

Name _____ Date _____ Period _____

Sex-linked Diseases (& Blood Type)

The following sex-linked diseases are carried on the X-chromosome and are recessive.


Key	
Male	Female
$X^N Y = \text{Normal Male}$	$X^N X^N = \text{Normal Female}$
$X^n Y = \text{Affected Male}$	$X^N X^n = \text{Carrier Female}$
	$X^n X^n = \text{Affected Female}$

1) A normal woman ($X^N X^N$) marries a man with hemophilia ($X^n Y$). Draw a Punnett square and write the genotypes of the kids.

2) Yes No Will the couple above have any hemophiliac children?

3) A carrier female ($X^N X^n$) marries a normal man ($X^N Y$). Draw the Punnett Square below.

4) _____ What is the probability that the couple above will have a hemophiliac child?

5)  <--- The son has hemophilia. What is his genotype? _____

6) What is the genotype of the Dad? _____

7) What is the genotype of the Mom? _____

8) Will a hemophiliac father pass the bad allele to his **son**, or his **daughter**? Assume that mom is 100% normal. Show what happens with a Punnett Square.

9) Will a hemophiliac father **ever** pass his bad gene to his son? **Why or why not?**

10) A color-blind mom ($X^n X^n$) marries a normal man ($X^N Y$). Draw the Punnett Square.

11) Describe the sons of the couple above.

12) Describe the daughters of the couple above.

1) A homozygous blood type A mother mates with a blood type AB father. **Draw the Punnett Square** that shows possible blood types of the children.

Alleles of Blood Types	
Blood Type	Combination of Alleles
A	$I^A I^A$ or $I^A i$
B	$I^B I^B$ or $I^B i$
AB	$I^A I^B$
O	ii

1a) What percent are Type A ? _____ Type AB? _____

2. A heterozygous blood type B mates with a type O. **Draw the Punnett Square** that shows the blood types of the children.

2a) What percent of the children are Type B? _____ Type O? _____

3. A heterozygous blood type A mates with a heterozygous blood type B. **Draw the Punnett Square** that shows the blood types of the children.

3a) What percent of the children are...

Type A? _____ Type B? _____ Type AB? _____ Type O? _____