

1. Hemophilia, a blood clotting disorder, is caused by an X-linked recessive allele (h). What are the chances that the daughter of a normal man and a heterozygous woman will have hemophilia?

a. Write the allele symbols and indicate what trait they code for.

$X^H = \text{normal}$      $X^h = \text{hemophilia}$

b. Write the P<sub>1</sub> cross.

$X^H Y \times X^H X^h$

c. Write the Punnett square.

	$X^H$	$X^h$
$X^H$	$X^H X^H$	$X^H X^h$
$Y$	$X^H Y$	$X^h Y$

d. Answer to the question:  $0\%$

2. A recessive allele on the X chromosome causes colorblindness. A woman with normal vision (whose father is colorblind) marries a colorblind man. What fraction of their children is expected to be colorblind boys? Show your work and circle your answer below.

$X^C = \text{normal}$      $X^c = \text{colorblind}$

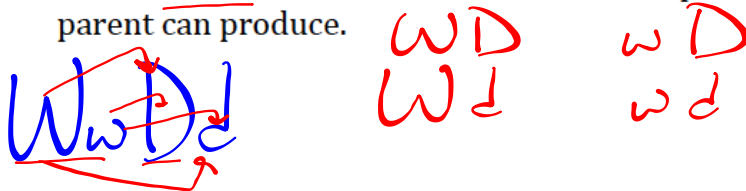
$X^C X^c \times X^c Y$

	$X^C$	$X^c$
$X^c$	$X^C X^c$	$X^c X^c$
$Y$	$X^C Y$	$X^c Y$

$25\%$

3. For a species of squash, assume white color is dominant to yellow color, and disk shape is dominant to spherical shape. If a squash plant that is heterozygous for white, disk squash ( $WwDd$ ) is crossed with a plant that is also heterozygous for white and disk, how many different **phenotypes** are their offspring expected to show?

- a. Use the FOIL method to show the different possible gametes that each parent can produce.



- b. Make a Punnett square showing the possible genotypes of offspring of this 2-factor cross.

	$WD$	$Wd$	$wD$	$wd$
$WD$	$WWDD$	$WwDd$	$WwDD$	$WwDd$
$Wd$	$WwDd$	$WWdd$	$WwDd$	$Wwdd$
$wD$	$WwDd$	$WwDd$	$wwDD$	$wwDd$
$wd$	$WwDd$	$Wwdd$	$wwDd$	$wwdd$

$9 : 3 : 3 : 1$

- white, disk  
- white, sphere

- yellow, disk  
- yellow, sphere