Name: KEY Row: _____

Date:_____ Period:_____

Sex-Linked Traits Worksheet

1) Albinism is a recessive autosomal genetic disorder that causes the complete or partial absence of pigments in the skin, hair and eyes. Fill in the Punnett square and determine the expected genotypic ratios from crossing homozygous recessive and heterozygous dominant parents.

	a	a
A		
a		

Genotypes: Aa: aa Genotypic Ratio: 1:1

Phenotypes: Normal: albino

% of kids with disorder: 50% % of carrier kids: 50%

2) Red-Green color blindness is a recessive sex-linked (X chromosome) genetic disorder where the middle (green) or long (red-yellow) wavelength cones in the eyes have a partial or complete loss of function. Fill in the Punnett square and determine the expected genotypes and phenotypes from crossing a normal male and a female who is a carrier for colorblindness.

	X^H	X^h
X^H		
Y		

Genotypes: XHXH. XHXh. XHY. XhY

Circle all phenotype(s): normal male, male with colorblindness, normal female, carrier female, female with colorblindness

% of kids with disorder: 25% Circle their gender(s) male / female

3) Color blindness is a recessive sex-linked genetic disorder located on the X chromosome. Fill in the Punnett square for a cross of a male with color blindness and a normal female.

	X^H	X^H
X^h		
Y		

Genotypes: XHXh - XHY

Circle all phenotype(s): normal male, male with colorblindness, normal female, carrier female, female with colorblindness

% of kids with disorder: 0% Circle their gender(s) male / female

4) Color blindness is a recessive sex-linked genetic disorder located on the X chromosome. Fill in the Punnett square for a cross of a male who is color blind and a female who is a carrier for color blindness.

	XN	Xn
Xn		
Y		

Genotypes: XNXn - XnXn - XNY - XnY

Circle all phenotype(s): normal male, male with colorblindness, normal female, carrier female, female with colorblindness

% of kids with disorder: 50% Circle their gender(s) male / female

5) Color blindness is a recessive sex-linked genetic disorder located on the X chromosome. Fill in the Punnett square for a cross of a normal male and a female who is color blind.

	Xn	Xn
XN		
Y		

Genotypes: XNXn - XnY

Circle all phenotype(s): normal male, male with colorblindness, normal female, carrier female, female with colorblindness

% of kids with disorder: 50% Circle their gender(s): male / female

6) Color blindness is a recessive sex-linked genetic disorder located on the X chromosome. Fill in the Punnett square for a cross of a color blind male and a color blind female.

	Xn	Xn
Xn		
Y		

Genotypes: XnXn - XnY

Circle all phenotype(s): normal male, male with colorblindness, normal female, carrier female, female with colorblindness

% of kids with disorder: 100% Circle their gender(s): male / female

7) Explain how sex-linked traits are different than autosomal traits.

Sex linked traits are carried on Chromosome #23 and therefore are carried on the X chromosome. They are more prevalent in males as they only need one gene to express the trait whereas females need both recessive genes to show the disease. Females must have a father with the disease and a carrier mother or diseased mother to show the disease.

8) Explain why males have more sex-linked disorders than females. See above