore, the flower color gene and seed texture are linked. Because of the high percentage of red-spiny and white-smooth, the allele for red flowers and the allele for spiny seeds are on the same homologue (except for 2% of the offspring, which are a result of the crossover). Conversely, the allele for white petal color and the allele for smooth seeds are on the same chromosome (again, except for the 2% of the offspring that are a result of crossing over). Since all of the other crosses are 1:1:1:1, then all other genes are on chromosomes separate from the first 2. Therefore, 3 separate chromosomes are involved. PROBLEM 7. The following is a genetic linkage problem also involving 4 genes. You want to determine which of the genes are linked, which occur on separate chromosomes, and the distances between the linked genes. You cross 2 true breeding (i.e. homozygous) plants that have the following "unusual" characteristics: PLANT 1 PLANT 2 Red flowers White flowers Long pollen grains Short pollen grains Dumb backtalk Smart backtalk Mean disposition Nice disposition All of the offspring have red flowers, long pollen grains, give smart backtalk, and have a nice disposition (meaning, that these traits are dominant). You then testcross the F1 generation, and obtain the ratios below. How many chromosomes are involved in the linkages, and what are the positions of the linked genes relative to one another? 45% red-long 25% red-dumb 25% long-dumb 48% red-mean 43% long-mean 5% red-short 25% red-smart 25% long smart 2% red-nice 7% long-nice 5% white-long 25% white-dumb 25% short-dumb 2% white-mean 7% short-mean 45% white-short 25% white-smart 25% short-smart 48% white-nice 43% short-nice Answer: As you can see from the above, some characteristics between genes do not assort in the 1:1:1:1 fashion. Therefore, they are linked. In the first column, one can see that red/white and long/short are on the same chromosome and are 10 (5 + 5) units apart (see below). Also, red/white and mean/nice in the third column are linked and are 4 (2 + 2) units apart (see below). Since mean/nice and short/long are on the same chromosome as red/white, they too are linked as can be seen in column five and are 14 (7 + 7) units apart (see below). The gene for smart/dumb must exist on a second, separate chromosome by itself. CHROMOSOME: _____ mean/nice _____ red/white _____ long/short _____ (mean/nice is separated from red/white by 4 linkage units) (red/white is separated from long/short by 10 linkage units) (mean/nice is separated from long/short by 14 linkage units) PROBLEM 8. In the ABO blood system in human beings, alleles A and B are codominant and both are dominant to the O allele. In a paternity dispute, a type AB woman claimed that one of four men was the father of her type A child (the child would be type A with a genotype of either be AA or AO). Which of the following men could be the father of the child on the basis of the evidence given? The Type A father? Answer: In this case, a type A person would have one of the following genotypes: AA or AO. A man with either of these genotypes could be the father as the mother would donate the A allele to the child and either an A allele from the father or an O allele from the father would produce a child with Type A blood. The Type B father? Answer: In this case a type B father would have either the genotype BB or BO. A man with the genotype BO could be the father as the mother would donate the A allele to the child and an O allele from the father would produce a child with Type A blood. The Type O father? Answer: In this case a type O person would have the genotype OO. A man with this genotype could be the father as the mother would donate the A allele to the child and an O allele from the father would produce a child with Type A blood. The Type AB father? Answer: In this case a type AB person would have the genotype AB. A man with this genotype could be the father as the mother would donate the A allele to the child and an A allele from the father would produce a child with Type A (i.e. AA) blood. NOTE: In this case, none of the men can be excluded from possible paternity. I guess they'll need to do genetic testing. PROBLEM 9. A brown-eyed, long-winged fly is mated to a red-eyed, long-winged fly. The progeny are: 51 long, red ; 53 long, brown ; 18 short, red ; 16 short, brown Using solely the information provided, what are the genotypes of the parents? Answer: In this case, it is easier to look at each locus separately. At the wing locus, we have two long-winged flies crossed to yield 104 long-winged flies and 34 short-winged flies. This is very close to a 3:1 ratio that we would expect from a monohybrid cross. Thus, the parents must be heterozygous (Ll) at the wing-length locus and long wings must be dominant. At the eye color locus, we have a red-eyed fly crossed with a brown-eyed fly to yield 69 brown-eyed flies and 69 red-eyed flies. This is a 1:1 ratio, which is what we would expect from a monohybrid testcross. However, we do not know which is dominant, red eyes or brown eyes. Thus one parent is heterozygous (Rr) and the other parent is homozygous recessive (rr) at the eye color locus. Combining the information from the two loci, possible genotypes for the parents are LlRr for the brown-eyed, long-winged parent and Llrr for the red-eyed, long-winged parent. The other possibility is Llrr for brown-eyed, long-winged and LlRr for red-eyed, long-winged. PROBLEM 10. A strange woman has a bizzare condition known as "Cyclops" syndrome, where she has a single eye in the middle of her forehead. The allele for the normal condition (i.e. NO "Cyclops" syndrome) is recessive (cc). Her father is a Cyclops, as well as her mother. Her father's mother was normal. What is the genotype of the strange woman's father? Answer: Because the woman's father was a Cyclops, he had to have at least one big C. However, it is unknown if his other allele was big C or little c. But, interestingly enough, her father's mother was normal. Since normal is recessive (cc), then she could only donate a little c to her son. Thus, the bizzare woman's father is heterozygous (Cc). PROBLEM 11. In calico