

Name: Key
 Date: _____ Period: _____

14 = %

Punnett Square Worksheet 2

Directions: Read each problem carefully. Make a "key" for the trait, identify the parents involved in the cross and the gametes each parents produces. Show the Punnett square and give the ratio of both genotype and phenotype.

Before you begin....Define the following terms from your notes...

- > Homozygous *The same alleles on both chromosomes*
ex) RR, rr
- > Heterozygous *The alleles are different.*
ex) Rr
- > Phenotype *The way it looks or feels. (physical)*
- > Genotype *Genetic code, RR, rr, Rr.*
- > Dominant *Trait takes over*
- > Recessive *trait covered up*

1. In rabbits, black fur is dominant over white fur. Show the cross of a heterozygous black male with a homozygous white female.

1 pt

Key: B = black fur b = white fur

Parents & Gametes:

2 pts Bb x bb = parents
 offspring = Bb, $\frac{2}{4}$, 50%, Black fur
 bb, $\frac{2}{4}$, 50%, white fur

	b	b
B	Bb	Bb
b	bb	bb

1 pt

2. Tall is dominant over short in pea plants. Show the cross of a homozygous short plant is crossed with a homozygous tall plant.

Key: T = tall t = short

Parents & Gametes:

Parents = tt x TT

offspring = Tt, $\frac{4}{4}$, 100%, ~~Short~~
 Tall

	t	t
T	Tt	Tt
T	Tt	Tt

14

3. In humans, free-ear lobes are dominant to attached. Two parent^S that are both heterozygous free are expecting a child. What are the chances that the child will have free ear lobes ^{or} attached?

Key: F = Free-ear lobes f = attached

	F	f
F	FF	Ff
f	Ff	ff

Parents & Gametes: parents = $Ff \times Ff$
 offspring = $FF, \frac{1}{4}, 25\%$, Free
 $Ff, \frac{3}{4}, 50\%$, Free
 $ff, \frac{1}{4}, 25\%$, attached

4. Wrinkled seed are recessive to smooth seeds. Show a plant that always produces wrinkled seeds crossed with a heterozygous smooth seeds producing plant.

Key: W = smooth w = wrinkled

	w	w
W	Ww	Ww
w	$w.w$	ww

Parents & Gametes: parents = $ww \times Ww$
 $Ww = \frac{2}{4}, 50\%$, smooth
 $ww = \frac{2}{4}, 50\%$, wrinkled

5. As in the previous problem... Show a heterozygous smooth plant crossed with another heterozygous smooth seed producing plant.

Key: W = smooth w = wrinkled

	W	w
W	WW	Ww
w	Ww	ww

Parents & Gametes: parents $Ww \times Ww$
 $WW, \frac{1}{4}, 25\%$ - smooth
 $Ww, \frac{2}{4}, 50\%$ - smooth
 $ww, \frac{1}{4}, 25\%$ - wrinkled

6. Blue eyes are dominant to red eyes in rabbits. Show a heterozygous blue-eyed rabbit crossed with a red-eyed rabbit.

Key: B = blue b = red

	B	b
b	Bb	bb
b	Bb	bb

Parents & Gametes: parents = $Bb \times bb$
 $Bb, \frac{2}{4}, 50\%$, blue eyes
 $bb, \frac{2}{4}, 50\%$, red eyes

7. In fruit flies, red eyes are dominant over white eyes. Show a cross between two white-eye fruit flies.

Key: R = red eyes r = white eyes

	r	r
r	rr	rr
r	rr	rr

Parents & Gametes: $rr \times rr$
 $rr - \frac{4}{4}, 100\%$, white eyes

← Squares only

Punnett square worksheet

3

Complete the following monohybrid crosses: draw a Punnett square, list the ratio and describe the offspring. Be sure to remember that the **capital letter is dominant**.

Example)

A green pea plant (GG) is being crossed with a green pea plant (Gg).

	G	G
G	GG	GG
g	Gg	Gg

GenoType= 2 GG: 2 Gg ; 0 gg

Phenotype= 4 Green pea plants: 0 other color

- 1) A green pea plant (Gg) is crossed with a yellow pea plant (gg).

- 2) A tall plant (TT) is crossed with a tall plant (Tt).

- 3) A tall plant (Tt) is crossed with a short plant (tt).

- 4) A red flower (Rr) is crossed with a white flower (rr).

- 5) A white flower (rr) is crossed with a white flower (rr).

