Key – Punnett Squares Problems

Biology

1.

	T	t
T	TT - Tall	Tt - Tall
t	Tt - Tall	tt - Short

2.

	Y	y
y	Yy - Yellow	yy - Green
y	Yy - Yellow	yy - Green

3.

	Y	y
Y	YY - Yellow	Yy - Yellow
y	Yy - Yellow	yy - Green

4.

	R	R
r	Rr - Round	Rr - Round
r	Rr - Round	Rr - Round

5.

	B	b
b	Bb – Brown	bb – Blue
b	Bb - Brown	bb – Blue

The man must be heterozygous. If he were homozygous recessive, he would have blue eyes (but he doesn't). If he were homozygous dominant, none of the children would have blue eyes

(they would all have at least one dominant allele). The brown-eyed children are heterozygous, since the woman can only donate a recessive allele. The blue eyed child is homozygous recessive.

6.

	D	D
d	Dd – not deaf	Dd – not deaf
d	Dd – not deaf	Dd – not deaf

If the male is homozygous dominant, all of the offspring would be able to hear and they would all be heterozygous.

	D	d
d	Dd – not deaf	dd –deaf
d	Dd – not deaf	dd –deaf

If the male is heterozygous, 50% of the offspring would be able to hear and would be heterozygous; the other 50% of the offspring would be deaf and would be homozygous recessive.

7.

	D	d
D	DD – not deaf	Dd – not deaf
d	Dd – not deaf	dd - deaf

If either parent were homozygous dominant, none of the children could be homozygous recessive (they all would have gotten at least one dominant allele from the parent who was homozygous dominant). Therefore, both parents must be heterozygous. (If either parent was homozygous recessive, he or she would be deaf, not hearing.)