Dihybrid Cross Worksheet

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1. Set up a punnett square using the following information:
   - Dominate allele for tall plants = D
   - Recessive allele for dwarf plants = d
   - Dominate allele for purple flowers = W
   - Recessive allele for white flowers = w
   - Cross a homozygous dominate parent (DDWW) with a homozygous recessive parent (ddww)

	DW	DW	DW	DW
dw	DdWw	DdWw		
dw	DdWw	DdWw		
dw	DdWw	DdWw		
dw	DdWw	DdWw		

All will be DdWw

2. Using the punnett square in question #1:
   a. What is the probability of producing tall plants with purple flowers? 100% or 16/16
      Possible genotype(s)? DdWw
   b. What is the probability of producing dwarf plants with white flowers? 0%
      Possible genotype(s)? None
   c. What is the probability of producing tall plants with white flowers? 0%
      Possible genotype(s)? None
   d. What is the probability of producing dwarf plants with purple flowers? 0%
      Possible genotype(s)? None

3. Set up a punnett square using the following information:
   - Dominate allele for black fur in guinea pigs = B
   - Recessive allele for white fur in guinea pigs =b
   - Dominate allele for rough fur in guinea pigs = R
   - Recessive allele for smooth fur in guinea pigs = r
   - Cross a heterozygous parent (BbRr) with a heterozygous parent (BbRr)

	BR	Br	bR	br
BR	BBRR	BBRr	BbRR	BbRr
Br	BBRr	BBrr	BbRr	Bbrr
bR	BbRR	BbRr	bbRR	bbRr
br	BbRr	Bbrr	bbRr	bbrr

BbRr x BbRr

4 Possible Gametes for each

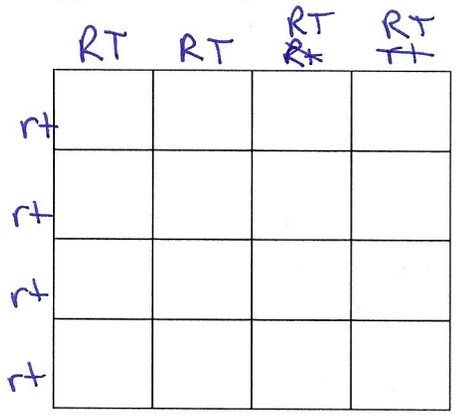
1. BR
2. Br
3. bR
4. br

1. BR
2. Br
3. bR
4. br

4. Using the punnett square in question #3:
   a. What is the probability of producing guinea pigs with black, rough fur? 9/16
      Possible genotype(s)? BBRR BBRr BbRR BbRr
   b. What is the probability of producing guinea pigs with black, smooth fur? 3/16
      Possible genotype(s)? BBrr Bbrr
   c. What is the probability of producing guinea pigs with white, rough fur? 3/16
      Possible genotype(s)? bbRR bbRr
   d. What is the probability of producing guinea pigs with white, smooth fur? 1/16
      Possible genotype(s)? bbrr

RRTT x rrtt

5. Set up a punnett square using the following information:
   - Dominate allele for purple corn kernels = R
   - Recessive allele for yellow corn kernels = r
   - Dominate allele for starchy kernels = T
   - Recessive allele for sweet kernals = t
   - Cross a homozygous dominate parent with a homozygous recessive parent



100% → RrTt Heterozygous

6. Using the punnett square in question #5:
   a. What is the probability of producing purple, starchy corn kernels? 100%

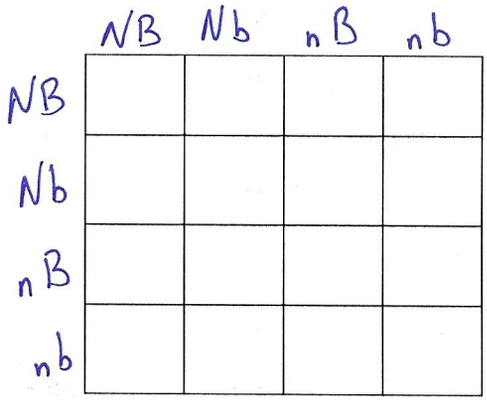
      Possible genotype(s)? RrTt
   b. What is the probability of producing yellow, starchy corn kernels? 0%

      Possible genotype(s)? None
   c. What is the probability of producing purple, sweet corn kernels? 0%

      Possible genotype(s)? None
   d. What is the probability of producing yellow, sweet corn kernels? 0%

      Possible genotype(s)? None

7. Set up a punnett square using the following information:
   - Dominate allele for normal coat color in wolves = N
   - Recessive allele for black coat color in wolves = n
   - Dominant allele for brown eyes = B
   - Recessive allele for blue eyes = b
   - Cross a heterozygous parent with a heterozygous parent



8. Using the punnett square in question #7:
   a. What is the probability of producing a wolf with a normal coat color with brown eyes? 9/16

      Possible genotype(s)? NNBB NnBB NNBb NnBb
   b. What is the probability of producing a wolf with a normal coat color with blue eyes? 3/16

      Possible genotype(s)? ~~B~~ NNbb Nnbb
   c. What is the probability of producing a wolf with a black coat with brown eyes? 3/16

      Possible genotype(s)? nnBB nnBb
   d. What is the probability of producing a wolf with a black coat with blue eyes? 1/16

      Possible genotype(s)? nnbb

#9

a) Dominant - Tall, Axial

Recessive - Short, Terminal

b) P Tall + Terminal × Short + Axial

TTaa × tt AA

F_1 Tall + Axial

Tt Aa

~~c) Tt TtAa~~

c) TtAa × TtAa

F_2: 9:3:3:1 Ratio

9 - Tall + Axial (9/16) T_ A_

3 - Tall + Terminal (3/16) T_ aa

3 - Short + Axial (3/16) tt A_

1 - Short + Terminal (1/16) tt aa

#10 A_ curly aa brown

a) p) aa × Aa

F_1) Litter #1

3 Aa

2 aa

Litter #2

4 aa

2 Aa

b) ♀ aa ♀ aa

$\frac{1}{2} \cdot \frac{1}{2} \cdot \frac{1}{2} \cdot \frac{1}{2} = \frac{1}{16}$

11

Woman ♀ Aatt × aaTt ♂ Husband

4 Possible Genotypes

AaTt
Aatt
aaTt
aatt

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a) HHRR × hhrr

all F_1 - HhRr → HhRr × HhRr

F_2 - 9:3:3:1 Ratio

9 H_R_
3 H_rr
3 hhR_
1 hhrr

b) hhRR × HHrr

all F_1 - HhRr

F_2 - Same as part A

c) P: hhrr × ?

F_1: 2 hhR_
2 H_R_
1 H_rr

♂ Must be HhRr

Possible genotypes (4)

P: hhrr × HhRr

F_1: HhRr, hhRr, Hhrr, hhrr