Use the information provided and your knowledge of genetics to answer each question.

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

TT_	_Ho_	Bb _	Не	DD <i>Ho</i> _	Ff _	Не_	_ tt _	_Ho	_ dd	Но
Dd _		ff	Tt	bb	BB _		FF			
Whi lette	ch of er	the ge	notype	s in #1 wou	ld show	/ the do	omina	ant tra	it?	_any with an and upper case
Whi lette	ch of ers	the ge	notype	s in #1 wou	ld show	/ the re -	ecessi	ve trai	t?	ones with two lower case
2. Determine the phenotype for each genotype using the information provided.										
Yellow body color is dominant to blue.										
YY_	_yello	ow		Yy_	yel	low			_ уу _	blue
Square shape is dominant to round.										
ss_	squ	uare		Ss _	squ	uare			_ ss _	round
3. For each phenotype, give the genotypes that are possible.										
A tall body (T) is dominant to short (t).										
Tall	=T	t, TT				Short =	=	tt		
Pink body color (P) is dominant to yellow (p)										
Pink body =PP, PpYellow body =pp										
4. A turtle is heterozygous for its square shape. Another turtle is round. Create a Punnett square to show the possibilities that would result if they mated. Ss x ss										
A. List the possible genotypes and phenotypes of the offspring.										
B. What are the chances of an offspring will be a square shape?2_out of _4 or _50%										
C. What are the chances of an offspring will be a round shape?2_ out of4_ or50%										
5. Two organisms are heterozygous for their pink body color, which is dominant over a yellow body color. Create a Punnett square to show the possibilities that would result if they had offspring. HINT: Read question #3! Pp x Pp										

A. List the possible genotypes and phenotypes for their offspring. PP, PP, Pp, pp

B. What are the chances of an offspring with a pink body? \_\_\_\_3\_ out of \_\_\_4\_\_ or \_\_\_75\_\_\_%

C. What are the chances of an offspring with a yellow body? \_\_1\_\_ out of \_\_4\_\_ or \_\_25\_\_%

6. A salamander has blue skin and is homozygous dominant. It mates with a green skin salamander, which is a recessive trait. Create a Punnett square to show the possible offspring. BB x bb

A. List the possible genotypes and phenotypes for their offspring. Bb

B. What are the chances of an offspring will be blue skin? \_\_100\_\_%

C. What are the chances of an offspring will be green skin? \_\_o\_%

7. Similar heterozygous salamanders mate. Create a Punnett square to show the offspring possibilities. Bb x Bb

A. List the possible genotypes and phenotypes of the offspring and the percent of each.

**Answer Key** 

1.

Purebreds - TT, DD, BB, FF, ff, dd, bb, tt

Hybrids - Dd, Bb, Ff, Tt

2.

3. Tall - TT or Tt Short - tt

Pink - PP or Pp Yellow – pp

4. A. SS - square shape, Ss - square shape, and ss - round shape

B. 2 out of 4 or 50%

C. 2 out of 4 or 50%

NOTE: Some of your students may feel that the roundpants gene should be the dominant trait as SpongeBob's TV parents are

both roundpants. However, these are only his parents on the TV show and his real parents are both heterozygous for squarepants.

5. A. PP - pink body, Pp - pink body, and pp - yellow body

B. 3 out of 4 or 75%

C. 1 out of 4 or 25%

6. A. Bb - light blue skin

B. 100%

C. 0%

D. Squidward's children would not be considered purebred, since each would have a

gene pair made up of a dominant gene and a recessive gene.

7. A. TT - tall eyeballs or Tt - tall eyeballs

B. The hospital must have made a mistake, since the genotype "tt" would not be

possible based on the genotypes of Mr. and Mrs. Krabbs.

NOTE: Students may come up with other possible scenarios, such as

Mr. Krabbs not really a homozygous tall-eyed crab or a mutation. A few of

my students suggested that Mr. Krabbs might not be the father!

NOTE: Some of your students may comment that Mr. Krabbs had a whale as a daughter. However, this was only for

the TV show. He is happily married to a beautiful crab in real life and has beautiful crab children. (Ok, so it's not

"real" life!)