

THE **NONSENSE** OF **NUMBERS**



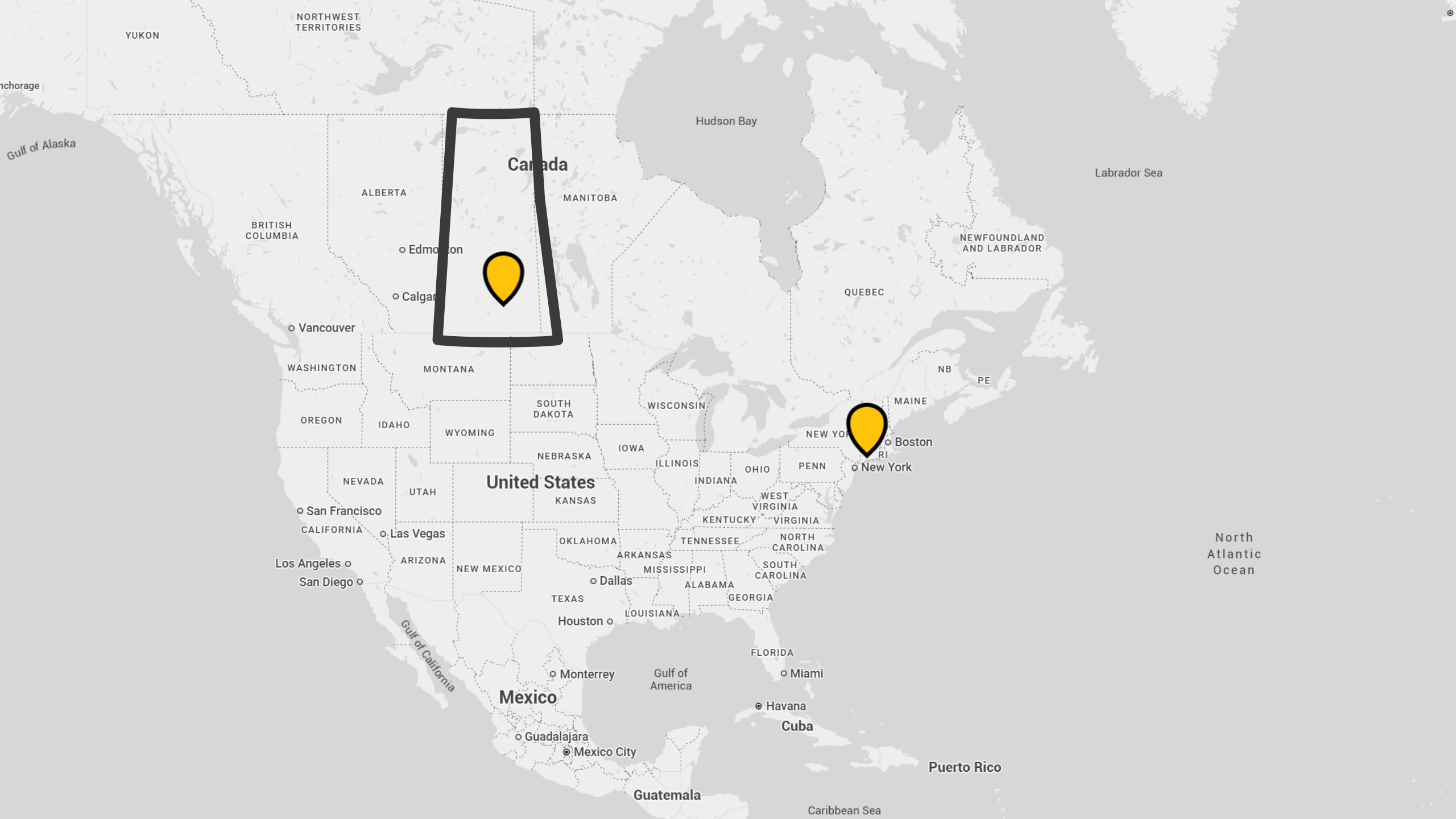
| KYLE WEBB | JUN 29, 2026

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YUKON

NORTHWEST
TERRITORIES

anchorage

Gulf of Alaska

Hudson Bay

Labrador Sea

Canada

ALBERTA

MANITOBA

BRITISH
COLUMBIA

o Edmonton

o Calgary

o Vancouver

NEWFOUNDLAND
AND LABRADOR

QUEBEC

WASHINGTON

MONTANA

OREGON

IDAHO

WYOMING

SOUTH
DAKOTA

WISCONSIN

NEBRASKA

IOWA

ILLINOIS

INDIANA

OHIO

NEW YORK

MAINE

NB

PE

United States

NEVADA

UTAH

o San Francisco

CALIFORNIA

o Las Vegas

Los Angeles o

San Diego o

ARIZONA

NEW MEXICO

KANSAS

OKLAHOMA

ARKANSAS

MISSISSIPPI

o Dallas

TENNESSEE

ALABAMA

LOUISIANA

TEXAS

Houston o

GEORGIA

FLORIDA

o Miami

o Havana

Cuba

Mexico

o Guadalajara

o Mexico City

Gulf of America

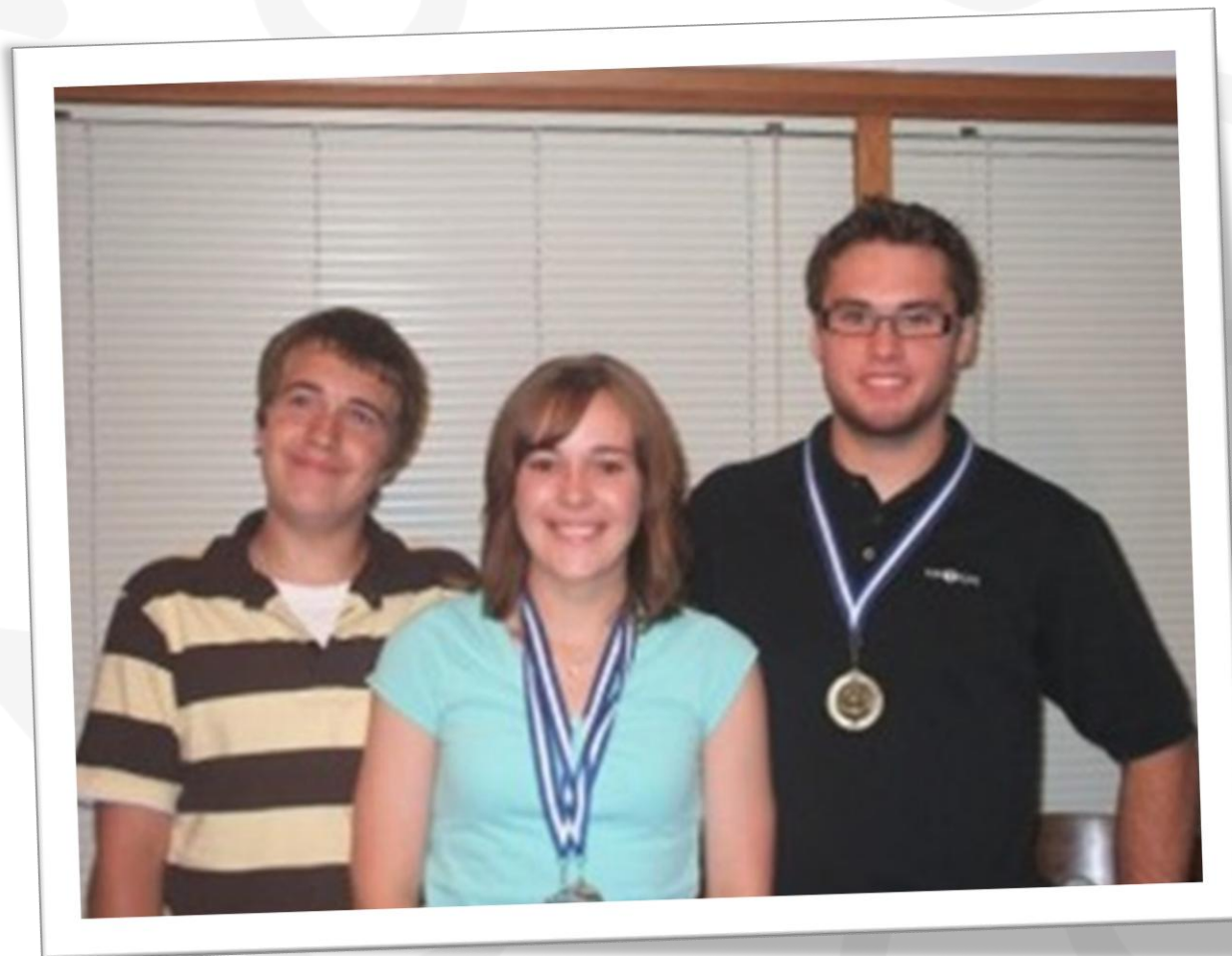
North
Atlantic
Ocean

Puerto Rico

Guatemala

Caribbean Sea

Gulf of California





Umu mu



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Assignment	Grade
1	85%
2	85%
3	
Overall Average	



