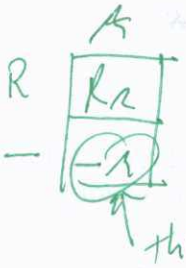
Extra Practice Problems

1. Mr. Thornybottom wants to breed red roses. Red color in roses is dominant to white color. He has red roses in his garden but he needs to figure out if they are heterozygous or homozygous. Suggest a way that Mr. Thornybottom could test his red roses to find out their genotype (hint, he does have white roses available).

1. R= red r= white
2. RR, Rr = red
rr = white
3. R_ X rr
4. R _ r
5. 

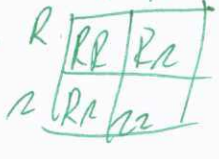
this 50% will tell the original genotype

6. Geno: Rr : rr
Pheno: Red: All red / white
7. Cross with the recessive phenotype since you know the recessive genotype.

2. Pretend Mr. Thornybottom crossed his red roses with white roses and got all red roses from the resulting seeds. What would be the expected phenotypes and genotypes if the new red roses were allowed to self-fertilize

1+2. Same as above
3. RR x rr
4. R R r r
5. 

6. Att
Geno: All Rr
Pheno: All red

3b. Rr x Rr
4b. R r R r
5b. 

6b. Geno: RR : 2Rr : rr
Pheno 3 Red : 1 white

3. a. When a white cow and a dark bull are bred the resulting calves usually have a spotted, white and dark color pattern known as roan. Show this cross.
   b. What would be the expected phenotypes and genotypes if two roan cattle were allowed to mate?

1. W = white w = Dark
2. WW = white
   Ww = roan
   ww = dark
3. WW × ww
4. W w
5. w | Ww
6. Geno: All Ww
   Pheno: All roan

3b. Ww × Ww
4b. W w W w
5b.

	W	w
W	WW	Ww
w	Ww	ww

6b. Geno WW : 2Ww : ww
Pheno 1 white : 2 roan : 1 dark
* Colominance *

4. In Indiana land sharks blue color is dominant to white and pointed teeth are dominant to round. A male land shark who is homozygous for blue color and sharp teeth mates with a female land shark who is homozygous for white color and round teeth. Show:
   1) A P cross from above
   2) A F_1 Cross from above

1. B = Blue b = white
   P = pointed p = round
2. BB, Bb = Blue bb = white
   PP, Pp = pointed pp = white
3. BBPP × bbpp
4. (BP) (bp)
5. bp
   BP | BbPp
6. Geno: All BbPp
   Pheno: All Blue Pointed

3b. BbPp × BbPp
4b. (BP) (Bp) (bP) (bp) → same
5b.

	BP	Bp	bP	bp
BP	BBPP	BBPp	BbPP	BbPp
Bp	BBPp	BBpp	BbPp	Bbpp
bP	BbPP	BbPp	bbPP	bbPp
bp	BbPp	Bbpp	bbPp	bbpp

6b. Geno 1BBPP : 2BBPp : 1BBpp : 2BbPP : 4BbPp : 2Bbpp : 1bbPP : 2bbPp : 1bbpp
Pheno. 9 Blue Pointed : 3 white Pointed : 3 Blue round : 1 white round