

- ENTER CLASS QUIETLY
- ALL Materials out ready to begin lesson
 - Red pen for correcting those without will lose marks.
- Quietly wait for the lesson to begin – you may set up your binders in this time
- If you missed a previous class/classes look in the tray beside Mr. Micheal's desk for the work
 - Ask for descriptions from fellow classmates
- Attendance, Take out ready to correct HW

Variables

Independent Variable

- The part of the experiment that is different in each group.
- What you are testing (e.g. – different types of soap).

Dependent Variable

- The part of the experiment that changes as a result of the independent variable.
- What is measured (e.g. – how clean the shirt gets).

Control Group

- Experimental group that does not have any variables, or is kept under normal conditions.
- What is normal (e.g. – tree grown outside).
- What is left alone (e.g. – no soap used).

Scientific Method

Sponge Bob Worksheet

1 – Patty Power

- Mr. Krabbs wants to make Bikini Bottoms a nicer place to live.
- He has created a new sauce that he thinks will reduce the production of body gas associated with eating crabby patties from the Krusty Krab.
- He recruits 100 customers with a history of gas problems.

1 – Patty Power

- He has 50 of them (Group A) eat crabby patties with the new sauce and 50 (Group B) with just a mixture of mayonnaise 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, 30 customers in group A reported having fewer gas problems and 8 customers in group B reported having fewer gas problems.

1 – Patty Power

- Which people are in the control group?

Group B because it's only mayo.

- What is the independent variable?

Different types of sauce.

- What is the dependent variable?

Gas problems.

1 – Patty Power

- What should Mr. Krabbs' conclusion be?
**Yes, his new sauce reduces gas problems.
Because even just mayo had gas.**
- Why do you think 8 people in group B reported feeling better?
Because of the placebo effect.

2 - *Slimotosis*

- Sponge Bob 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.

2 - *Slimotosis*

- Sponge Bob decides to test this cure by rubbing Gary with seaweed for 1 week and having him drink Dr. Kelp.
- After a week of treatment, the slime is gone and Gary's shell smells better.

2 - *Slimotosis*

- What was the initial observation?

That Gary is suffering from *slimotosis*, when the shell develops a nasty slime and gives off a horrible odor.

- What is the independent variable?

The different types of treatments/cures.

2 - *Slimotosis*

- What is the dependent variable?

Whether the slime is gone and his shell smells better.

- What should Sponge Bob's conclusion be?

That although the slimotosis is gone, he can't be sure whether it was because of the seaweed or drinking Dr. Kelp.

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 Sponge Bob to help him with an experiment.

3 – Marshmallow Muscles

- Larry develops a special marshmallow weight-lifting program for Patrick and Sponge Bob.
- 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 lathered in the muscle cream, while Sponge Bob's arms and back are lathered with the regular lotion.

3 – Marshmallow Muscles

- Which person is in the control group?

Sponge Bob, because he does not have the special cream.

- What is the independent variable?

The types of cream.

3 – Marshmallow Muscles

- What is the dependent variable?

Their strength increase.

- What should Larry's conclusion be?

That although the muscle cream works better than the normal cream, it did not double his strength as the ad claimed.

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.

4 – Microwave Miracle

- 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.

4 – Microwave Miracle

- What was Patrick's hypothesis?

If he feeds microwaved food to fish, they will become smarter and be able to swim through a maze faster.

- Which fish are in the control group?

The fish eating regular food.

- What is the independent variable?

The fish food.

4 – Microwave Miracle

- What is the dependent variable?

How fast the fish swim through the maze.

- Look at the results in the charts. What should Patrick's conclusion be?

There is no difference between the average times in each group.

Both groups got better, but probably just because they had swam it before.

5 – Krusty Krabs Breath Mints

- Mr. Krabs created a secret ingredient for a breath mint that he thinks will “cure” the bad breath people get from eating crabby patties at the Krusty Krab.
- He asked 100 customers with a history of bad breath to try his new breath mint.

5 – Krusty Krabs Breath Mints

- He had fifty customers (Group A) eat a breath mint after they finished eating a crabby patty.
- The other fifty (Group B) also received a breath mint after they finished the sandwich, however, it was just a regular breath mint and did not have the secret ingredient.
- Both groups were told that they were getting the breath mint that would cure their bad breath.

