Math at Work - Ami Kang

Experiments in a Bank?

+

Experiments

- What is it?
- Why do you do that?

test an idea or a method

Scientific Method

Ask a Question

Gather Information

Observe – look, listen, taste, touch, smell
Read. Ask an Expert.

Form a Hypothesis

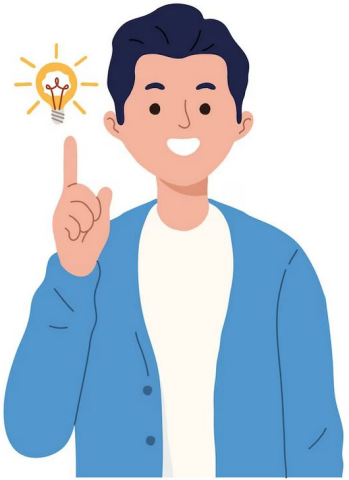
Guess the answer.

Test the Hypothesis

Do an experiment to see if you're right.

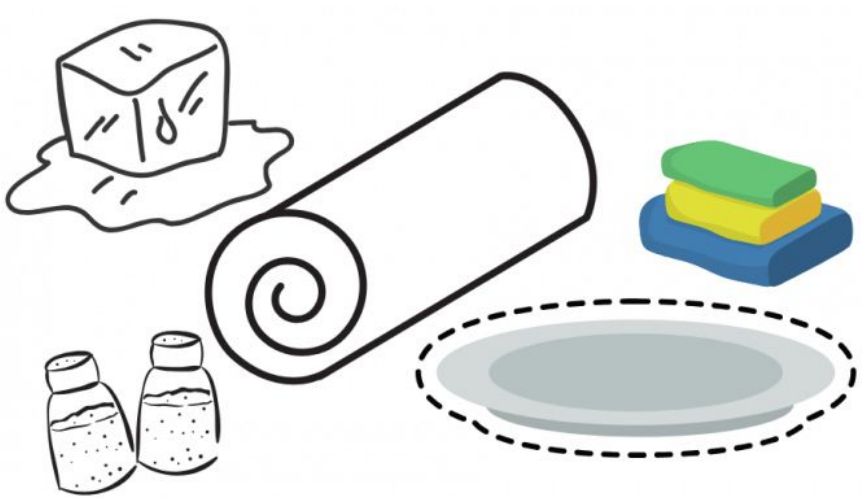
Share the Results

Tell other people what you learned.



Source: https://inventorsoftomorrow.com/2018/08/18/scientific-method-songs/
: https://www.freepik.com/

Observe	Question	Hypothesis/ Prediction	Experiment	Analyze/ Share learning
Ice melts fast in water.	Does ice melt faster in different liquids?	Ice will melt faster in juice than in water.	• Ice cube in a glass of water • Ice cube in a glass of juice • Ice cube in an empty glass	How long does it take to melt a ice cube in each glass?



Source: https://littlebinsforlittlehands.com/using-scientific-method-experiments-kids/

Banks

Q1. How many banks are in the US?

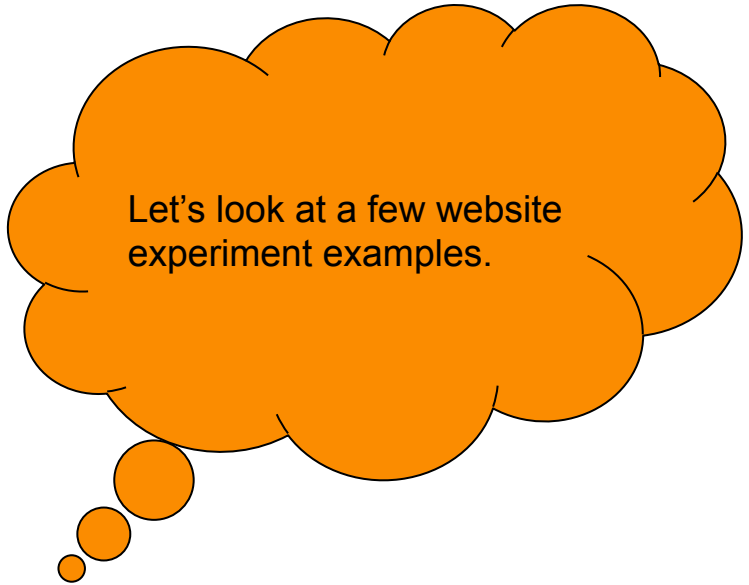
About 5,000 banks

Q2. What does it mean?