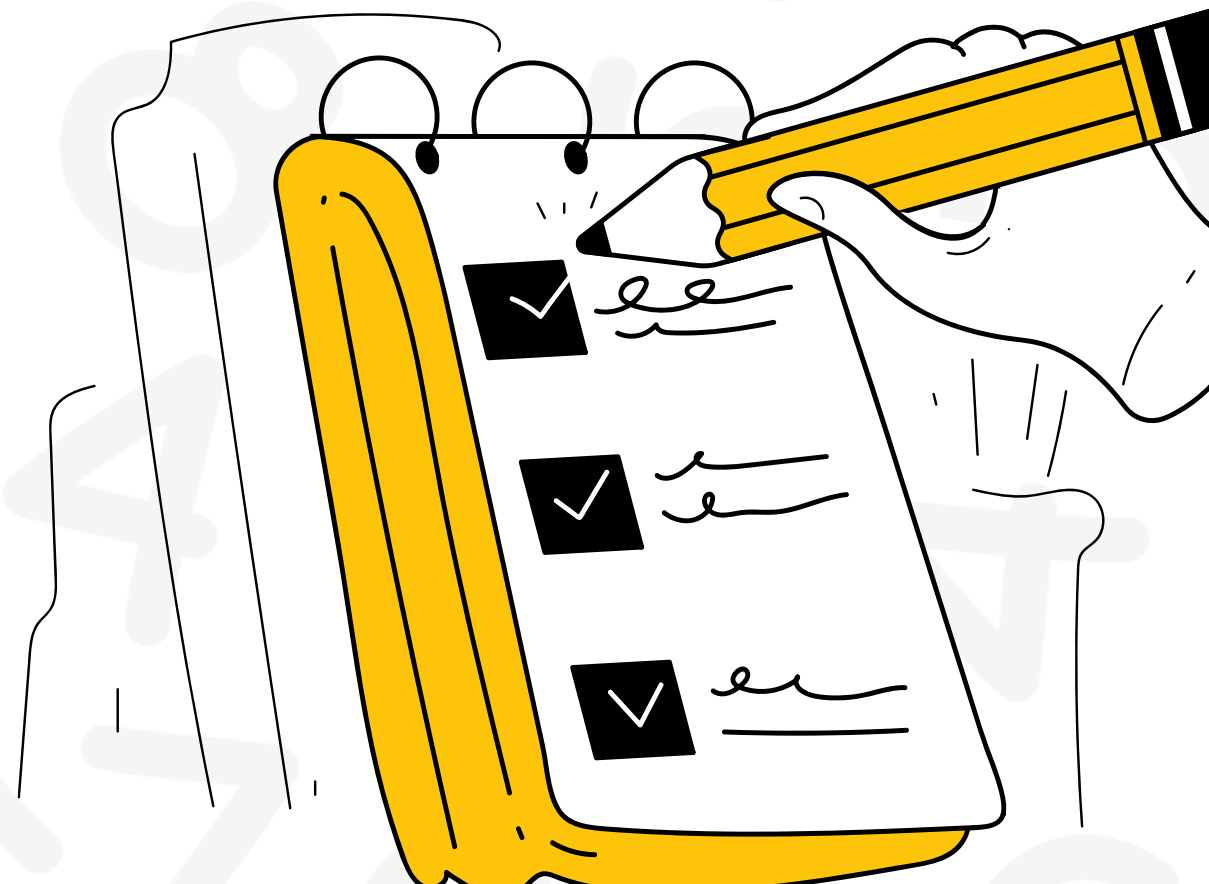
Assignment	Grade
1	85%
2	85%
3	0%
Overall Average	



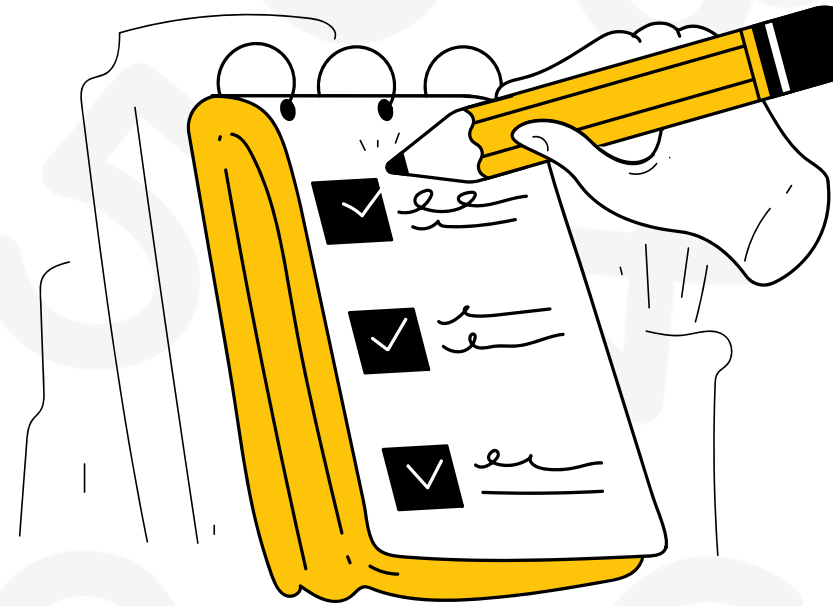
Assignment	Grade
1	85%
2	85%
3	0%
Overall Average	57%

Assignment	Grade
1	85%
2	85%
3	0%
4	85%
5	85%
6	85%
7	85%
8	85%
9	85%
10	85%
11	85%
12	85%
13	85%
14	85%
15	85%
16	85%
17	85%
Overall Average	80%

WHAT DOES A **GRADE** **MEAN?**



The purpose of a grade should be to accurately **summarize and communicate student learning** in relation to specific outcomes.



MARK A QUESTION

$$\begin{array}{rcl} 5x - 10 & = & -3x + 8 \\ -3x & & +3x \end{array}$$

$$\begin{array}{rcl} 2x - 10 & = & 8 \\ +10 & -10 & \end{array}$$

$$\begin{array}{rcl} 2x & = & -2 \\ -2 & +2 & \end{array}$$

$$x = 0$$

/3 marks



SCORING GUIDE

1 point each.

1. Strategic Isolation

- Correctly applies an inverse operation to **both sides** to begin isolating variable or constant terms.

2. Algebraic Execution & Simplification

- Accurately performs algebraic operations and calculations, correctly combining like terms and simplifying the equation.
- This point is awarded based on the student's *own* preceding work.

3. Final Solution (/1)

- Provides the correct final numerical solution for x (e.g., as an integer, fraction, or decimal).
- Awarded based on the student's *own* preceding work.

/3

1 point each.

1. Strategic Isolation

- 
- Correctly applies an inverse operation to **both sides** to begin isolating variable or constant terms.

2. Algebraic Execution & Simplification

- 
- Accurately performs algebraic operations and calculations, correctly combining like terms and simplifying the equation.
 - This point is awarded based on the student's *own* preceding work.

3. Final Solution (/1)

- 
- Provides the correct final numerical solution for x (e.g., as an integer, fraction, or decimal).
 - Awarded based on the student's *own* preceding work.

2/3

$$5x - 10 = -3x + 8$$

$$\quad -3x + 10 \qquad -3x + 10$$

$$5x - 3x = 8 + 10$$

$$2x = 18$$

$$x = \frac{18}{2} = 9$$

1 point each.

1. Strategic Isolation

 Correctly applies an inverse operation to **both sides** to begin isolating variable or constant terms.

2. Algebraic Execution & Simplification

- Accurately performs algebraic operations and calculations, correctly combining like terms and simplifying the equation.
- This point is awarded based on the student's *own* preceding work.

3. Final Solution (/1)

- Provides the correct final numerical solution for x (e.g., as an integer, fraction, or decimal).
- Awarded based on the student's *own* preceding work.

2/3

$$5x - 10 = -3x + 8$$

$+3x$

$+3x$

$$8x - 10 = 8$$

$+10$

$+10$

$$8x = 18$$

$$5x - 10 = -3x + 8$$

$$\quad -3x + 10 \quad -3x + 10$$

$$5x - 3x = 8 + 10$$

$$2x = 18$$

$$x = \frac{18}{2} = 9$$

2/3

$$5x - 10 = -3x + 8$$

$$\quad +3x \quad +3x$$

$$8x - 10 = 8$$

$$\quad +10 \quad +10$$

$$8x = 18$$

$$5x - 10 = -3x + 8$$

$$-3x + 10 \quad -3x + 10$$

$$5x - 10 = -3x + 8$$

$$+3x \quad +3x$$

The purpose of a grade should be to accurately **summarize and communicate student learning** in relation to specific outcomes.

$$2x = 18$$

$$x = \frac{18}{2} = 9$$

2/3

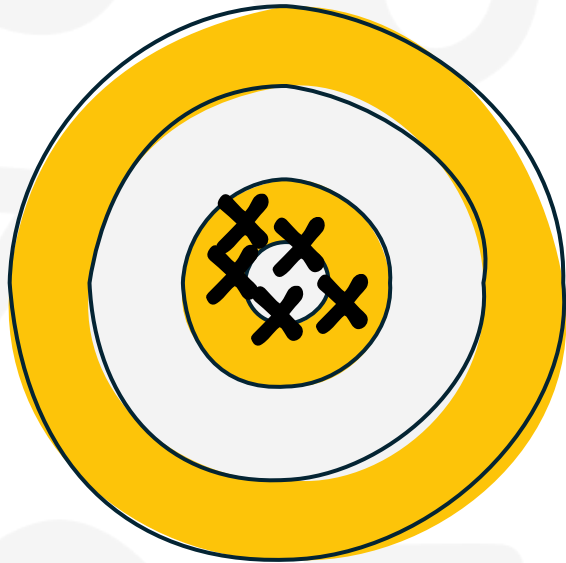
$$8x = 18$$

NOISE

Unwanted **variability** in judgments
that should be **identical**.

— Daniel Kahneman

BIAS VS NOISE



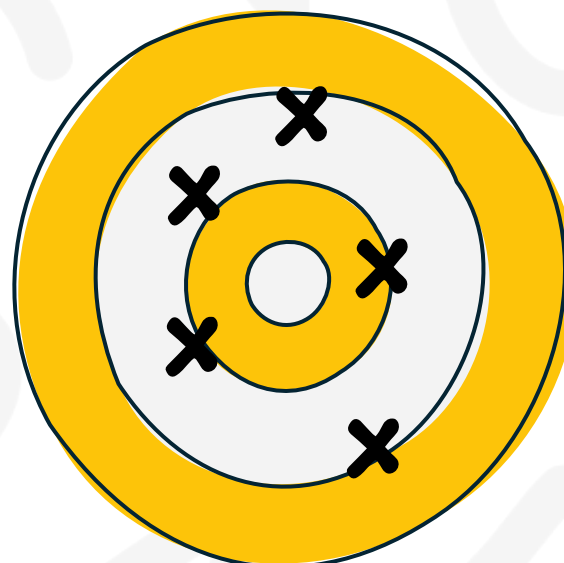
ACCURATE

low bias, low noise



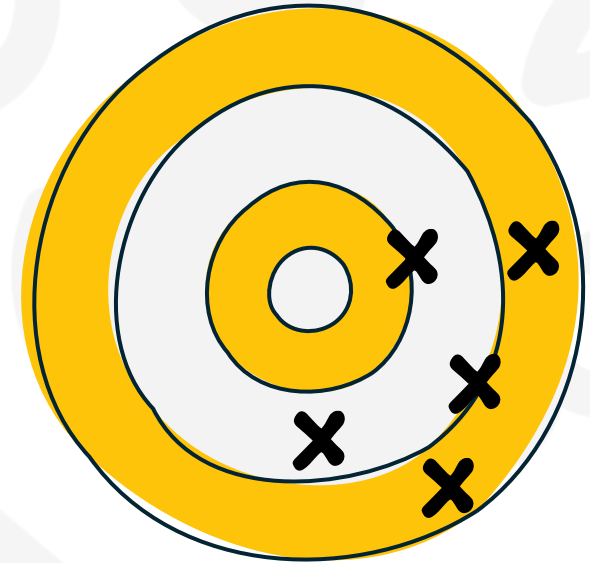
BIASED

high bias, low noise



NOISY

low bias, high noise



BOTH

high bias, high noise





Expected Difference:

10%

Actual Median Difference:

55%

\$9000

\$16,000



**Implementing the
*Assessment Standards for
School Mathematics***

Lew Romagnano

The Myth of Objectivity in Mathematics Assessment

THE ASSESSMENT PRINCIPLE: Assessment should support the learning of important mathematics and furnish useful information to both teachers and students.

