

Punnett Square



Sheet

Form of Inheritance	Things to look for:	Sample Punnett Square	Example																									
Normal (Mendelian)	<ul style="list-style-type: none"> One trait is listed with two alleles (Ex: Hairline- widow's peak vs. straight) Affects males and females equally Use the same letter on the Punnett square (Ex: Aa) 	<table style="margin-left: auto; margin-right: auto;"> <tr> <td></td> <td>A</td> <td>A</td> </tr> <tr> <td>a</td> <td>Aa</td> <td>Aa</td> </tr> <tr> <td>a</td> <td>Aa</td> <td>Aa</td> </tr> </table>		A	A	a	Aa	Aa	a	Aa	Aa	Dimples dominant over no dimples																
	A	A																										
a	Aa	Aa																										
a	Aa	Aa																										
Sex-Linked	<ul style="list-style-type: none"> Males are affected more than females because they only have 1 X chromosome Use $X^A X^A$ for females Use $X^A Y$ for males Use the same letter for the trait (Yes: $X^A X^A$, NO: $X^A X^B$) 	<table style="margin-left: auto; margin-right: auto;"> <tr> <td></td> <td>X^A</td> <td>X^a</td> </tr> <tr> <td>X^A</td> <td>$X^A X^A$</td> <td>$X^A X^a$</td> </tr> <tr> <td>Y</td> <td>$X^A Y$</td> <td>$X^a Y$</td> </tr> </table>		X^A	X^a	X^A	$X^A X^A$	$X^A X^a$	Y	$X^A Y$	$X^a Y$	Colorblindness in boys																
	X^A	X^a																										
X^A	$X^A X^A$	$X^A X^a$																										
Y	$X^A Y$	$X^a Y$																										
Incomplete Dominance	<ul style="list-style-type: none"> One dominant allele is not strong enough to overpower the recessive allele. Use the same letter on the Punnett square, with heterozygous phenotypes being a blend. 	<table style="margin-left: auto; margin-right: auto;"> <tr> <td></td> <td>R </td> <td>R</td> </tr> <tr> <td>r </td> <td>Rr </td> <td>Rr </td> </tr> <tr> <td>r</td> <td>Rr</td> <td>Rr</td> </tr> </table>		R	R	r	Rr	Rr	r	Rr	Rr	Red flower + white flower = Pink flowers																
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r	Rr	Rr																										
r	Rr	Rr																										
Co-Dominance	<ul style="list-style-type: none"> Both alleles are dominant so they both show up in the phenotype Use two capital letters in the Punnett square Use different capital letters on the Punnett square (Ex: AB) 	<table style="margin-left: auto; margin-right: auto;"> <tr> <td></td> <td>B</td> <td>W</td> </tr> <tr> <td>B</td> <td>BB</td> <td>BW</td> </tr> <tr> <td>W</td> <td>BW</td> <td>WW</td> </tr> </table>		B	W	B	BB	BW	W	BW	WW	White chicken + black chicken = Black and white speckled chicken																
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B	BB	BW																										
W	BW	WW																										
Dihybrid	<ul style="list-style-type: none"> Two different traits are given, so the genotypes include 4 letters Distribute the genotypes to get 4 gametes for each parent Keep the same letters paired together (YES: AaBb, NO: Abab) 	<table style="margin-left: auto; margin-right: auto;"> <tr> <td></td> <td>RF</td> <td>Rf</td> <td>rF</td> <td>rf</td> </tr> <tr> <td>RF</td> <td>RRFF</td> <td>RRFf</td> <td>RrFF</td> <td>RrFf</td> </tr> <tr> <td>Rf</td> <td>RRFf</td> <td>RRff</td> <td>RrFf</td> <td>Rrff</td> </tr> <tr> <td>rF</td> <td>RrFF</td> <td>RrFf</td> <td>rrFF</td> <td>rrFf</td> </tr> <tr> <td>rf</td> <td>RrFf</td> <td>Rrff</td> <td>rrFf</td> <td>rrff</td> </tr> </table>		RF	Rf	rF	rf	RF	RRFF	RRFf	RrFF	RrFf	Rf	RRFf	RRff	RrFf	Rrff	rF	RrFF	RrFf	rrFF	rrFf	rf	RrFf	Rrff	rrFf	rrff	Round yellow peas vs. wrinkled green peas
	RF	Rf	rF	rf																								
RF	RRFF	RRFf	RrFF	RrFf																								
Rf	RRFf	RRff	RrFf	Rrff																								
rF	RrFF	RrFf	rrFF	rrFf																								
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