Competition, competition, competition

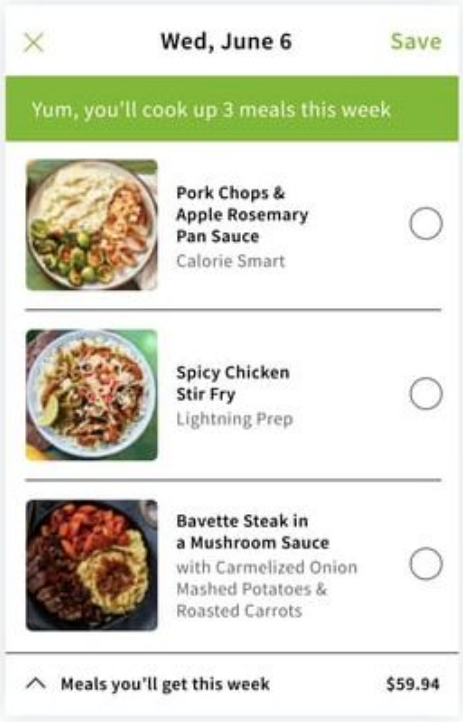
Image Source: https://www.freepik.com/

Out of many things a bank does……

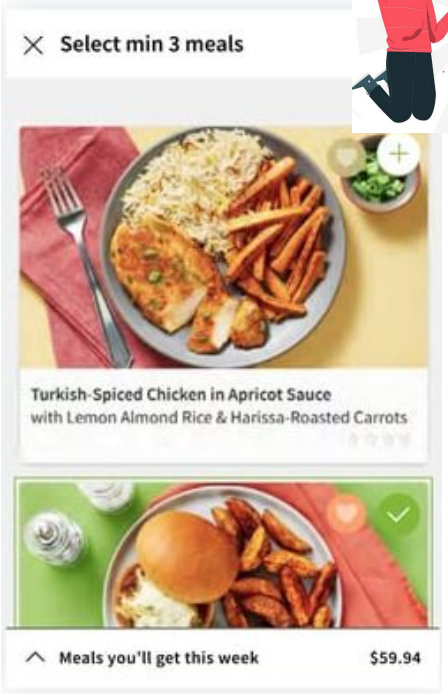


Which menu display is a winner?

(A) Menu Display



(B) Menu Display



contributed to a 7% increase in upselling revenue.

In general, people likes (B) website display more than (A) website display.

Advertisement 1

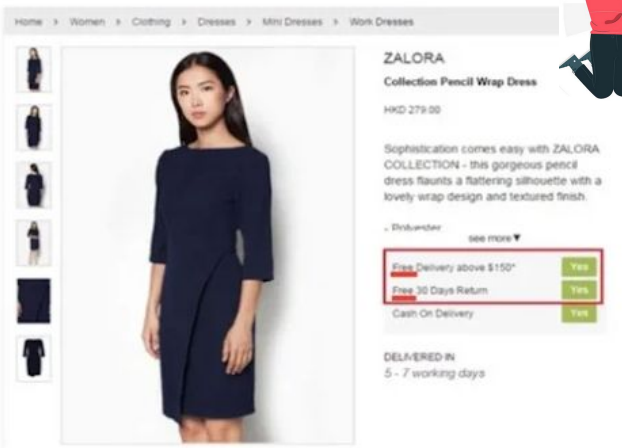
Which advertisement is a winner?

Advertisement 2

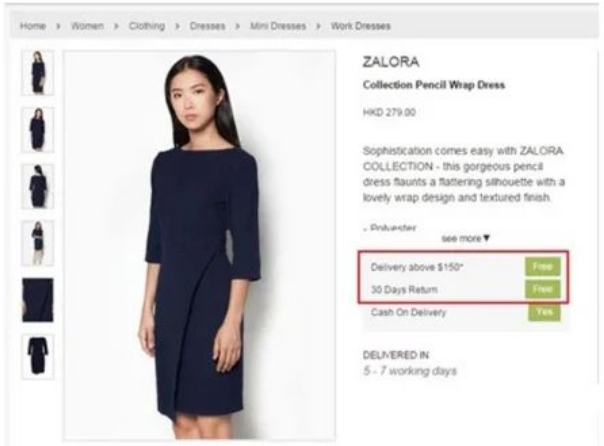
433% more click-throughs than the control.

