Predicting Results

LT: Identify & analyse data which demonstrates chance as a factor of determining genetic outcomes.

Hypothesis: If we cross 2 brown heterozygous black rabbits then 25 % of the offspring will be brown.

Code
B = black (dominant)
b = brown (recessive)

heterozygous X heterozygous
Bb Bb

homozygous-dominant BB
homozygous- recessive bb
heterozygous is always dominant Bb

Capital letter, the phenotype is what shows up

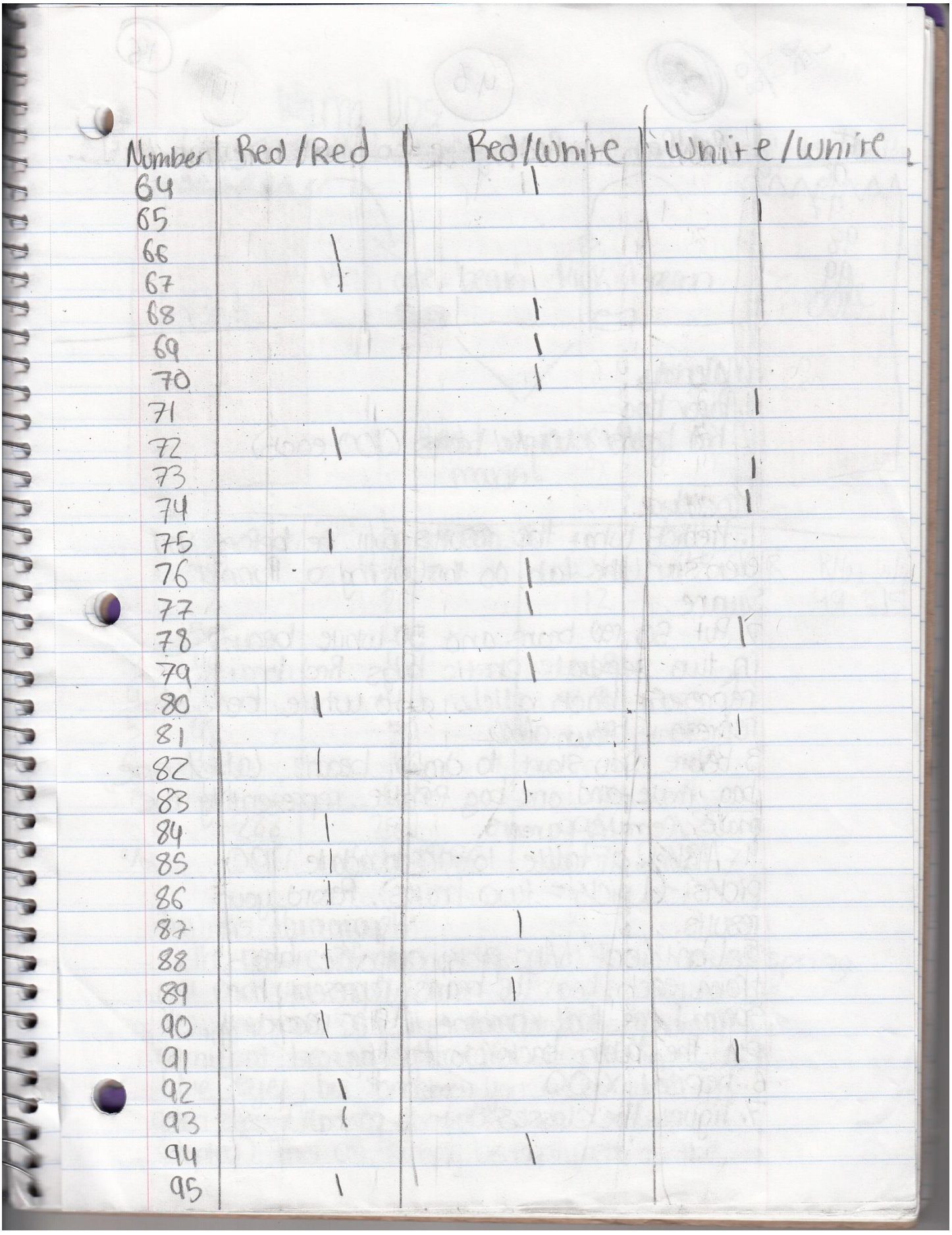
Dad \ Mom	B	b
B	25 BB	50 Bb
b	75 Bb	bb

genotype	phenotype
25 BB	black
50 Bb	black
75 bb	brown

red beans = B alleles
white beans = b alleles

Gene Rabbits	Combinations Red/Red	Red/White	White/White
1	1	1	
2		1	
3		1	
4	1		
5	1		
6	1		
7	1		
8	1		
9	1		
10	1	1	
11		1	
12			
13	1		1
14		1	
15			
16	1	1	
17		1	
18			
19	1		1
20		1	
21			1
22			
23	1	1 10	
24		1	
25		1	
26			
27	1		
28	1	1	
29		1	
30			
31	1		

Number	Red / Red	Red/White	White/White
32		1	
33		1	
34			1
35	1		
36			1
37		1	
38	1		
39		1	
40	1		
41			1
42		1	
43	1		
44		1	
45			1
46	1		
47		1	
48			1
49	1		