—*Principles and Standards for
School Mathematics* (NCTM 2000, p. 22)

A wide array of alternatives to traditional quiz-and-test assessment of students' mathematical understanding has been proposed in the last decade (e.g., Stenmark [1991]; NCTM [1995]; Graer et al. [1999]). Adding open-ended

Objectivity, like the mythical pot of gold at the end of the rainbow, would be wonderful if we could have it, but it does not exist. All assessments of students' mathematical understanding are subjective.

A more useful way to characterize methods of

SAT[®]

SAT[®]



570



630





71.3% ± 7.5%



78.8% ± 7.5%



SAT[®]



71.3% ± 7.5%



78.8% ± 7.5%

True grade.

70%

56%

Worst case.

83%

65%

More likely.

74%

~~~~~		AVG
 ~~~~~		96.573%
 ~~~~ m		96.566%

"So imprecise that they are almost meaningless."

"So imprecise that they are almost meaningless."



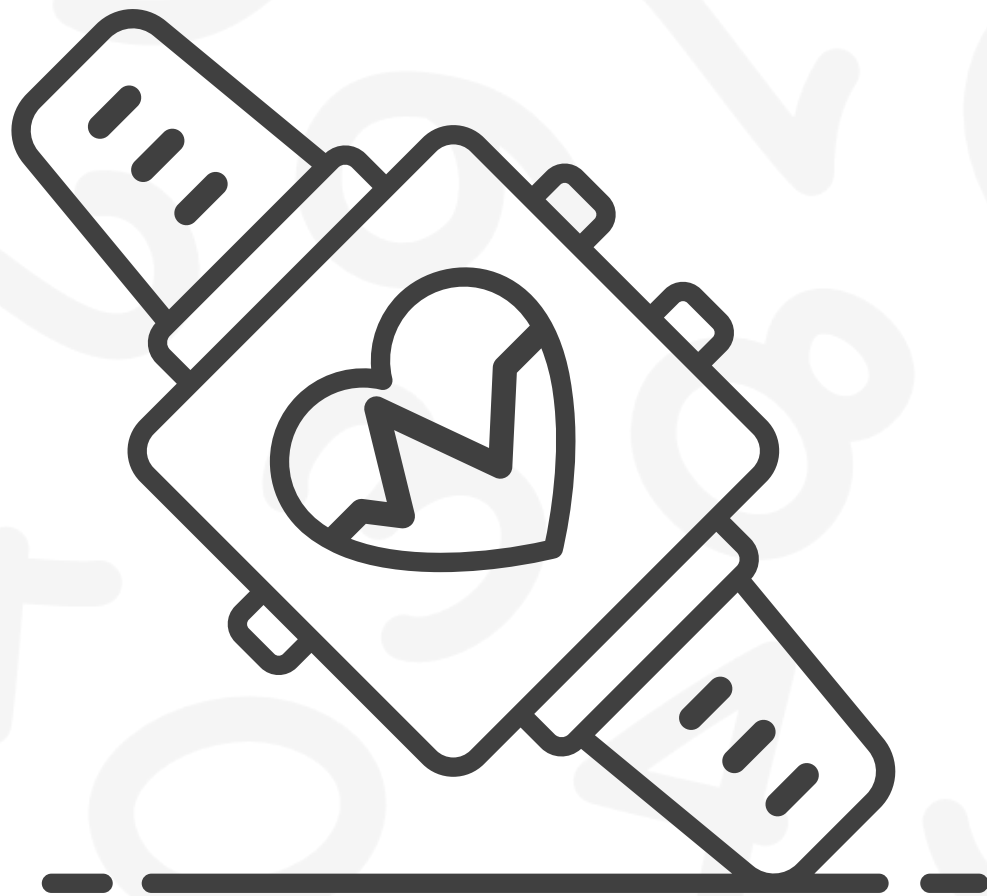


“Why would I study?”

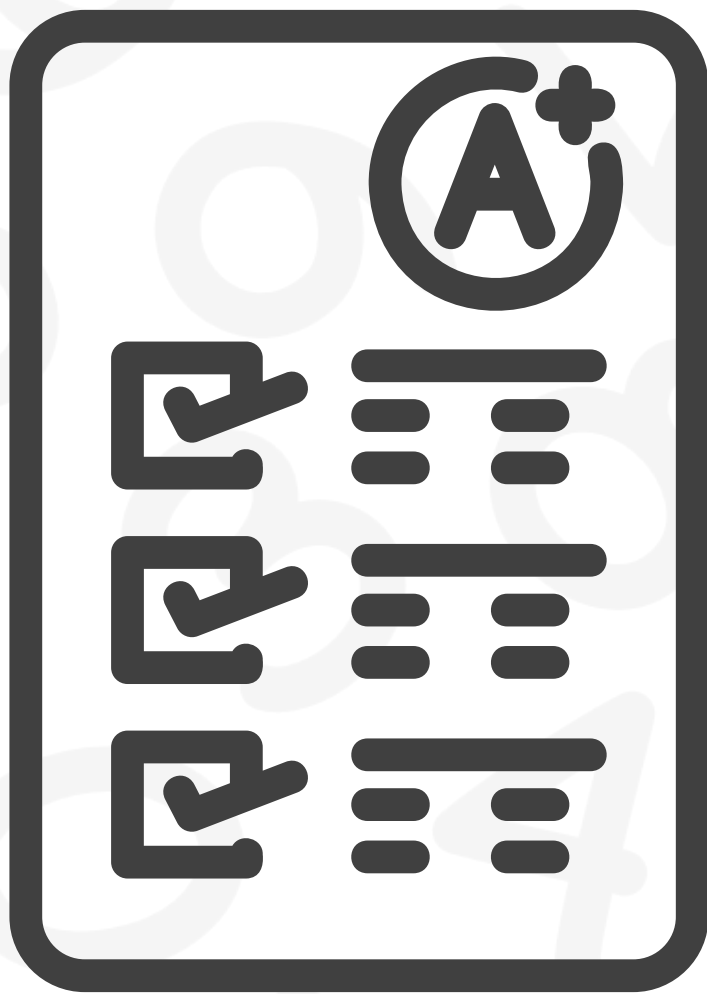
# GOODHART' S LAW

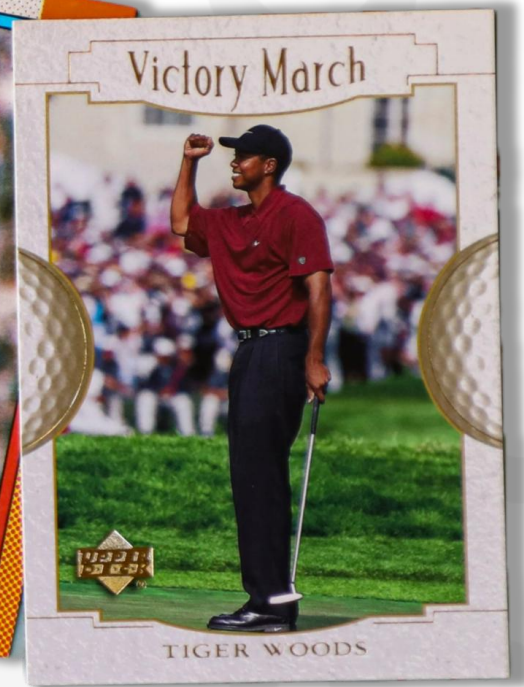
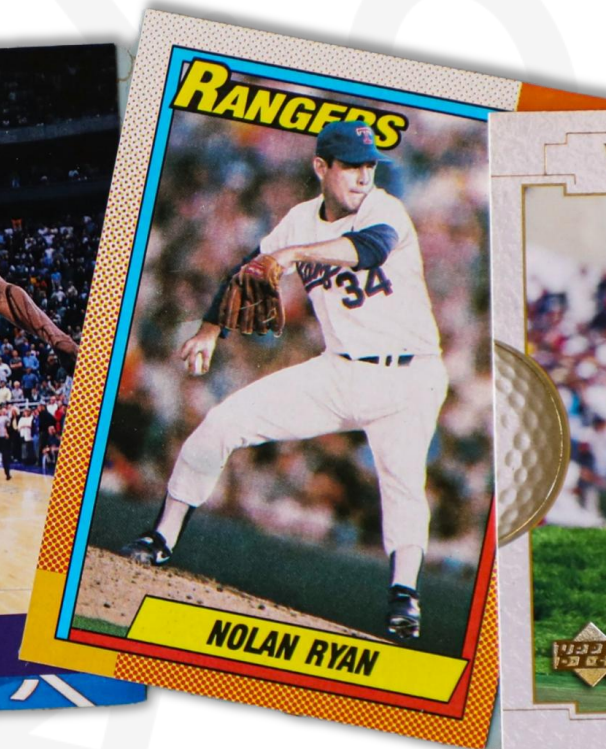
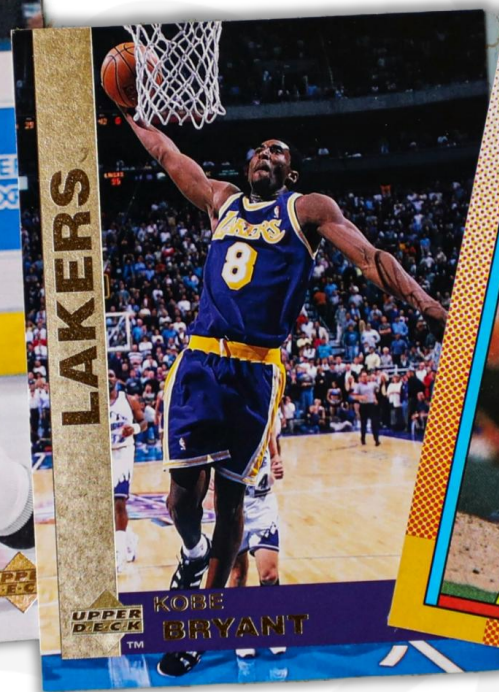
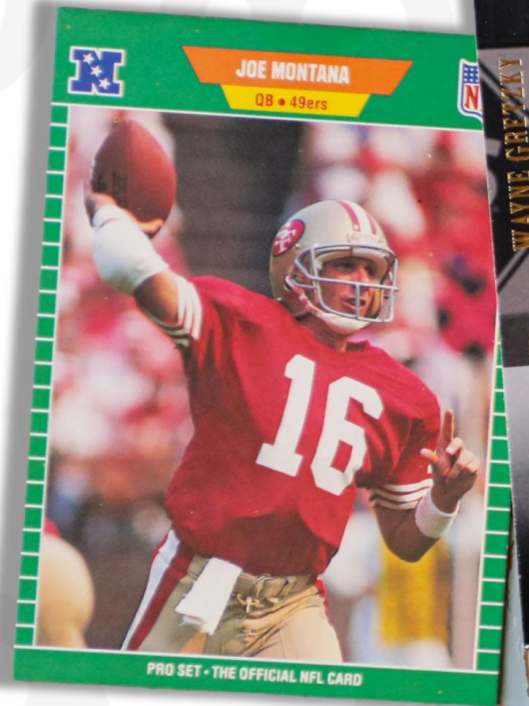
When a **measure** becomes  
a **target**, it ceases to be a  