Advertisement 3

Which website design is a winner?



Website design <A>

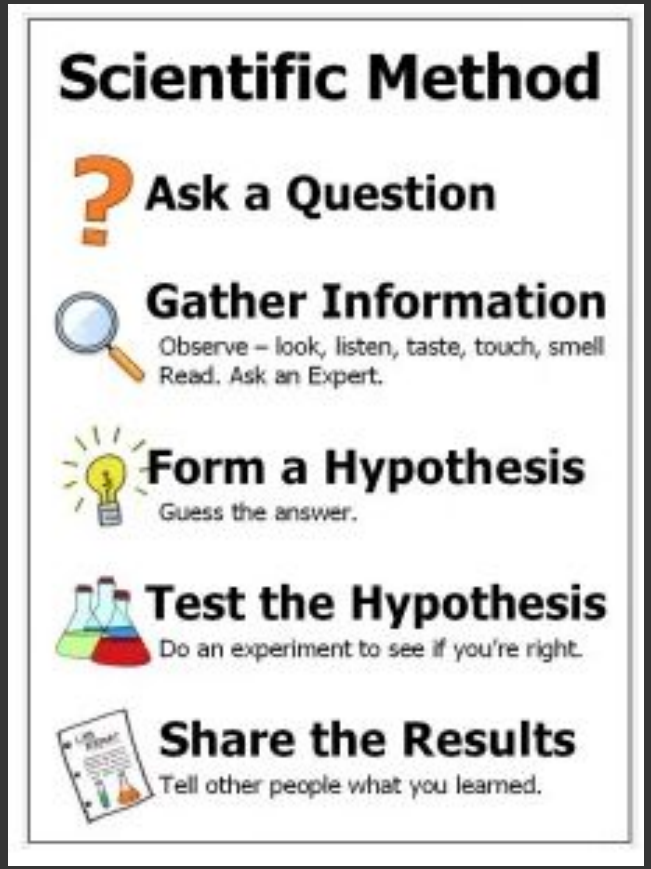


Website design <B>

Zalora’s increased its checkout rate by 12.3% by optimizing its product pages

https://vwo.com/blog/ab-testing-examples/

Bank Website Marketing Experiment



1. Question: How can we make people want to get more credit cards from the bank's website?
2. Gather information: What kind of information is important to people?
3. Form a hypothesis: A new website design/contents will be more persuasive/appealing than the old website
4. Test the hypothesis: Run a website random test
5. Share the results: Analyze the difference between the old and new website performance and share the learning

