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Genetics:
You're Such a Square

Name:_____

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

AA_____	Ee_____	Ii_____	Mm_____	QQ_____	Uu_____	YY_____
Bb_____	ff_____	Jj_____	nn_____	rr_____	Vv_____	Zz_____
Cc_____	Gg_____	kk_____	oo_____	Ss_____	ww_____	
DD_____	HH_____	LL_____	Pp_____	tt_____	XX_____	

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

a. Tall plants are dominant to short plants.

TT _____
Tt _____
tt _____

b. Round seeds are dominant to wrinkled seeds.

RR _____
Rr _____
rr _____

c. Dimples are dominant to No Dimples

DD _____
Dd_____
dd_____

d. Round ears in cats are recessive.

EE _____
Ee _____
ee _____

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

a. Straight hair is dominant to curly.

_____straight
_____straight
_____curly

b. Pointed heads are dominant to round heads.

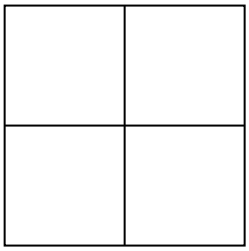
_____pointed
_____pointed
_____round

Genetics:
You're Such a Square

Name:_____

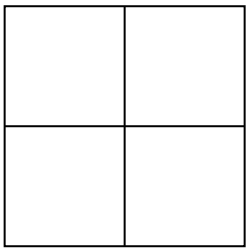
Continued…

4. *Set up the Punnet squares for each of the crosses listed below if round eyes are dominant to almond shaped eyes.*



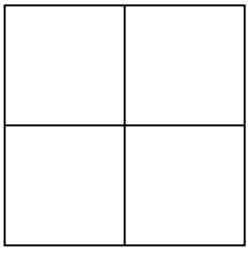
RR x rr

What percentage of the offspring will be round? _____
What percentage of the offspring will be heterozygous? _____
What percentage of the offspring will be purebred? _____



Rr x rr

What percentage of the offspring will be almond shaped? _____
What percentage of the offspring will be homozygous? _____
What percentage of the offspring will be hybrids? _____



RR x Rr

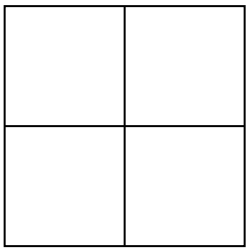
What percentage of the offspring will be round? _____
What percentage of the offspring will be homozygous dominant? _____
What percentage of the offspring will be homozygous recessive? _____

Genetics:
You're Such a Square

Name:_____

Continued…

Rr x Rr



What is the ratio of round to almond shaped eyes? _____
What is the ratio of RR : Rr : rr? _____
What percentage of the offspring will be like the parents? _____

Practice with Punnett Squares using the problems below. Show your work in the space to the right.

5. A RR (round seeded) plant is crossed with a rr (wrinkle seeded) plant.
    a. What percentage of the offspring will be round seeded? _____
    b. What percentage of the offspring will be wrinkle seeded? _____

6. A Tt (tall) plant is crossed with a Tt (tall) plant.
    a. What percentage of the offspring will be short? _____
    b. What percentage of the offspring will be purebred tall? _____

7. A heterozygous tall plant is crossed with a homozygous tall plant.
    a. What percentage of the offspring will be homozygous dominant? _____
    b. What is the ratio of tall to short plants? _____

8. A homozygous round seeded plant crossed with a purebred wrinkle seeded plant.
    a. What are the genotypes of the parents? _____X _____
    b. What percentage of the offspring will be homozygous? _____

Genetics:
You're Such a Square

Name:_____

Continued…

Practice with Punnett Squares using the problems below. Show your work in the space to the right.

9. If purple flowers are dominant to white flowers and two white flowered plants are crossed, what percentage of their offspring will be white flowered? _____

10. A white dog is crossed with a heterozygous black dog.
    a. What are the parents' genotypes? _____
    b. What percentage of the offspring will be black? _____

11. Two dogs, both heterozygous for the gene that controls hair color are crossed.
    a. What percentage of their offspring will be black? _____
    b. What percentage will be white? _____

12. In cats, the allele for short hair is dominant. Show the cross for a purebred short haired cat and a purebred long-haired cat.
    What percentage of the offspring will have short hair? _____

13. Complete a cross for the offspring produced in #12.
    a. What is the ratio of long haired to short haired cats? _____
    b. What is the ratio of homozygous to heterozygous? _____

14. Two short haired cats are mated several times. Out of 100 offspring, 25 of them have long hair.
    What are the probable genotypes of the parents? _____x _____

15. Brown eyes (B) are dominant over blue eyes (b). Using this example, explain how a child can have a trait that neither parent expresses physically. Use a Punnett Square to validate your answer.