**good measure.**













## G

**LAKERS**A photograph of Kobe Bryant in a purple Los Angeles Lakers jersey, looking off to the side. The jersey features the word "LAKERS" in gold lettering. He is wearing a white and gold Lakers jersey underneath. The background is blurred, showing other people in the arena.

Bryant finished off his second season in the NBA in impressive fashion on April 19 in the Lakers victory over Utah Jazz. The win gave the Lakers a share of the Pacific Division Championship and completed the regular season at 61-21. Bryant turned in a huge effort in the victory, scoring 25 points in 37 minutes of action off the Lakers bench, connecting on 10-of-19 attempts from the floor and sinking four-of-six free throw attempts. Bryant scored 12 of his 25 points in the decisive fourth quarter as the Lakers outscored Utah 29-25 to register a 102-98 win.

Ht: 6'7" Wt: 210 lbs College: None Born: 8/23/78 Philadelphia, Pennsylvania



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## 200

**TORONTO BLUE JAYS®** — first baseman

HT: 6'2" WT: 245 BATS: RIGHT THROWS: RIGHT

**BORN:** 3-16-99, MONTREAL, QUEBEC, CANADA **SIGNED:** BLUE JAYS-2015 AS FREE AGENT **ACQUIRED:** FREE AGENT, 7-2-15

X



TOPPS