50			1
51		1	
52	1		
53			1
54		1	
55		1	
56		1	
57	1		
58		1	
59		1	
60		1	
61			1
62	1		
63		1	


Number
Red/Red
Red/White
White/White
64
65
66
67
68
69
70
71
72
73
74
75
76
77
78
79
80
81
82
83
84
85
86
87
88
89
90
91
92
93
94
95

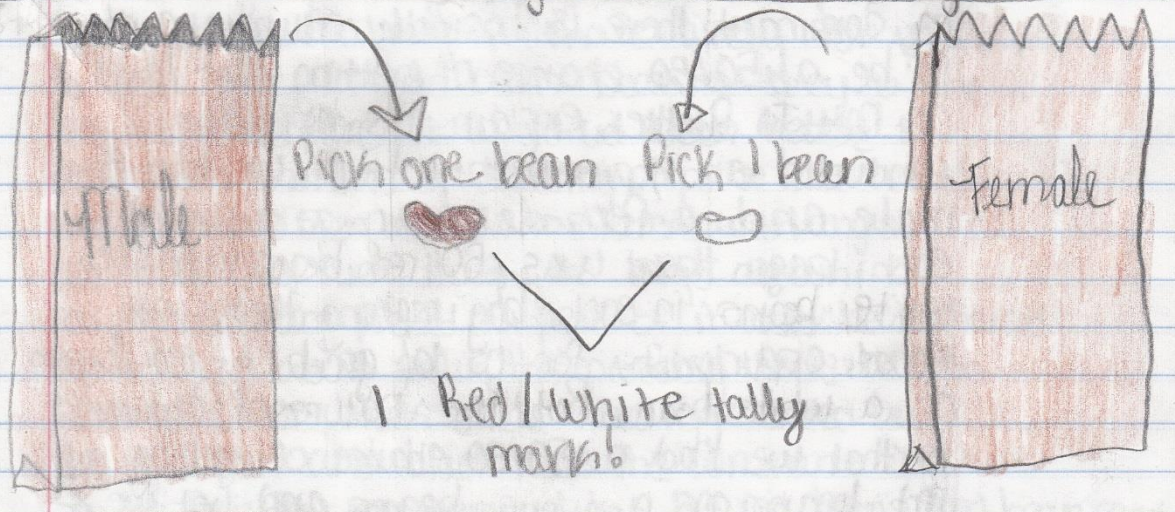
#	Red/Red	Red/White	White/White
96		1	
97	1		
98			1
99		1	
100		1	

Materials:
1. Paper Bag
2. Red beans & White beans (100 each)

Procedure:
1. Predict what the results will be before you even start the lab; do this using a Punnet Square.
2. Put 50 red beans and 50 white beans in two seperate plastic bags. Red beans represent black allele and white beans represent brown allele
3. Before you start to draw beans, label one bag male and one bag female representing the male/female parents.
4. Make a table to accomodate 100 picks - (1 pick = two beans). Record your results.
5. Don't Look! And pick out one bean from each bag. The beans represent the sperm & egg that combine. After recording, put the bean back into the bag.
6. Repeat x100
7. Figure the classes data & record it

