

Name: _____ Date: _____ Per: _____

Spongebob Controls and Variables

Spongebob and his Bikini Bottom pals have been busy doing a little research. Read the description for each experiment and answer the questions using blue font.

1. Patty Power

Mr. Krabbs wants to make Bikini Bottom a nicer place to live. He has created a new sauce that he thinks will reduce the production of body gas associated with eating Krabby Patties from the Krusty Krab. He recruits 100 customers with a history of gas problems. He has 50 of them (Group A) eat Krabby Patties with the new sauce. The other 50 (Group B) eat Krabby Patties with sauce that looks just like the new sauce but is really just a mixture of the old sauce and food coloring. Both groups were told that they were getting the sauce that would reduce gas production. Two hours after eating the Crabby Patties, 35 customers in Group A reported having fewer gas problems and 4 customers in Group B reported having fewer gas problems.

1. Write a hypothesis for Mr. Krabbs' investigation (what is going to happen and why).
2. Which customers are the control group (the group not getting tested)?
3. What is the independent variable (variable being tested, thing that changed)?
4. What is the dependent variable (the thing being measured)?

5. What should Mr. Krabb's conclusion be? (Use CER format):

Claim (what did you learn from Smithers' investigation):

Evidence (data/numbers that prove your Claim):

Reason (how the Evidence/data proves your Claim):

5. What should Mr. Krabbs do to better test how effective the new sauce is?

2. Slimotosis

Spongebob notices that his pal Gary is suffering from slimotosis, which occurs when the shell develops a nasty slime and gives off a horrible odor. His friend Patrick tells him that rubbing seaweed on the shell is the perfect cure, while Sandy says that drinking Dr. Kelp will be a better cure. Spongebob decides to test this cure by rubbing Gary with seaweed and having him drink Dr. Kelp for 1 week. After a week of treatment, the slime is gone and Gary's shell smells better.

6. Write a hypothesis for Spongebob's investigation (what is going to happen and why).

7. What are the controls (parts that are unchanged)?

8. What is the independent variable (variable being tested/changed)?

9. What is the dependent variable (thing being measured)?

10. What should Spongebob's conclusion be? (Use CER format):

Claim (what did you learn from Smithers' investigation):

Evidence (data/numbers that prove your Claim):

Reason (how the Evidence/data proves your Claim):

11. How could Spongebob change this experiment to better test what got rid of Gary's Slime

3. Marshmallow Muscles

Larry was told that a certain muscle cream was the newest, best thing on the market and claims to double a person's muscle power when used as part of a muscle-building workout. Interested in this product, he buys the special muscle cream and recruits Patrick and Spongebob to help him with an experiment. Larry develops a special marshmallow weight-lifting program for Patrick and Spongebob. He meets with them once every day for a period of 2 weeks and keeps track of their results. Before each session, Patrick's arms and back are covered in the muscle cream while Spongebob's arms and back are covered in regular lotion.

Time	Patrick	Spongebob
Initial Amount	18	5
After 1 Week	22	9
After 2 Weeks	30	17

12. Write a hypothesis for Larry (what is going to happen and why).

13. What are the controls (parts that are unchanged)?

14. What is the independent variable (variable being tested/changed)?

15. What is the dependent variable (thing being measured)?

16. What should Larry's conclusion be? (Use CER format):

Claim (what did you learn from Smithers' investigation):

Evidence (data/numbers that prove your Claim):

Reason (how the Evidence/data proves your Claim):

17. How can Larry change this experiment to better test if the muscle powder doubles a person's power?

4. Microwave Miracle

Patrick believes that fish that eat food exposed to microwaves will become smarter and would be able to swim through a maze faster. He decides to perform an experiment by placing fish food in a microwave for 20 seconds. He has the fish swim through a maze and records the time it takes for each one to make it to the end. He feeds the special food to 10 fish and gives regular food to 10 others. After 1 week, he has the fish swim through the maze again and records the times for each.

Special Food Group (Time in minutes/seconds)			Regular Food Group (Time in minutes/seconds)		
Fish	Before	After	Fish	Before	After
1	1:06	1:00	1	1:09	1:08
2	1:54	1:20	2	1:45	1:30
3	2:04	1:57	3	2:00	2:05
4	2:15	2:20	4	1:30	1:23
5	1:27	1:20	5	1:28	1:24
6	1:45	1:40	6	2:09	2:00
7	1:00	1:15	7	1:25	1:19
8	1:28	1:26	8	1:00	1:15
9	1:09	1:00	9	2:04	1:57
10	2:00	1:43	10	1:34	1:30

18. What is Patrick's hypothesis (what is going to happen and why)?

19. What are the controls (parts that are unchanged)?

20. What is the independent variable (variable being tested/changed)?

21. What is the dependent variable (thing being measured)?

Look at the results in the charts. What should Patrick's conclusion be? (Use CER format):

Claim (what did you learn from Smithers' investigation):

Evidence (data/numbers that prove your Claim):

Reason (how the Evidence/data proves your Claim)