One of the game's feared sluggers, Vladimir smacks the ball when he squares it up. Guerrero's 249 batted balls at 95+ mph in 2023 were the fourth-most in the Majors, with his hard-hit percentage ranking in the 89th percentile. Only New York's Giancarlo Stanton has more 115-plus-MPH exit velos since 2018.

### MAJOR LEAGUE BATTING RECORD

LEAGUE LEADER IN *ITALICS*. TIE ♦

YR	CLUB	G	AB	R	H	2B	3B	HR	RBI	SB	BB	SLG	OPS	AVG	WAR
19	BLUE JAYS	123	464	52	126	26	2	15	69	0	46	.433	.772	.272	2.1
20	BLUE JAYS	60*	221	34	58	13	2	9	33	1	20	.462	.791	.262	0.6
21	BLUE JAYS	161	604	123	188	29	1	48*	111	4	86	.601	1.002	.311	6.7
22	BLUE JAYS	160	638	90	175	35	0	32	97	8	58	.480	.818	.274	3.9
23	BLUE JAYS	156	602	78	159	30	0	26	94	5	67	.444	.788	.264	2.0
MAJ. LEA. TOTALS		660	2529	377	706	133	5	130	404	18	277	.490	.844	.279	15.3



**topps**



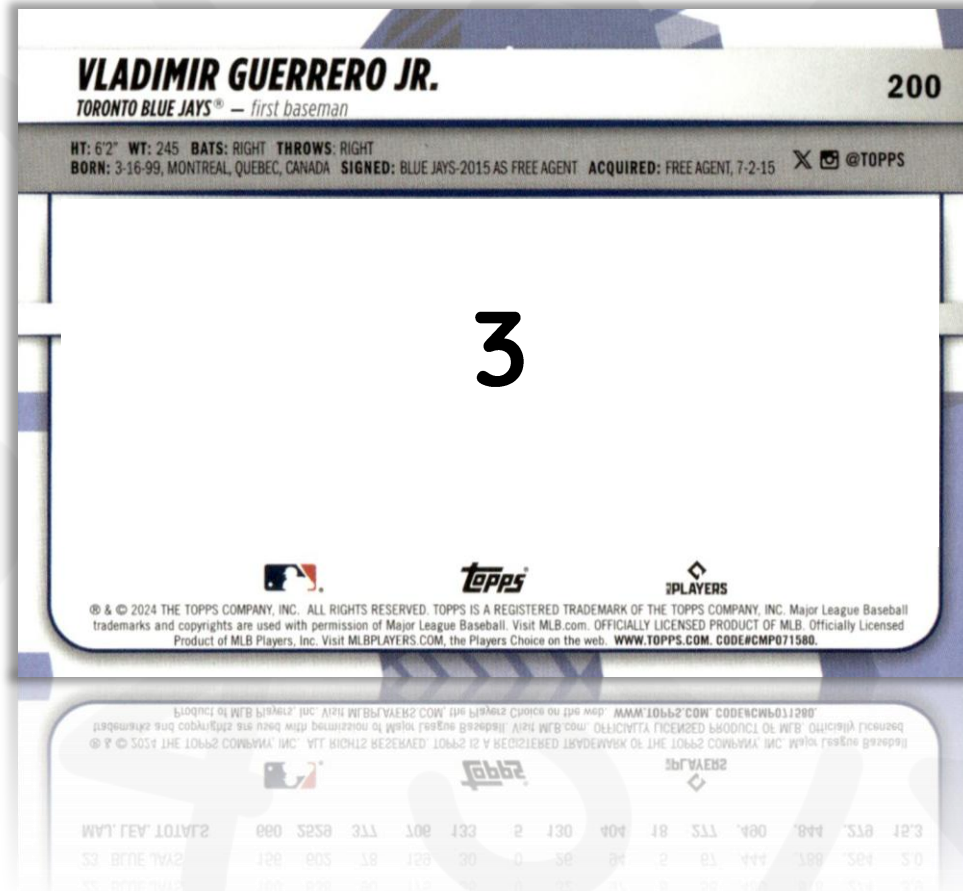
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5662





# A Century of Grading Research: Meaning and Value in the Most Common Educational Measure¹

Susan M. Brookhart  
Duquesne University

Thomas R. Guskey  
University of Kentucky

Alex J. Bowers  
Teachers College,  
Columbia University

James H. McMillan  
Virginia Commonwealth  
University

Jeffrey K. Smith  
University of Otago

Lisa F. Smith  
University of Otago