Genetics:
You're Such a Square

Teacher Key

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

AA **HO**	Ee **HE**	Ii **HE**	Mm **HE**	QQ **HO**	Uu **HE**	YY **HO**
Bb **HE**	ff **HO**	Jj **HE**	nn **HO**	rr **HO**	Vv **HE**	Zz **HE**
Cc **HE**	Gg **HE**	kk **HO**	oo **HO**	Ss **HE**	ww **HO**	
DD **HO**	HH **HO**	LL **HO**	Pp **HE**	tt **HO**	XX **HO**	

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

   a. Tall plants are dominant to short plants.
      TT **Tall**
      Tt **Tall**
      tt **Short**

   b. Round seeds are dominant to wrinkled seeds.
      RR **Round**
      Rr **Round**
      rr **Wrinkled**

   c. Dimples are dominant to No Dimples
      DD **Dimples**
      Dd**Dimples**
      dd **No Dimples**

   d. Round ears in cats are recessive.
      EE **Normal ears**
      Ee **Normal ears**
      ee **Round ears**

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

   a. Straight hair is dominant to curly.
      SS straight
      Ss straight
      ss curly

   b. Pointed heads are dominant to round heads.
      PP pointed
      Pp pointed
      pp round

Genetics:
You're Such a Square

Teacher Key

Continued…

4. *Set up the Punnet squares for each of the crosses listed below if round eyes are dominant to almond shaped eyes.*

RR x rr

	R	R
r	Rr	Rr
r	Rr	Rr

What percentage of the offspring will be round? **100%**
What percentage of the offspring will be heterozygous? **100%**
What percentage of the offspring will be purebred? **0%**

Rr x rr

	R	r
r	Rr	rr
r	Rr	rr

What percentage of the offspring will be almond shaped? **50%**
What percentage of the offspring will be homozygous? **50%**
What percentage of the offspring will be hybrids? **50%**

RR x Rr

	R	R
R	RR	RR
r	Rr	Rr

What percentage of the offspring will be round? **100%**
What percentage of the offspring will be homozygous dominant? **50%**
What percentage of the offspring will be homozygous recessive? **0%**

Genetics:
You're Such a Square

Teacher Key

Continued…

Rr x Rr

	R	r
R	RR	Rr
r	Rr	rr

What is the ratio of round to almond shaped eyes? **3:1**
What is the ration of RR : Rr : rr? **1:2:1**
What percentage of the offspring will be like the parents? **50%**

Practice with Punnett Squares using the problems below. Show your work in the space to the right.

5. A RR (round seeded) plant is crossed with a rr (wrinkle seeded) plant.
a. What percentage of the offspring will be round seeded? **100%**
b. What percentage of the offspring will be wrinkle seeded? **0%**

	R	R
r	Rr	Rr
r	Rr	Rr

6. A Tt (tall) plant is crossed with a Tt (tall) plant.
a. What percentage of the offspring will be short? **25%**
b. What percentage of the offspring will be purebred tall? **75%**

	T	t
T	TT	Tt
t	Tt	tt

7. A heterozygous tall plant is crossed with a homozygous tall plant.
a. What percentage of the offspring will be homozygous dominant? **50%**
b. What is the ratio of tall to short plants? **2:2**

	T	t
T	TT	Tt
T	TT	Tt

8. A homozygous round seeded plant crossed with a purebred wrinkle seeded plant.
a. What are the genotypes of the parents? **RR** X **rr**
b. What percentage of the offspring will be homozygous? **0%**

	R	R
r	Rr	Rr
r	Rr	Rr

Genetics:
You're Such a Square

Teacher Key

9. If purple flowers are dominant to white flowers and two white flowered plants are crossed, what percentage of their offspring will be white flowered? **100%**

	p	p
p	pp	pp
p	pp	pp

10. A white dog is crossed with a heterozygous black dog.
a. What are the parents' genotypes? **Bb X bb**
b. What percentage of the offspring will be black? **50%**

	B	b
b	Bb	bb
b	Bb	bb

11. Two dogs, both heterozygous for the gene that controls hair color are crossed.
a. What percentage of their offspring will be black? **75%**
b. What percentage will be white? **25%**

	B	b
B	BB	Bb
b	Bb	bb

12. In cats, the allele for short hair is dominant. Show the cross for a purebred short haired cat and a purebred long haired cat
a. What percentage of the offspring will have short hair? **100%**

	S	S
s	Ss	Ss
s	Ss	Ss

13. Complete a cross for the offspring produced in #12.
a. What is the ratio of long haired to short haired cats? **3:1**
b. What is the ratio of homozygous to heterozygous? **2:2**

	S	s
S	SS	Ss
s	Ss	ss

14. Two short haired cats are mated several times. Out of 100 offspring, 25 of them have long hair. What are the probable genotypes of the parents? **Ss** x **Ss**

	B	b
B	BB	Bb
b	Bb	bb

15. Brown eyes (B) are dominant over blue eyes (b). Using this example, explain how a child can have a trait that neither parent expresses physically. Use a Punnett Square to validate your answer. **Both parents must be heterozygous.**