1. In fruit flies, normal wings (W) is dominant over vestigial wings (w). The results of a cross of two flies gives the following offspring:

Normal Wing	793
Vestigial Wing	811

~1600

ww

What was the genotype of the parents of these F1 offspring? Use a Punnett square to support your answer.

	W	w
w	Ww	ww
w	Ww	ww

Ww x ww

2. In fruit flies the eye color is controlled by genes. Red is dominant to white. Find the possible eye colors of the F1 generation for each of the following crosses. Use the five-step format given in class to solve each problem. (the first one is set up for you)

A) Rr x rr

1) Symbols:

R = red r = white

2) genotypes of parents

Rr x rr

3) possible gametes

Rr, rr

4) fill out the square:

	R	r
r	Rr	rr
r	Rr	rr

5) Phenotypic and genotypic ratios:

P = 2 : 2

G = 0 : 2 : 2

B) rr x RR

Rr

	R	R
r	Rr	Rr
r	Rr	Rr

P = 4 : 0

G = 0 : 4 : 0

C) Rr x Rr

RR, Rr, rr

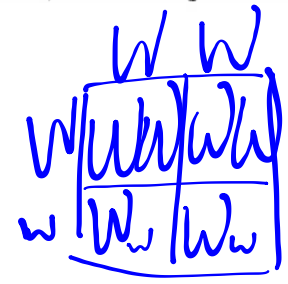
	R	r
R	RR	Rr
r	Rr	rr

P = 3 : 1

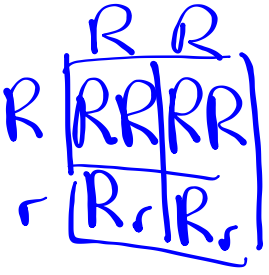
G = 1 : 2 : 1

3. Circle the crosses that are possible (i.e. are written correctly) from the list below, and then complete them below using Punnett squares, solved using the five-step format given in class.

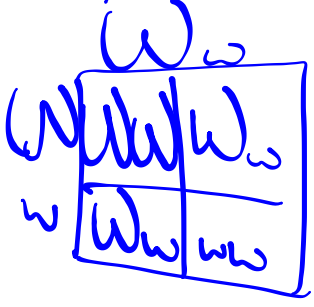
A. Ww x RR
B. WW x Ww
C. RW x rw
D. Rr x RR
E. Ww x Ww
F. WR x rr
G. Wwr x Rrw



P = 4:0
G = 2:2:0



P = 4:0
G = 2:2:0



P = 3:1
G = 1:2:1

Assort the gametes produced by the following genotypes. Use arrows to show the various combinatior and give ratios of each kind of gamete produced.

1. Bb Cc
   ¼ BC ¼ bC
   ¼ Bc ¼ bc

2. Tt Gg ¼ TG ¼ tG
   ¼ Tg ¼ tg

3. Cc bb ½ Cb
   ½ cb

4. RR gg Rg 100%

5. rr Gg
   ½ rG
   ½ rg

6. tt Ww
   ½ Wt
   ½ wt

7. ++ Nn
   ½ +N
   ½ +n

8. tt rr tr – 100%

9. Vv nn
   ½ Vn
   ½ vn

Tall stem is dominant to dwarf stem and red flower is dominant to white flower. Determine the kind of gametes that each of the following individuals can produce.

1. homozygous tall – heterozygous red
   TTRr ½ TR ½ Tr

2. heterozygous tall – white
   Ttrr ½ T r ½ t r

3. dwarf – white
   ttrr 100% tr

4. hybrid tall – true-breeding red
   TtRR ½ TR ½ Tr

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

AA Ho Ee He Ii He Mm He
Bb He ff Ho Jj He nn Ho

2. For each of the **genotypes** below determine what **phenotypes** would be possible.

Purple flowers are dominant to white flowers.

PP purple
Pp purple
pp white

Brown eyes are dominant to blue eyes

BB brown
Bb brown
bb blue

Round seeds are dominant to wrinkled seeds.

RR Round
Rr Round
rr Wrinkled

Bobtails in cats are recessive.

TT tail
Tt tail
tt bobtail

3. For each **phenotype** below, list the **genotypes** (remember to use the letter of the dominant trait)

Straight hair is dominant to curly.

SS straight
Ss straight
ss curly

Pointed heads are dominant to round heads.

PP pointed
Pp pointed
pp round

AaBb "FOIL"

1/4 AB
1/4 Ab
1/4 aB
1/4 ab