Warm Ups

3-17-14 "Life is either a daring eventure or nothing" -Helen Keller



3rd Period Data

	R/R	R/W	W/W	8	R/R	R/W	W/W
1	62	26	12		36	49	15
2	50	42	8				
3	40	42	18				
4	50	41	9				
5	42	39	19				
6	38	46	16				
7	41	45	14				
	282	281	96				
%	47	40.14286	13.71428571				

Analysis Paragraph:

The nature of chance is that how an offspring will end up really isn't all that predictable. Yes, you can say that the blue eye phenotype is dominant because your older two siblings have blue eyes, but somehow you ended up with green eyes. (And no the older two weren't adopted). This can simply be explained as the

→ TURN PAGE!

we could control what bean we pulled out each time. Making it more likely for us to pull out a red bean because they were bigger. Therefore, it would've been better to test with marbels or counting chips so that everything was the same size and didn't interfere with any of the data. Also, even though the large amount of red beans being picked out half of it could be explained by the size, but in reality this probably would happen because (B) or black allele were represented by the red bean and black was the dominant allel. So the fact that some groups got 50 red beans / red bean combo would make sense in actual life because thats the dominant allele, there was no way to show this dominance in our lab because in our lab everything had a 50/50 chance regardless of dominance or not... (another disclaimer).

Overall, our goal was to identify & analyse evidence which demonstrates chance as a factor in genetic outcome. I do accept my hypothesis because we estimated that 25% of the bunny's would be brown. Although our class came out with 13% there was the factor of being able to tell which bean you were going to pull out. And in the grand scheme of things, 13% is pretty close, and 25% was a logical refrence point based off the Punnet's Square. In this lab I learned that the way we look is basically chance and even if we know the geno/phenotype, theres no telling how we'll look (or what fur color) Now I wonder... just how much would the data change doing it with marbels? Would we get closer to that 25%?

Heads or Tails?!

#	(B) Heads	(b) Tails
1		1
2	1	
3		1
4		1
5		1
6	1	
7	1	
8		1
9	1	
10		1
11	1	
12	1	
13		1
14	1	
15	1	
16	1	
17		1
18	1	
19	1	
20	1	
21		1
22		1
23	1	
24		1
25		1
26	1	
27	1	
28		1
29		1
30		1
31	1	
32		1

#	(B) Heads	(b) Tails
33	1	
34	1	
35	1	
36	1	
37		1
38	1	
39	1	
40		1
41		1
42	1	
43		1
44		1
45	1	
46	1	
47		1
48		1
49		1
50	1	
51		1
52	1	
53	1	
54	1	
55	1	
56		1
57	1	
58	1	
59	1	
60	1	
61		1
62		1
63	1	
64	1	

#	(B) Heads	(b) Tails
65	|	
66	|	
67	|	
68		|
69	|	
70		|
71	|	
72		|
73		|
74	|	
75	|	
76		|
77	|	
78		|
79	|	
80		|
81		|
82	|	
83	|	
84	|	
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86		|
87	|	
88	|	
89		|
90		|
91		|
92		|
93		|
94	|	
95		|
96		|

#	(B) Heads	(b) Tails
97	|	
98		|
99	|	
100		|
Totals	54	46

354
9
436

55
46
101

54 | 100.0
54
460

The difference between the two sets of data is that obviously the heads and tails data only has two possibilities - both being fair because there is no way to cheat because of the size of the beans. For example's sake let's say that Heads is the black allele and Tails is the brown allele, technically it should show up 50/50 for each after 100 times because they have a 50% chance everytime. But that's not how it ended up, which could partially be effected by not throwing it the same way every time. But overall I think this data would be more accurate because of the fair chance everytime. It turns out that heads had more by eight tosses. Which is still almost 50/50. However, this data wouldn't work because there aren't 3 possibilities like there would be normally.