

Bikini Bottom Genetics ANSWER KEY

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Bikini Bottom Genetics

Answer Key

1. $\begin{matrix} \text{Ho} & & \text{He} & & \text{Ho} & & \text{He} & & \text{Ho} & & \text{Ho} \\ \text{He} & & \text{Ho} & & \text{He} & & \text{Ho} & & \text{Ho} & & \text{Ho} \end{matrix}$

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

Hybrids - Dd, Bb, Ff, Tt

2. $\begin{matrix} \text{Yellow body} & & \text{Yellow body} & & \text{Blue body} \\ \text{Square shape} & & \text{Square shape} & & \text{Round shape} \end{matrix}$

3. Tall - TT or Tt Short - tt
Pink - PP or Pp Yellow - pp

4. $\begin{matrix} & s & s \\ S & Ss & Ss \\ s & ss & ss \end{matrix}$ 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. $\begin{matrix} & P & p \\ P & PP & Pp \\ p & Pp & pp \end{matrix}$ 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. $\begin{matrix} & b & b \\ B & Bb & Bb \\ B & Bb & Bb \end{matrix}$ 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. $\begin{matrix} & T & t \\ T & TT & Tt \\ T & Tt & Tt \end{matrix}$ 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 was married to a whale. However, this was only for the TV show and he is happily married to a beautiful crab in real life. (Ok, so it's not "real" life!)

Bikini Bottom Genetics 2

Answer Key:

1. A - long nose, B - blue body, C - squarepants, D - round eyes, E - round eyes, F - stubby nose, G - roundpants, h - yellow body

2. A - Yy & YY, B - ss, C - rr, D - LL & Ll, E - ll, F - RR & Rr, G - SS & Ss, H - yy

3. A - Rr, B - SS, C - LL, D - Yy

4A - See square at right, Gerdy's genotype = Ss,

4B - BillyBob's genotype = Ss

4C - SS & Ss = squarepants and ss = roundpants

4D - 75%

4E - 25%

5A - Wilma = Rr, Wilbur = RR

5B - See square at right

5C - RR & Rr = round eyes

5D - 100%

5E - 0%

6. The Punnett square shows that they would have a 50% chance (2 out of 4) for a little sponge with a blue body color.

7. Since both people are recessive, the Punnett square shows that they have 0% chance for a child with a long nose.

8. SpongeBob's aunt would have to marry a purebred long nosed man (LL) in order to have the best chances for long-nosed children.

4A

	S	s
s	Ss	ss
s	Ss	ss

4C

	S	s
S	SS	Ss
s	Ss	ss

5

	R	r
R	RR	Rr
R	RR	Rr

Y

	y	Y
Y	Yy	YY
y	Yy	yy

l

	l	l
l	ll	ll
l	ll	ll

L

	L	L
L	LL	LL
L	LL	LL

Bikini Bottom - INCOMPLETE DOMINANCE ANSWER KEY

ANSWER KEY:

1. Red - RR, Blue - BB, Purple - RB

2A. RB - purple

2B. 0%

2C. 100%

2D. 0%

3A. RR - red, BB- blue, RB - purple

3B. 25%

3C. 50%

3D. 25%

4.A. RB - purple, BB - blue

4B. Purple - 50 plants, Blue - 50 plants, Red - 0

5A. YY -yellow, BB - blue, YB - green

5A. YY -yellow, BB - blue, YB - green

5B. 25%

5C. 25%

5D. 50%

6A. YY - yellow, YB - green

6B. 50%

6C. 0%

6D. 50%

7A. YB - green

7B. Yellow - 0, Blue - 0, Goobers - 100

8A. YB - green, BB - blue

8B. Yellow - 0, Blue - 50, Goober - 50