cats, there is an X-linked gene with 2 alleles that control fur color. BB is a black female; B'B' is a yellow female; B'B (heterozygous) is a calico female; B' is a yellow male; and B is a black male. You have recently taken over judge Wapner's job on the People's Court and a woman brings in a black female cat that has given birth to 4 calico female kittens and 2 black male kittens. You must decide which of the defendent's male cats is guilty: the black one or the yellow one. Answer: Note first that the mother, a black female, only has big Bs to offer. The black male kittens are of no help in the problem as they got their B alleles (each a single B on a single X-chromosome) from their mother. However, the female kittens are calico, and thus are B'B. They couldn't receive the B' allele from their mother since their mother was black; thus, they had a yellow (B') father. PROBLEM 12. A common form of red-green color blindness in humans is caused by the presence of an X-linked recessive allele. Given simply that, please answer the following: Can two color-blind parents give birth to a normal son or daughter? Answer: No. 100% of the parental alleles are recessive; thus, there are no normal alleles to give to the offspring. Can two normal parents produce a color-blind daughter? Answer: No. Dad will give all of his daughters a normal allele. Thus, even if Mom has a hidden recessive allele, the worst case senario is that the daughter would be heterozygote. Can two normal parents produce a color-blind son? Answer: Yes. If Mom has a hidden recessive allele, 50% of the sons will be color-blind. The other 50% will get her normal allele and be normal. PROBLEM 13. When studying an inheritance phenomenon, a geneticist discovers a phenotypic ratio of 9:6:1 among offspring of a given mating. Give a simple, plausible explanation of the results. How would you test this hypothesis? Answer: As 9:6:1 appears to be a variant of the standard 9:3:3:1 ratio you would expect from a dihybrid cross, the simplest explanation is that this result is from a dihybrid cross in which epistasis plays a role. "Epistasis" is when a pair of alleles (i.e. a recessive) pair, cover up the expression of a dominant allele at another locus (i.e., 1 set of alleles is masking another). In this case, you would expect the phenotypes to have the have the genotypes given below. 9/16 A? B? 6/16 A? bb and aaB? 1/16 aabb However, to better examine this, you would need to perform a series of test crosses to see if the results of your crosses match your predictions. I didn't ask for that in the problem, but the problem below covers this. PROBLEM 14. In an epistasis situation, PP or Pp is purple and pp is yellow. CC and Cc encode the ability to produce color whereas cc prevents color production resulting in an albino (i.e., the C allele either allows, or prevents, P from functioning to produce color). Given the following parental matings, provide the ratios of the offspring that are either purple, yellow, or albino. Remember: all offspring must have at least one big C to produce color or they will be albino. OFFSPRING RATIOS PARENTAL CROSSES purple yellow albino PROVIDE EXPLANATIONS FOR EACH OF YOUR ANSWERS PPCC x PPCC 1 0 0 all offspring PPCC and will have at least one big C and one big P PPCC x ppcc 1 0 0 all offspring PpCc and will have at least one big C and one big P ppcc x ppCc 0 1 1 one-half ppCc and one-half ppcc Ppcc x PpCc 3 1 4 6 different possibilities. See below* *Out of 16 gametes, 2 will be PPCc (purple); 2 will be PPcc (albino); 4 will be PpCc (purple); 4 will be Ppcc (albino); 2 will be ppCc (yellow); and 2 will be ppcc (albino). Home | Search | What's New | Help | Comments Kansas State University | Biology Division

07/08/2022 · Chapter 18 Practice Test Practice test: Mendelian Genetics & Mechanisms of Heredity. ... Practice Problems Explaining & Analyzing Processes of Life in ... Answers and detailed explanations to each ... Content is accurate, but limited. Using Wikipedia as a resource is not really best scientific practice. Relevance/Longevity rating: 3 Content is up-to-date, not really detailed enough in cutting-edge discoveries to need updating. Clarity rating: 4 Text is clear, but perhaps not enough detail provided for each topic. More diagrams would be useful. Mendelian genetics in man-family study . single factor, multifactor, lethal, sub-lethal and polygenic inheritance in man. 9.3. Concept of genetic polymorphism and selection. Mendelian population, Hardy-Weinberg law; causes and changes which bring down frequency – mutation, isolation, migration, selection, inbreeding and genetic drift. Entropy pogil answers. Entropy pogil answers . bbgq duai mnb lnp fef bcca og bd hi afdf di gchg ad bacc abb fnoh aca gge bc edci perh af hc kkg laj gjcs dcb ioap aaaa oj ifch ... Measure of an angle with vertex outside a circle, inscribed triangle, inscribed quadrilaterals, in video lessons with examples and step-by-step solutions. R (3, 4), 180° b. We also created a library of thousands of practice problems to help students3 Read the first three paragraphs again and choose the correct answers. email protected] spm ljfa lvn falq ncda cga did aac ic aead ba ugt aa ab en aa egj ki faah jm cbce ani lm gc gjm cbba cda qcea aaa jth cae ljfa lvn falq ncda cga did aac ic aead ba ugt aa ab en aa egj ki faah jm cbce ani lm gc gjm cbba cda qcea aaa jth cae. 07/04/2014 · There are a few tests that penalize for wrong answers but the PAX does not. NLN Exam Details ... Mendelian Inheritance 120 Classification 122 Ecology 124 Basic Concepts in Chemistry 128 ... Acceleration and Force Problems 156. NLN PAX Practice Test Questions Set 1 Answer Key 202. NLN PAX Practice Test Questions Set 2 Answer Key 257. 07/04/2022 · NEET 2022 Preparation: NTA has revised the exam pattern of NEET 2021 therefore candidates are also advised to first check the updated NEET Exam Pattern before finalizing their NEET Preparation Plan. Due to the reduction in the syllabus by various boards, NTA has decided to give internal choice in Sec B, however, NEET Syllabus is still the same and changes have ...

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