<Old>

<New>

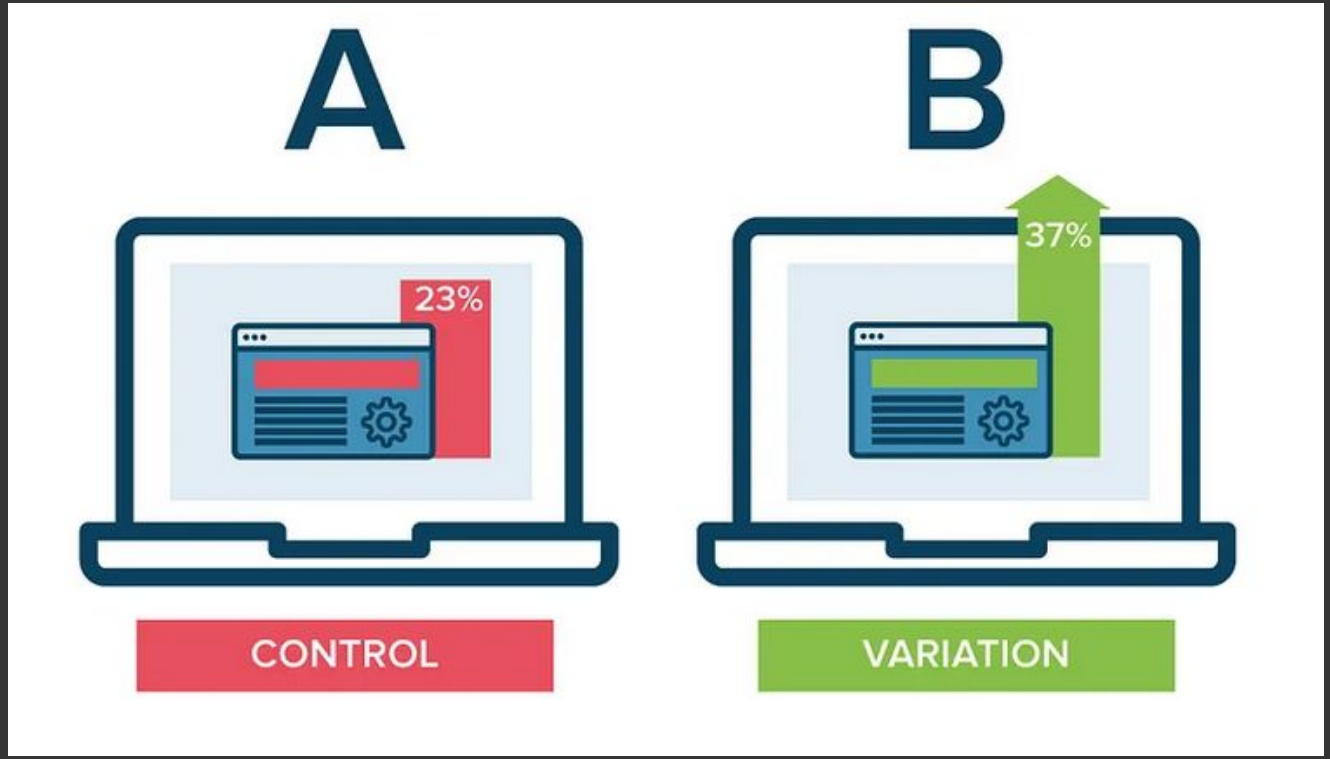
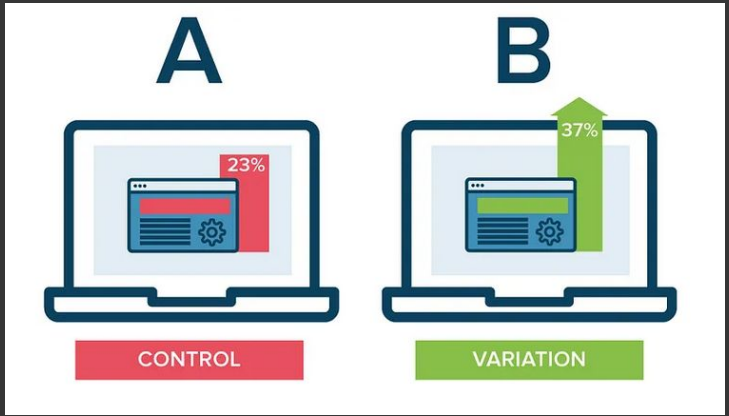


Image source: https://medium.com/analytics-vidhya/a-b-testing-clearly-explained-56488430156

So... where is Math used???



So... where is Math used???

Before the Experiment/Test

Can we ask all the people in the world to check the bank website?

Calculate minimum sample size

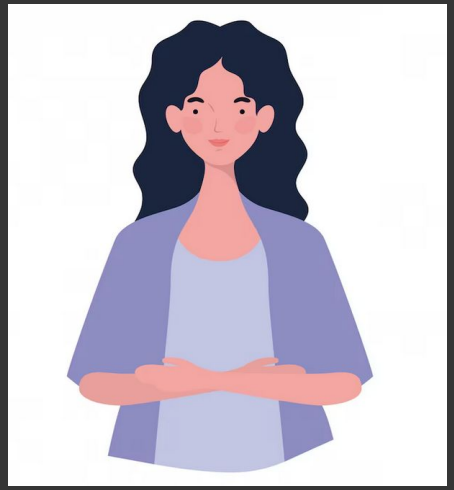
After the Experiment/Test

How confident/sure can we be about the test results?

ex) 23% is really different from 37%?

Run Statistical Analysis
- Compare averages
- Compare %

These days..



- Statistics
- Modeling
- Machine Learning

- Artificial Intelligence

Image sources: https://www.freepik.com/

Thank you!

Any Questions or Comments?