- 6) A black chicken (BB) is crossed with a black chicken (BB).

Punnett square problems continued

Complete the following problems. List the parent genotypes, draw and fill in a Punnett square, and then list the offspring genotypes and phenotypes.

1. A homozygous dominant brown mouse is crossed with a heterozygous brown mouse (tan is the recessive color).
2. Two heterozygous white (brown fur is recessive) rabbits are crossed.
3. Two heterozygous red flowers (white flowers are recessive) are crossed.
4. A homozygous tall plant is crossed with a heterozygous tall plant (short is the recessive size).
5. A heterozygous white rabbit is crossed with a homozygous black rabbit.

Key

45%

100

Punnett square worksheet

Complete the following monohybrid crosses: draw a Punnett square, list the ratio and describe the offspring. Be sure to remember that the capital letter is dominant.

Example)

A green pea plant (GG) is being crossed with a green pea plant (Gg).

	G	G
G	GG	GG
g	Gg	Gg

GenoType= 2 GG; 2 Gg; 0 gg

Phenotype= 4 Green pea plants; 0 other color

10 pts each
Skip no. 1
(5 pts, square)
(5 pts, %, geno)

1) A green pea plant (Gg) is crossed with a yellow pea plant (gg).

Gg, $\frac{2}{4}$, 50%, green
gg, $\frac{2}{4}$, 50%, yellow

	g	g
G	Gg	Gg
g	gg	gg

2) A tall plant (Tt) is crossed with a tall plant (Tt).

TT, $\frac{2}{4}$, 50%, Tall
Tt, $\frac{2}{4}$, 50%, Tall

	T	T
T	TT	TT
t	Tt	Tt

3) A tall plant (Tt) is crossed with a short plant (tt).

Tt, $\frac{2}{4}$, 50%, tall
tt, $\frac{2}{4}$, 50%, short

	T	t
t	Tt	tt
t	Tt	tt

4) A red flower (Rr) is crossed with a white flower (rr).

Rr, $\frac{2}{4}$, 50%, Red

	R	r
r	Rr	rr
r	Rr	rr

or

	r	r
R	Rr	Rr
r	rr	rr

rr, $\frac{2}{4}$, 50%, white

5) A white flower (rr) is crossed with a white flower (rr).

rr - $\frac{4}{4}$, 100%, white

	r	r
r	rr	rr
r	rr	rr

6) A black chicken (BB) is crossed with a black chicken (BB).

BB, $\frac{4}{4}$, 100%, black

	B	B
B	BB	BB
B	BB	BB

Punnett square problems continued

Complete the following problems. List the parent genotypes, draw and fill in a Punnett square, and then list the offspring genotypes and phenotypes.

1. A homozygous dominant brown mouse is crossed with a heterozygous brown mouse (tan is the recessive color).

	B	b
B	BB	Bb
B	BB	Bb

parents = $BB \times Bb$
 offspring = $BB, \frac{2}{4}, 50\%$, Brown
 $Bb, \frac{2}{4}, 50\%$, Brown

12

2. Two heterozygous white (brown fur is recessive) rabbits are crossed.

	W	w
W	WW	Ww
w	Ww	ww

parents = $Ww \times Ww$
 offspring = $WW, \frac{1}{4}, 25\%$, White fur
 $Ww, \frac{2}{4}, 50\%$, White fur
 $ww, \frac{1}{4}, 25\%$, brown fur

3. Two heterozygous red flowers (white flowers are recessive) are crossed.

	R	r
R	RR	Rr
r	Rr	rr

parents = $Rr \times Rr$
 offspring = $RR, 25\%, \frac{1}{4}$, Red flower
 $Rr, \frac{2}{4}, 50\%$, Red flower
 $rr, \frac{1}{4}, 25\%$, white flower

4. A homozygous tall plant is crossed with a heterozygous tall plant (short is the recessive size).

	T	T
T	TT	Tt
t	Tt	tt

parents = $TT \times Tt$
 offspring = $TT, \frac{2}{4}, 50\%$, Tall
 $Tt, \frac{2}{4}, 50\%$, Tall

5. A heterozygous white rabbit is crossed with a homozygous black rabbit.

	W	w
w	Ww	ww
w	Ww	ww

parents = $Ww \times ww$
 offspring = $Ww = \frac{2}{4}, 50\%$, White
 $ww = \frac{2}{4}, 50\%$, black
 12
 45%