5 – Krusty Krabs Breath Mints

- Two hours after eating the crabby patties, thirty customers in Group A and ten customers in Group B reported having better breath than they normally had after eating crabby patties.

5 – Krusty Krabs Breath Mints

1. Which people are in the control group?

Group B

1. What is the independent variable?

Secret ingredient in the breath mint.

2. What is the dependent variable?

Amount of bad breath.

5 – Krusty Krabs Breath Mints

4. What should Mr. Krabs' conclusion be?

The breath mint with the secret ingredient reduces bad breath three times better than the normal mint but not 100%.

4. Why do you think 10 people in group B reported fresher breath?

This may be due to the placebo effect.

6 – Sponge Bob Clean Pants

- Sponge Bob noticed that his favorite pants were not as clean as they used to be.
- His friend Sandy told him that he should try using Clean-O detergent, a new brand of laundry soap she found at Sail-Mart.

6 – Sponge Bob Clean Pants

- Sponge Bob made sure to wash one pair of pants in plain water and another pair in water with the Clean-O detergent.
- After washing both pairs of pants a total of three times, the pants washed in the Clean-O detergent did not appear to be any cleaner than the pants washed in plain water.

6 – Sponge Bob Clean Pants

6. What was the problem?

Sponge Bob's pants were not clean.

7. What is the independent variable?

Laundry soap.

8. What is the dependent variable?

Amount of dirt left on the pants (or how clean the pants were).

6 – Sponge Bob Clean Pants

9. What should Sponge Bob's conclusion be?

Clean-O laundry soap does not appear to be effective in cleaning his pants.

Because cleaning them in just water worked just as well.

7 – Squidward's Symphony

- Squidward loves playing his clarinet and believes it attracts more jellyfish than any other instrument he has played.
- In order to test his hypothesis, Squidward played a song on his clarinet for a total of 5 minutes and counted the number of jellyfish he saw in his front yard.

7 – Squidward's Symphony

- He played the song a total of 3 times on his clarinet and repeated the experiment using a flute and a guitar.
- He also recorded the number of jellyfish he observed when he was not playing an instrument.

7 – Squidward's Symphony

- The results are shown on a chart.

Number of Jellyfish/Instrument

Trial	No Music	Clarinet	Flute	Guitar
1	5	15	5	12
2	3	10	8	18
3	2	12	9	7

7 – Squidward's Symphony

10. What is the independent variable?

Instrument

11. What is the dependent variable?

Number of jellyfish

7 – Squidward's Symphony

10. What should Squidward's conclusion be?

Music seems to attract jellyfish in greater numbers than when no music is played.

11. Are the results reliable?

It is difficult to tell.

Because he may not have left enough time to clear out between trials.

8 – Super Bubbles

- Patrick and Sponge Bob love to blow bubbles!
- Patrick found some Super Bubble Soap at Sail-Mart.
- The ads claim that Super Bubble Soap will produce bubbles that are twice as big as bubbles made with regular bubble soap.

8 – Super Bubbles

- Patrick and Sponge Bob made up two samples of bubble solution.
- One sample was made with 5 oz. of Super Bubble Soap and 5 oz. of water, while the other was made with the same amount of water and 5 oz. of regular bubble soap.
- Patrick and Sponge Bob used their favorite bubble wands to blow 10 different bubbles and did their best to measure the diameter of each one.

8 – Super Bubbles

- The results are shown in the chart.

Bubbles
(Diameter in centimeters)

Bubble Trial	Super Bubble	Regular Soap
1	15	10
2	10	5
3	12	16
4	18	14
5	22	11
6	13	12
7	16	11
8	18	15
9	15	15
10	12	6

8 – Super Bubbles

14. What did the Super Bubble ads claim?

That its bubbles are twice as large as bubbles made with regular bubble soap.

15. What is the independent variable?

Type of bubble solution.

16. What is the dependent variable?

Size (diameter) of the bubble

8 – Super Bubbles

17.

a. Calculate the average diameter for each.

Super Bubble = 15.1 cm Regular = 11.5 cm

b. What should their conclusion be?

Although the average size is bigger, it is not “twice as large” as the ads claimed.