Michael T. Stevens  
University of  
California at Davis

Megan E. Welsh  
University of  
California at Davis

## ABSTRACT:

Grading refers to the symbols assigned to individual pieces of student work or to composite measures of student performance on report cards. This review of over 100 years of research on grading considers five types of studies: (a) early studies of the reliability of grades, (b) quantitative studies of the composition of K-12 report card

Grading is important to study because of the centrality of grades in the educational experience of all students. Grades are widely perceived to be what students “earn” for their achievement (Brookhart, 1993, p.139), and have pervasive influence on students and schooling (Pattison, Grodsky, & Muller, 2013). Furthermore, grades predict

"Grades assess a multidimensional construct containing both **cognitive** and **noncognitive** factors."

**effort**

**achievement**

**homework**

**behaviour**

**attendance**

**HODGEPODGE**

Brookhart, Guskey, et al. (2016)

# KIND

Clear rules

Immediate feedback

Patterns repeat

Right/wrong answers

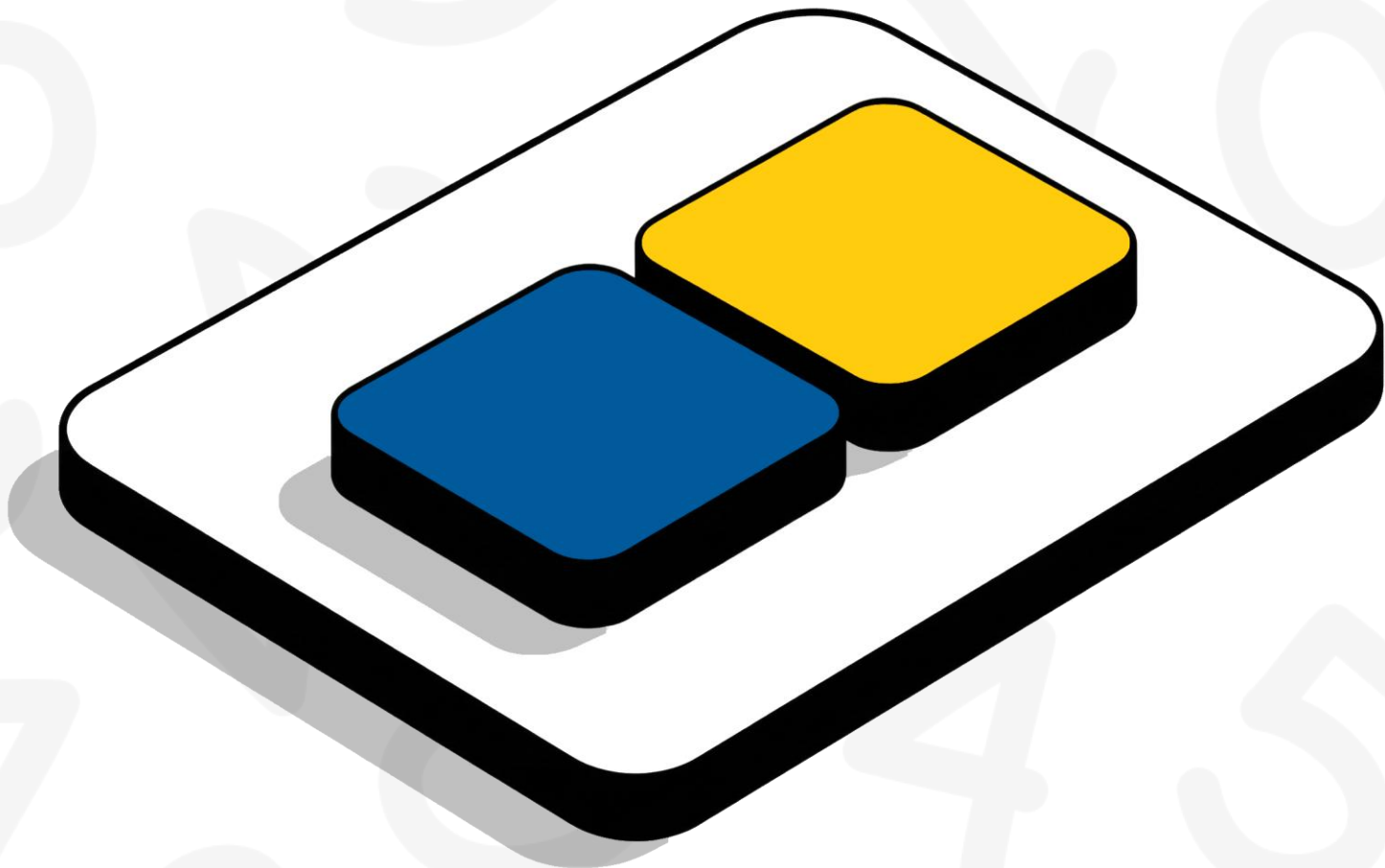
# WICKED

Unclear rules

Delayed feedback

Novel situations

Ambiguity



Journal of Experimental Psychology: General  
