Genetics Exam Review Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Matching**

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| 1. \_\_\_\_\_ Genotype | a. the segment of DNA that determines a particular trait |
| 2. \_\_\_\_\_ Phenotype | b. the form of the gene that shows when inherited from two parents |
| 3. \_\_\_\_\_ Allele | c. the genes an individual carries (the genetic code for a trait) |
| 4. \_\_\_\_\_ Heterozygous | d. Two identical genes for the same trait |
| 5. \_\_\_\_\_ Homozygous | e. an trait which is present even when inherited only from one parent. |
| 6. \_\_\_\_\_ Dominant | f. the observable expression of a trait (the physical appearance) |
| 7. \_\_\_\_\_ Recessive | g. all of the different forms of a gene |
| 10. \_\_\_\_ Gene | h. two different genes for the same trait |

**Genetics Practice Problems**

1. For each genotype below, indicate whether it is heterozygous (He) or homozygous (Ho)

AA\_\_\_\_\_ Ee\_\_\_\_\_ Ii\_\_\_\_\_ Mm\_\_\_\_\_ Pp\_\_\_\_\_

Bb\_\_\_\_\_ ff\_\_\_\_\_ Jj\_\_\_\_\_ nn\_\_\_\_\_ LL\_\_\_\_\_

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| --- | --- | --- |
| 1. Brown hair is dominant to blonde hair. Cross two parents who are heterozygous for brown hair
 | http://www.hobart.k12.in.us/jkousen/Biology/psquare0.jpg | % Brown Hair \_\_\_\_\_\_\_\_\_\_\_% Blonde Hair \_\_\_\_\_\_\_\_\_\_ |
| 1. Brown eyes are dominant to blue eyes. Cross a blue eyed parent and a heterozygous brown eyed parent
 | http://www.hobart.k12.in.us/jkousen/Biology/psquare0.jpg | % Brown Eyes \_\_\_\_\_\_\_\_\_\_\_% Blue Eyes \_\_\_\_\_\_\_\_\_\_\_ |
| 1. Describe incomplete dominance.
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| 1. Snap Dragons exhibit incomplete dominance between red and white alleles. Cross a pink (CRCW) with a white flower (CWCW)
2. Cross two heterozygous tan cows. BB=Black, BW=tan, and WW=white
 | http://www.hobart.k12.in.us/jkousen/Biology/psquare0.jpghttp://www.hobart.k12.in.us/jkousen/Biology/psquare0.jpg | % red \_\_\_\_\_\_\_\_\_\_\_% pink \_\_\_\_\_\_\_\_\_\_\_% white \_\_\_\_\_\_\_\_\_\_\_% Black \_\_\_\_\_\_\_\_\_\_\_% tan \_\_\_\_\_\_\_\_\_\_\_% white \_\_\_\_\_\_\_\_\_\_\_ |
| 1. Describe codominance.
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| 1. Coat color in cattle exhibits codominance. Cross a brown and white spotted cow (BW) with a white cow (WW)
2. Feather color in chickens is codominant. A black chicken crossed with a white chicken will produce black and white spotted offspring. Cross two black and white spotted offspring.
 | http://www.hobart.k12.in.us/jkousen/Biology/psquare0.jpghttp://www.hobart.k12.in.us/jkousen/Biology/psquare0.jpg | % brown \_\_\_\_\_\_\_\_\_\_\_% white \_\_\_\_\_\_\_\_\_\_\_% brown and white spots \_\_\_\_\_\_\_\_\_% Black\_\_\_\_\_\_\_\_\_\_\_\_% White \_\_\_\_\_\_\_\_\_\_\_% black and white spots \_\_\_\_\_\_\_\_\_\_\_ |
| 1. Describe sex-linked alleles.
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| 1. Colorblindness is a sex-linked recessive allele. What would be the outcome of a mating between a colorblind male and a female who is a carrier for colorblindness?
 | http://www.hobart.k12.in.us/jkousen/Biology/psquare0.jpg | % normal males \_\_\_\_\_\_\_\_\_\_\_% normal females \_\_\_\_\_\_\_\_\_\_\_% colorblind males \_\_\_\_\_\_\_\_\_\_% colorblind females \_\_\_\_\_\_\_\_ |
| 1. Cross a person with type AB blood with a person who is heterozygous for type A blood.
 | http://www.hobart.k12.in.us/jkousen/Biology/psquare0.jpg | % Type A blood\_\_\_\_\_\_\_\_\_% Type B blood\_\_\_\_\_\_\_\_\_% Type AB blood\_\_\_\_\_\_\_\_\_% Type O blood\_\_\_\_\_\_\_\_\_ |
| 1. What does this Karyotype show?

Male or Female?Normal or Abnormal?If abnormal what is the defect? | Image result for trisomy 13 |

24. What is cloning?

25. What is a genetically modified organism?

26. What is a DNA fingerprint and how might it be used?

27. The pedigree to the right shows the passing on of Hitchhiker’s Thumb in a family. Is this trait dominant or recessive?

28. How do you know?

29. How are individuals II-1 and II-4 related?

30. What is the relationship between individuals III-1 and III-2

31. Suppose that black hair (B) is dominant over blonde hair (b) and brown eyes (E) are dominant over blue eyes (e). The father has black hair (heterozygous) and brown eyes (heterozygous) and the mother has blonde hair and blue eyes.

 Genotype of father – \_\_\_\_\_\_\_\_\_ Genotype of mother - \_\_\_\_\_\_\_\_\_\_\_

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1. What percent of the offspring will be totally heterozygous?

2. What is the phenotype ratio?

3. What percent of the offspring will have blonde hair and blue eyes?