1982, Vol. 111, No. 1, 23-59

# Reinforcement-Induced Behavioral Stereotypy: How Not to Teach People to Discover Rules

Barry Schwartz  
Swarthmore College

## SUMMARY

Seven experiments examined the effects of contingent reinforcement on complex response sequences in college students. To obtain reinforcement, subjects were required to press two keys four times each, in any order. Seventy different successful sequences were possible. Experiment 1 showed that like pigeons, college students develop stereo-typed response sequences even when the reinforcement contingency does not require stereotypy. Experiment 2 showed that extinction increases sequence variability. Experiment 3 showed that when a subclass of possible sequences is reinforced, subjects develop stereotyped sequences that belong to that subclass. Experiment 4 showed that subjects develop sequences that are not reinforced when they are not reinforced.



**COMPLIANCE  $\neq$  COMPETENCE**



## When your 'A' becomes a 'C' — Ontario university downgrades marks from some high schools

Students from Grimsby Secondary School saw their marks downgraded by 27.1 per cent



[Conrad Collaco](#) · CBC News · Posted: Sep 18, 2018 12:54 PM EDT | Last Updated: September 20, 2018



EDUCATION

## One university's secret list to judge applicants by their high schools — not just their marks

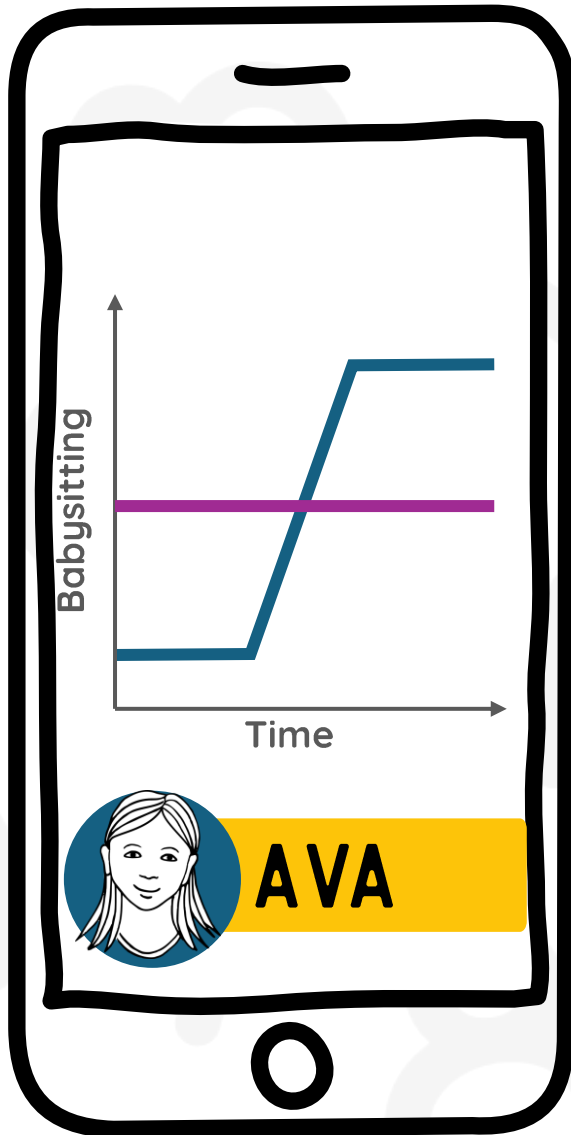
By [Patrick Cain](#) · Global News

Posted September 13, 2018 5:30 am · Updated September 13, 2018 10:08 pm · 8 min read



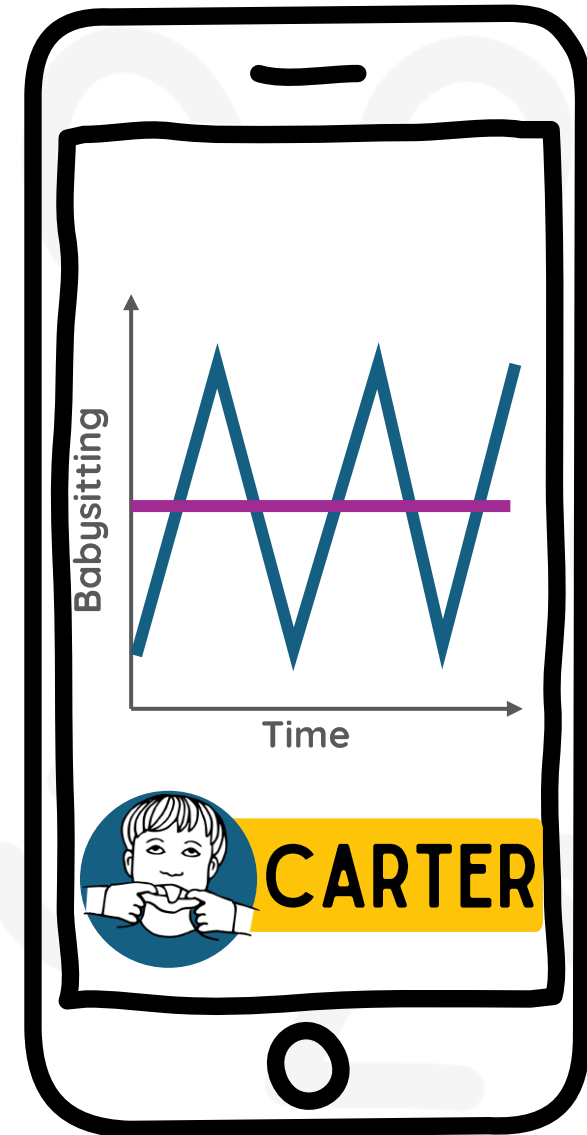
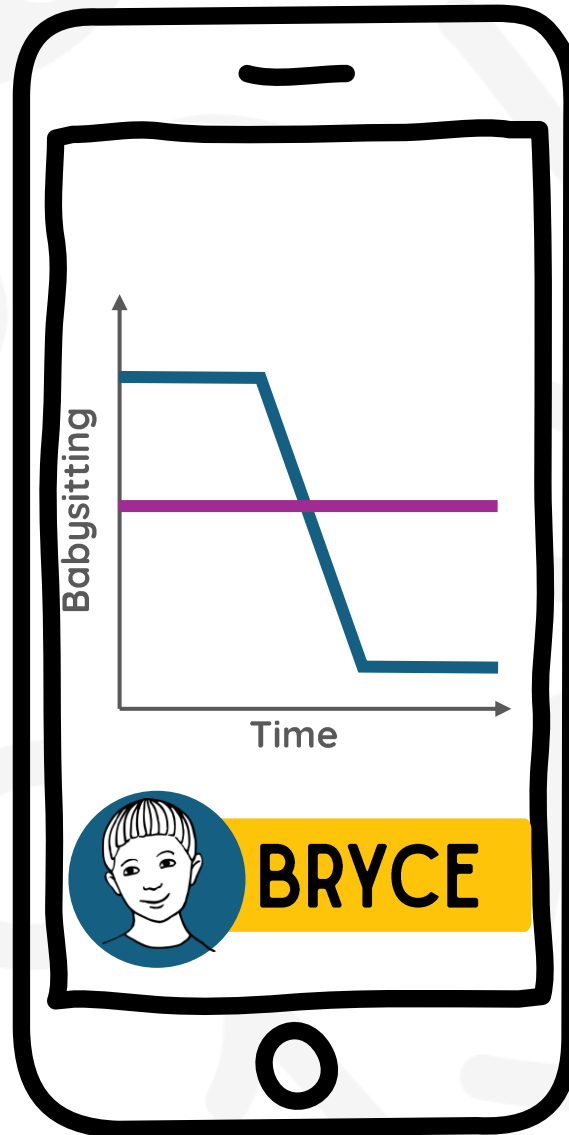
# POINT GATHERING

Event Based Reporting



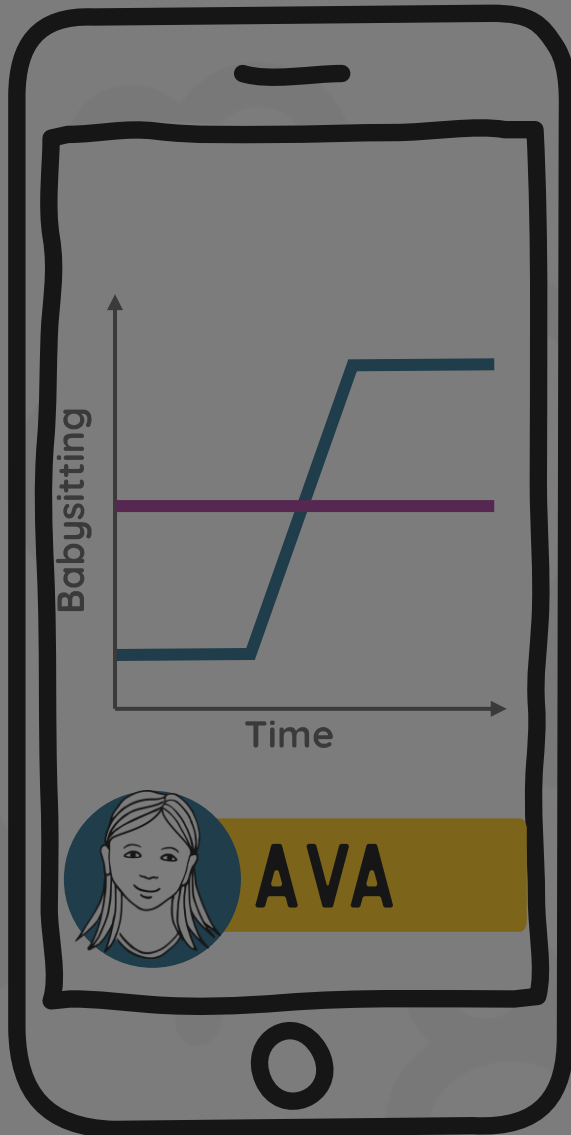
# DATA GATHERING

Outcomes Based Reporting



# POINT GATHERING

Event Based Reporting

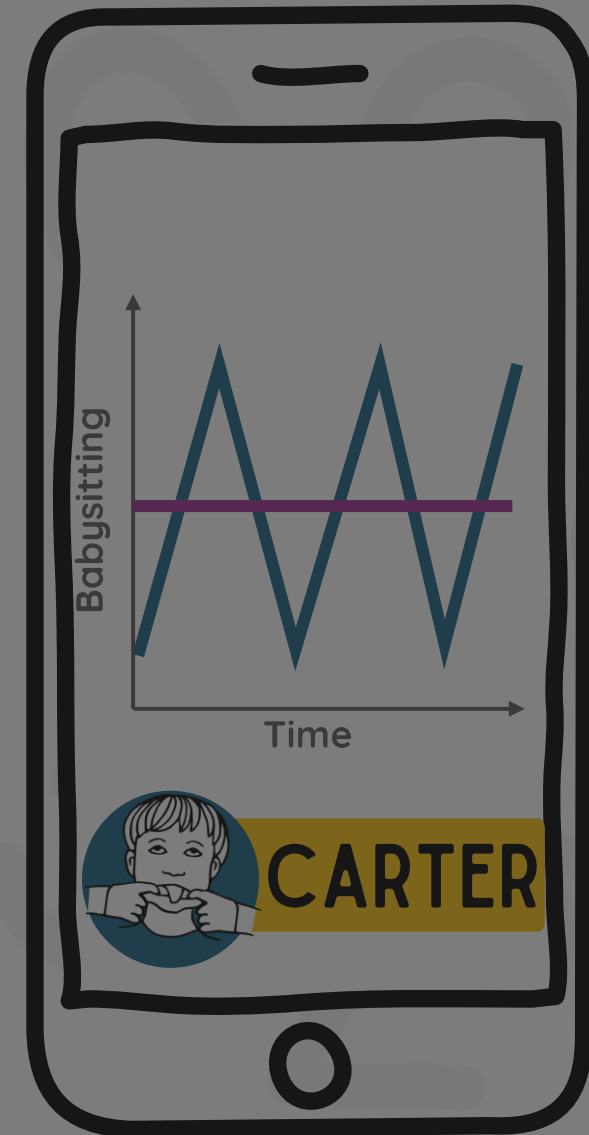


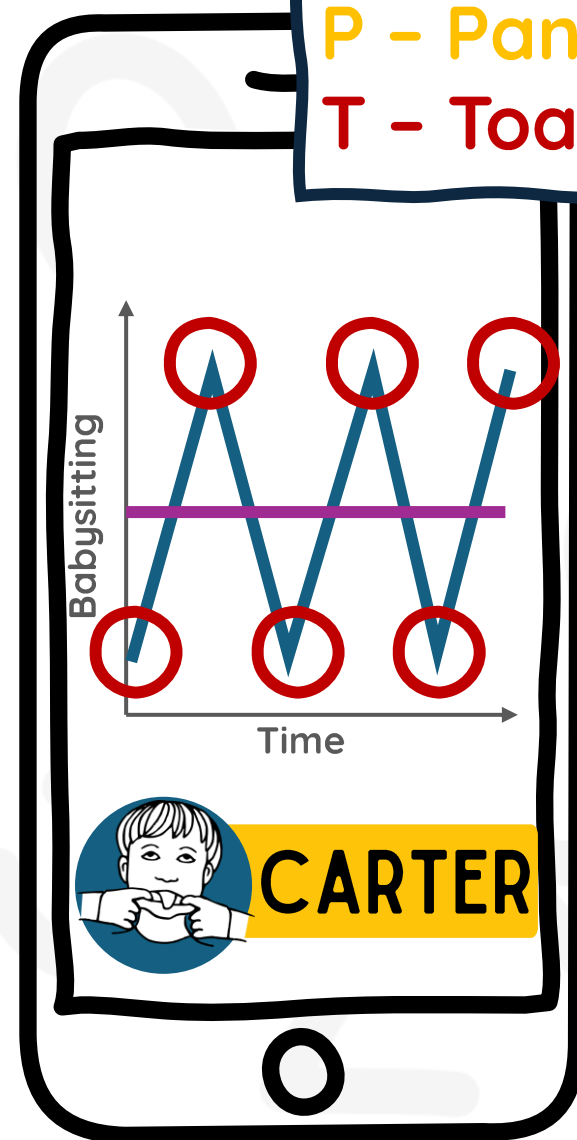
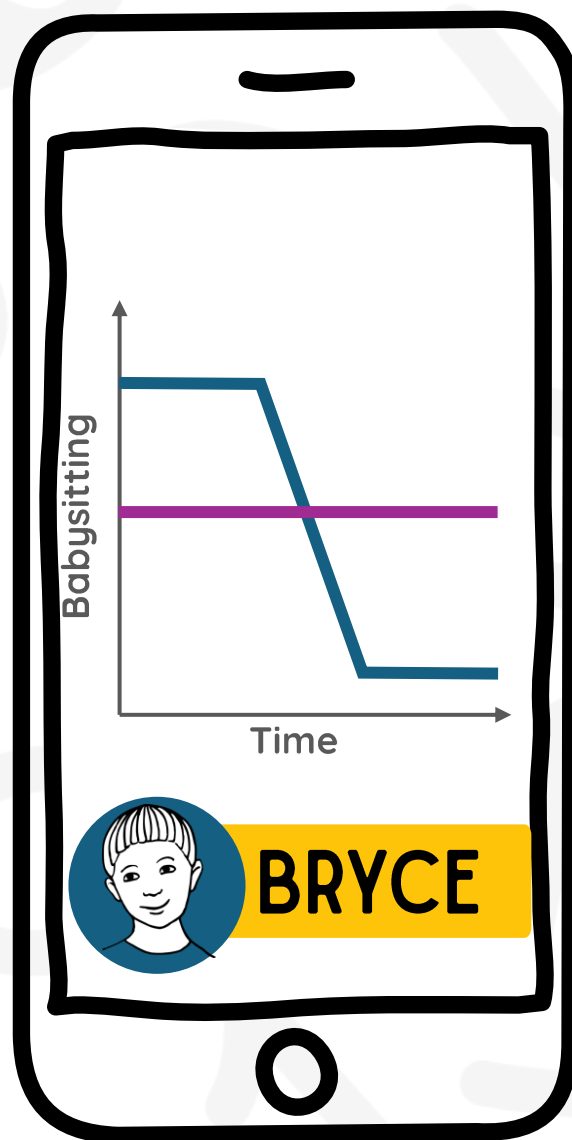
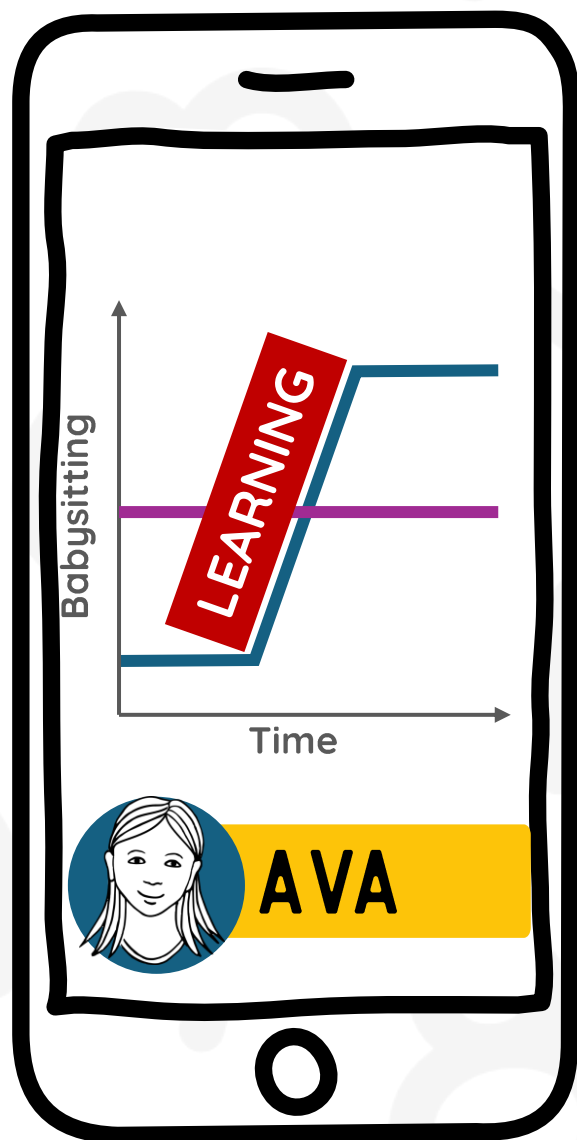
C - Crepe  
W - Waffle  
P - Pancake  
T - Toast



# DATA GATHERING

Outcomes Based Reporting

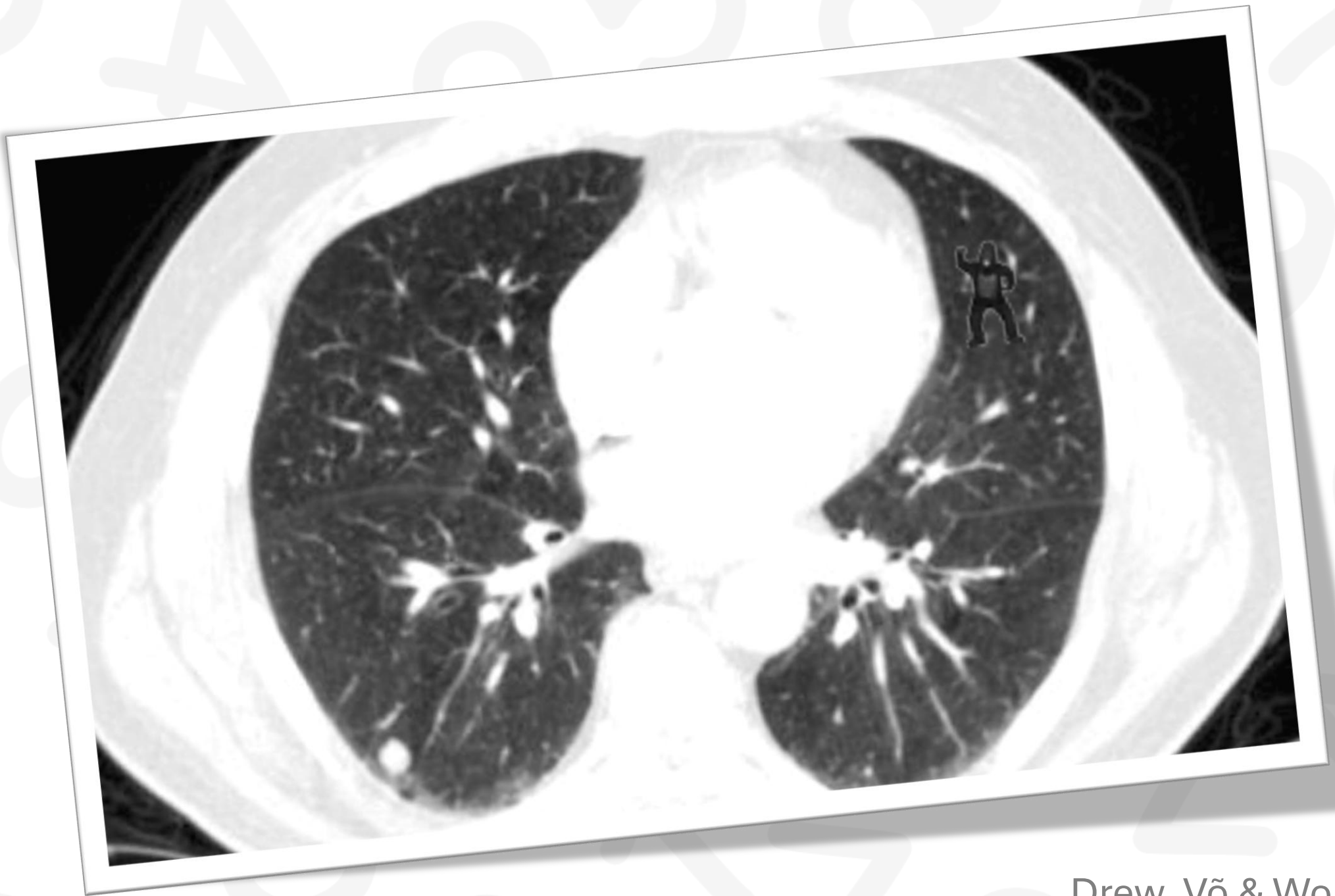


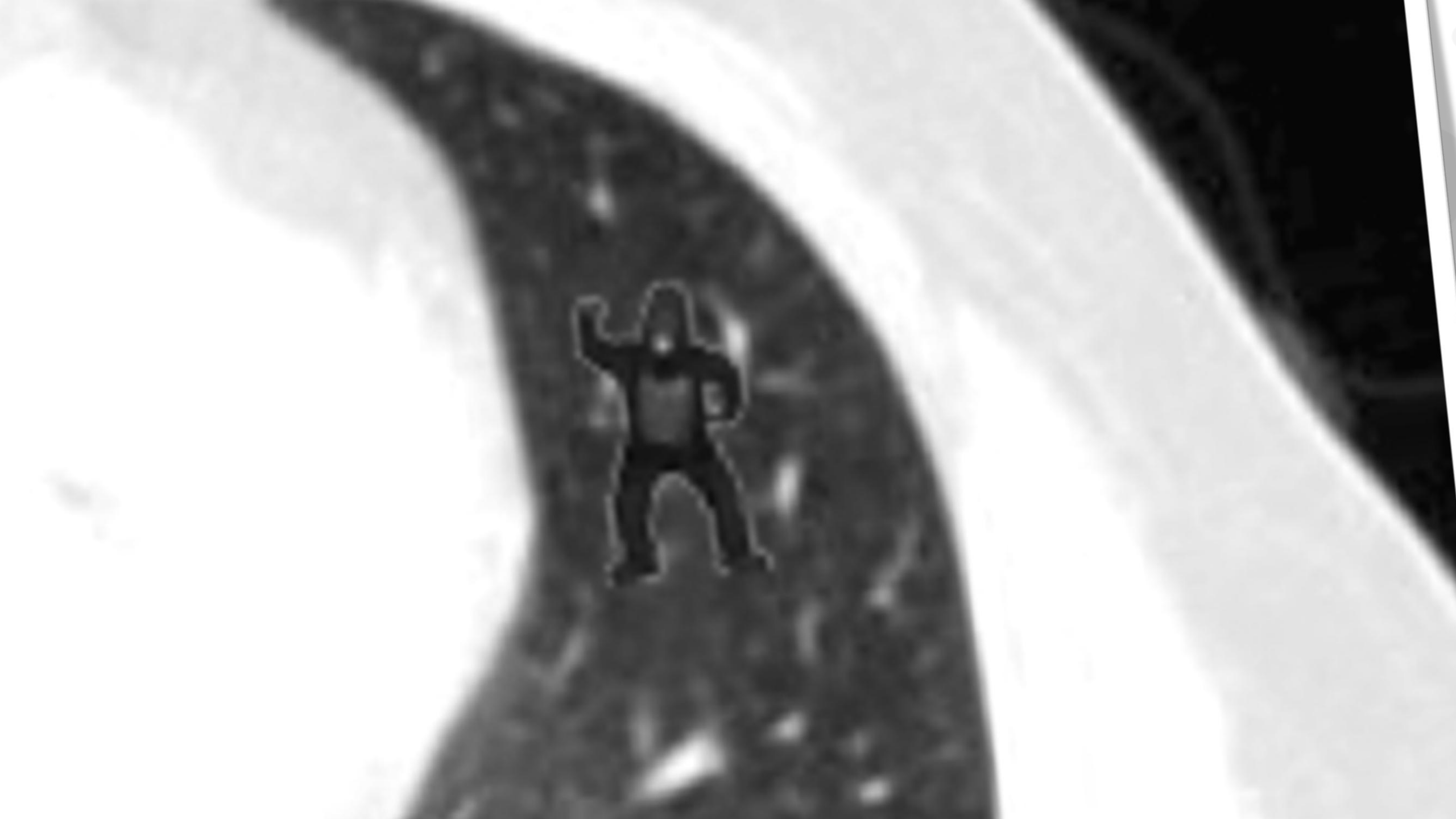


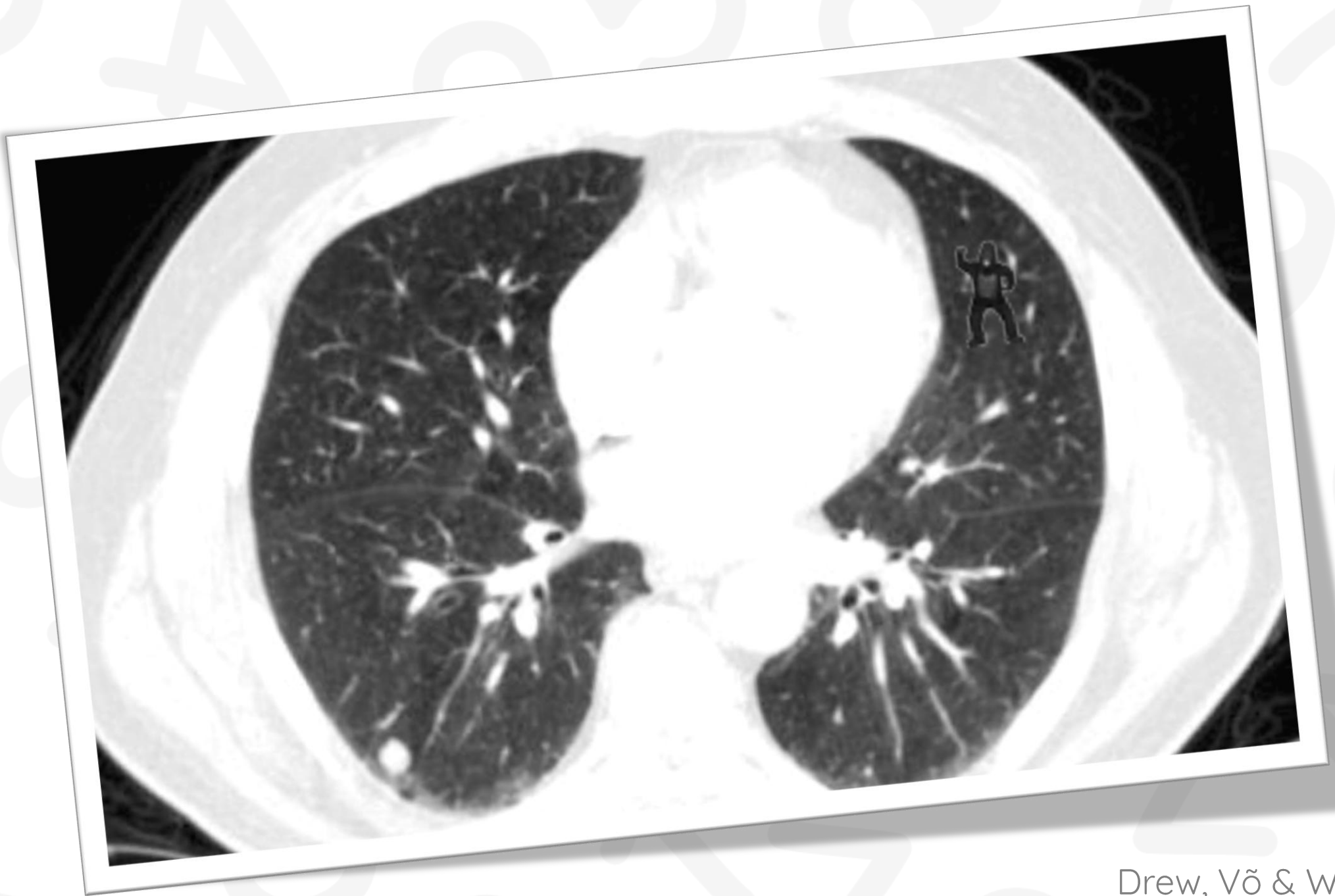
C - Crepe  
W - Waffle  
P - Pancake  
T - Toast

?









Drew, Võ & Wolfe, 2013

PRODUCT

# TRIANGULATION OF DATA

OBSERVATION

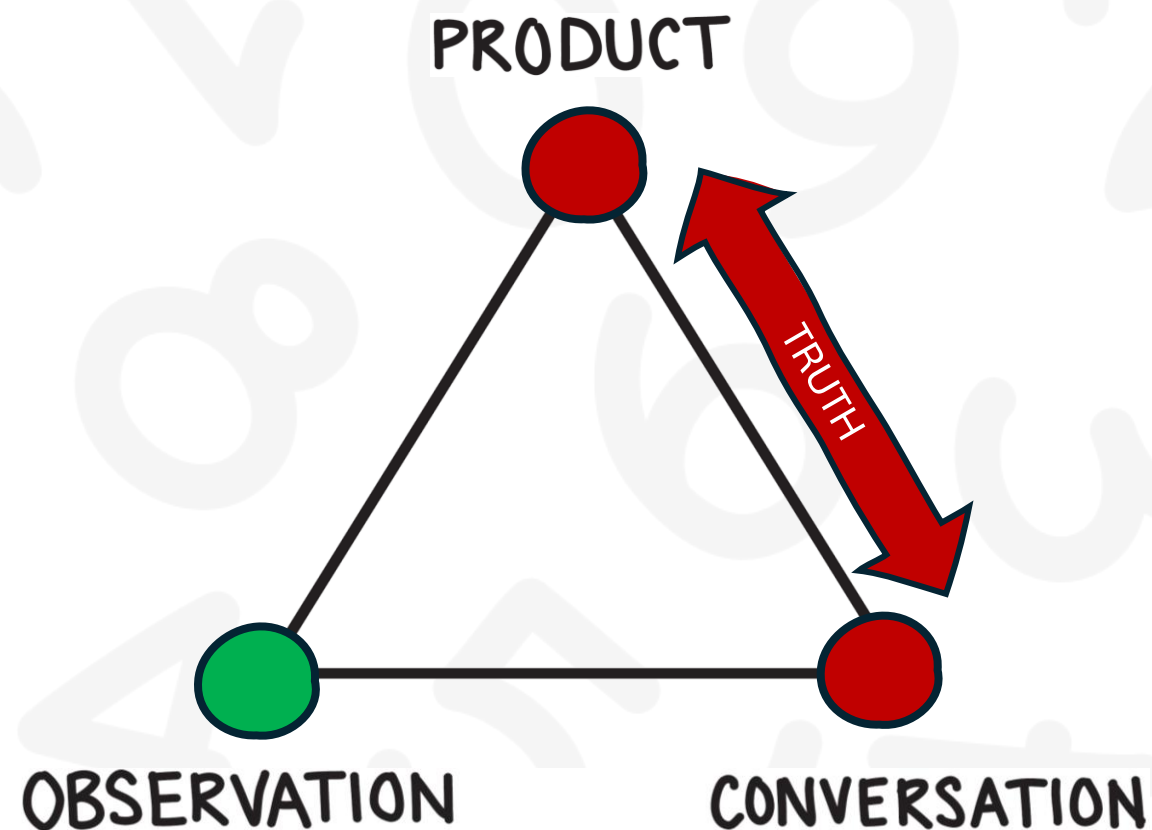
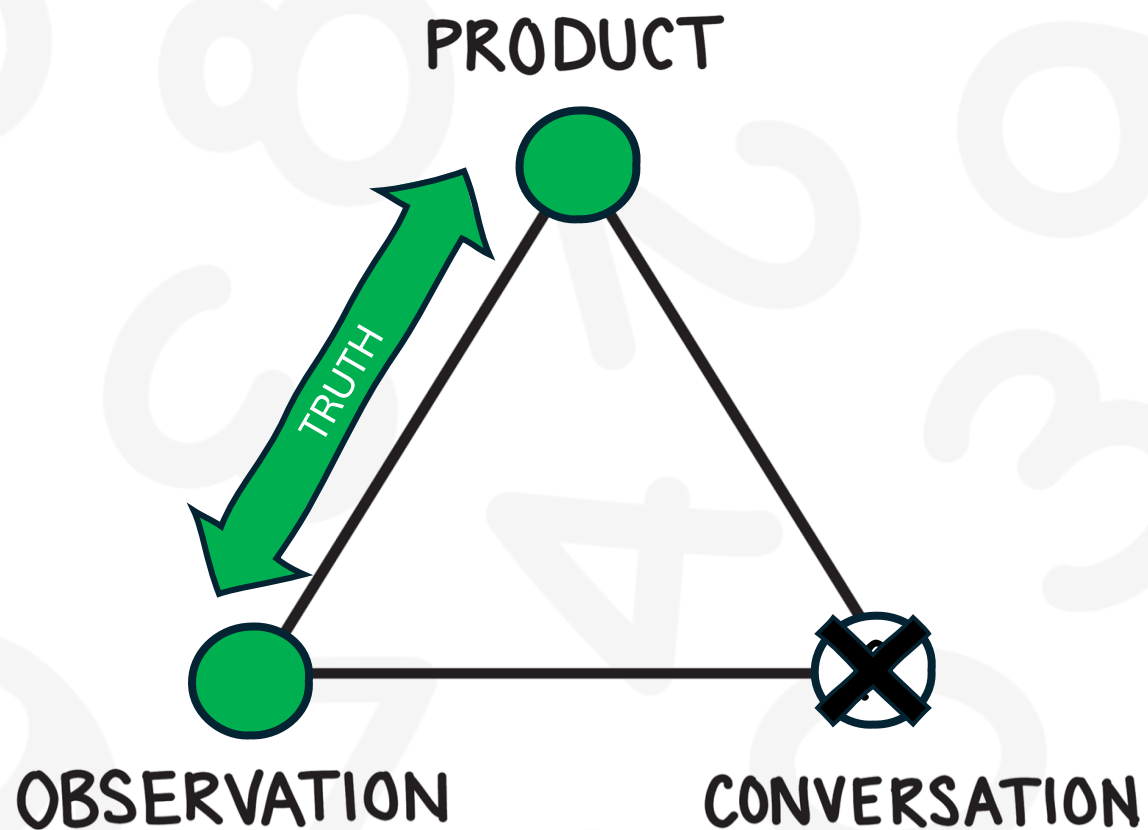
CONVERSATION



**DANA**



**ELI**

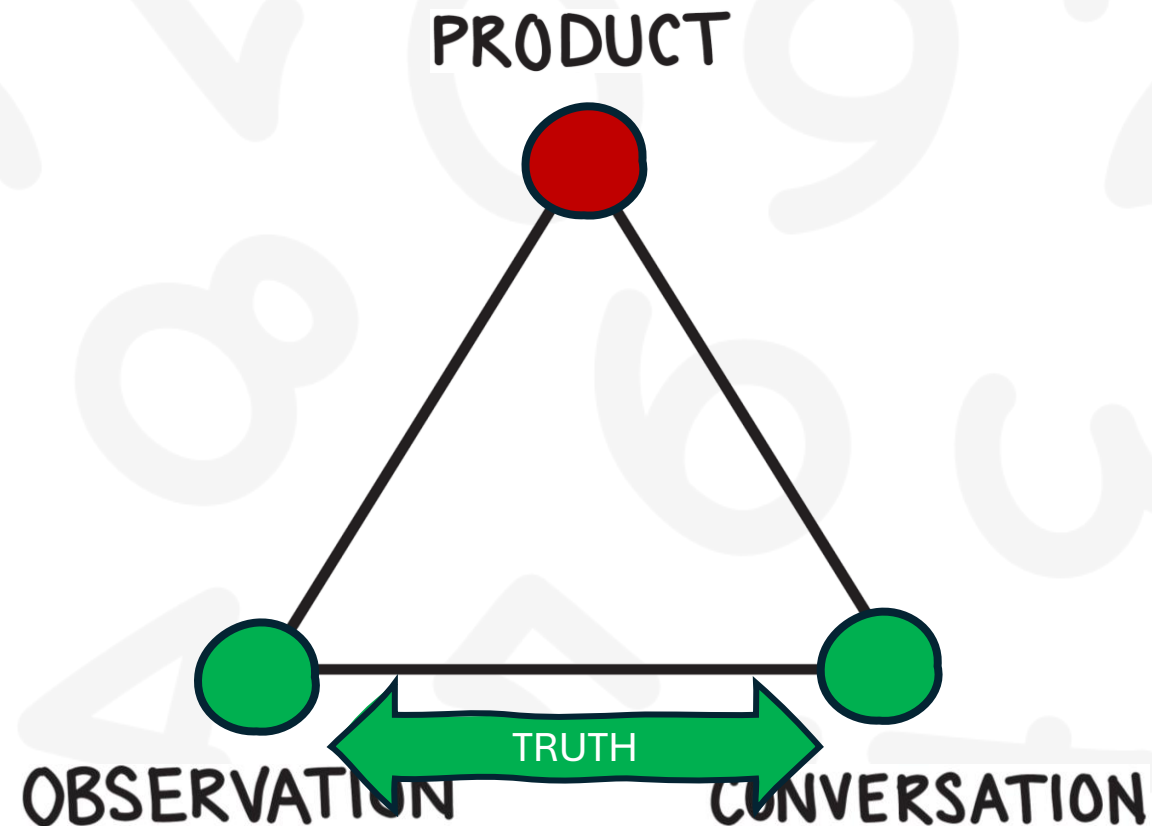
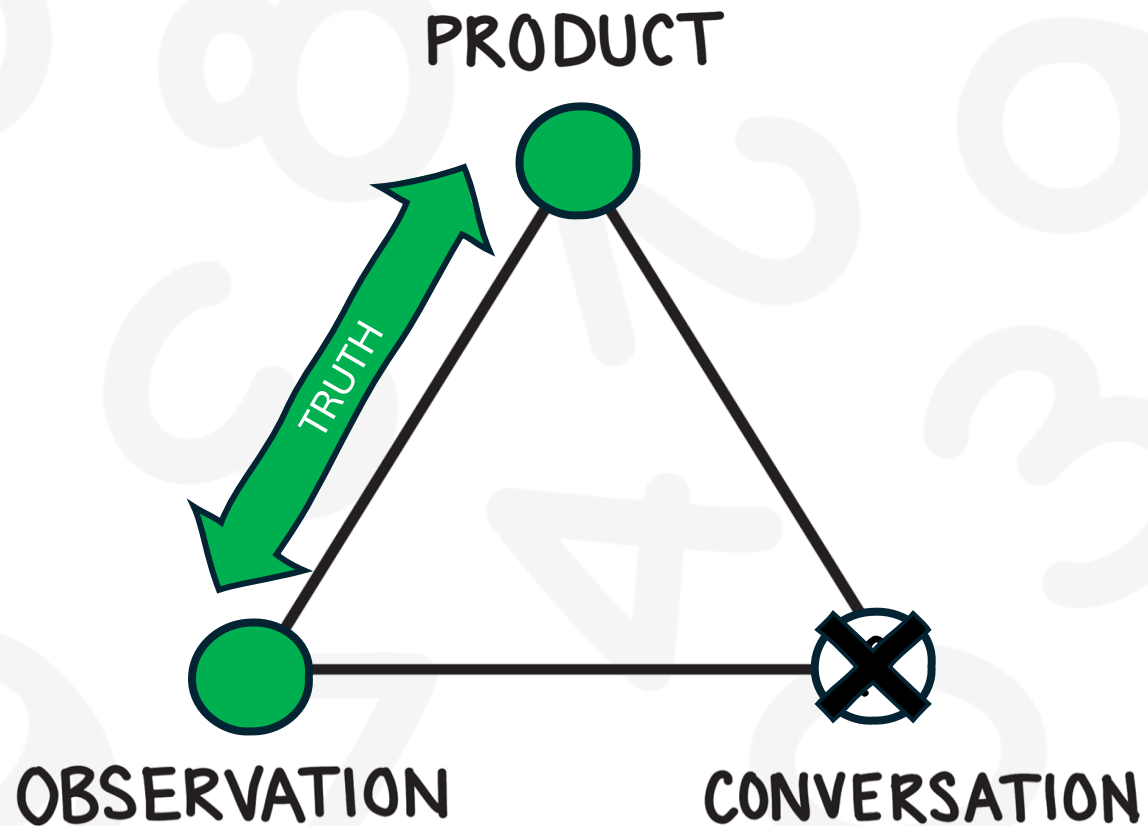




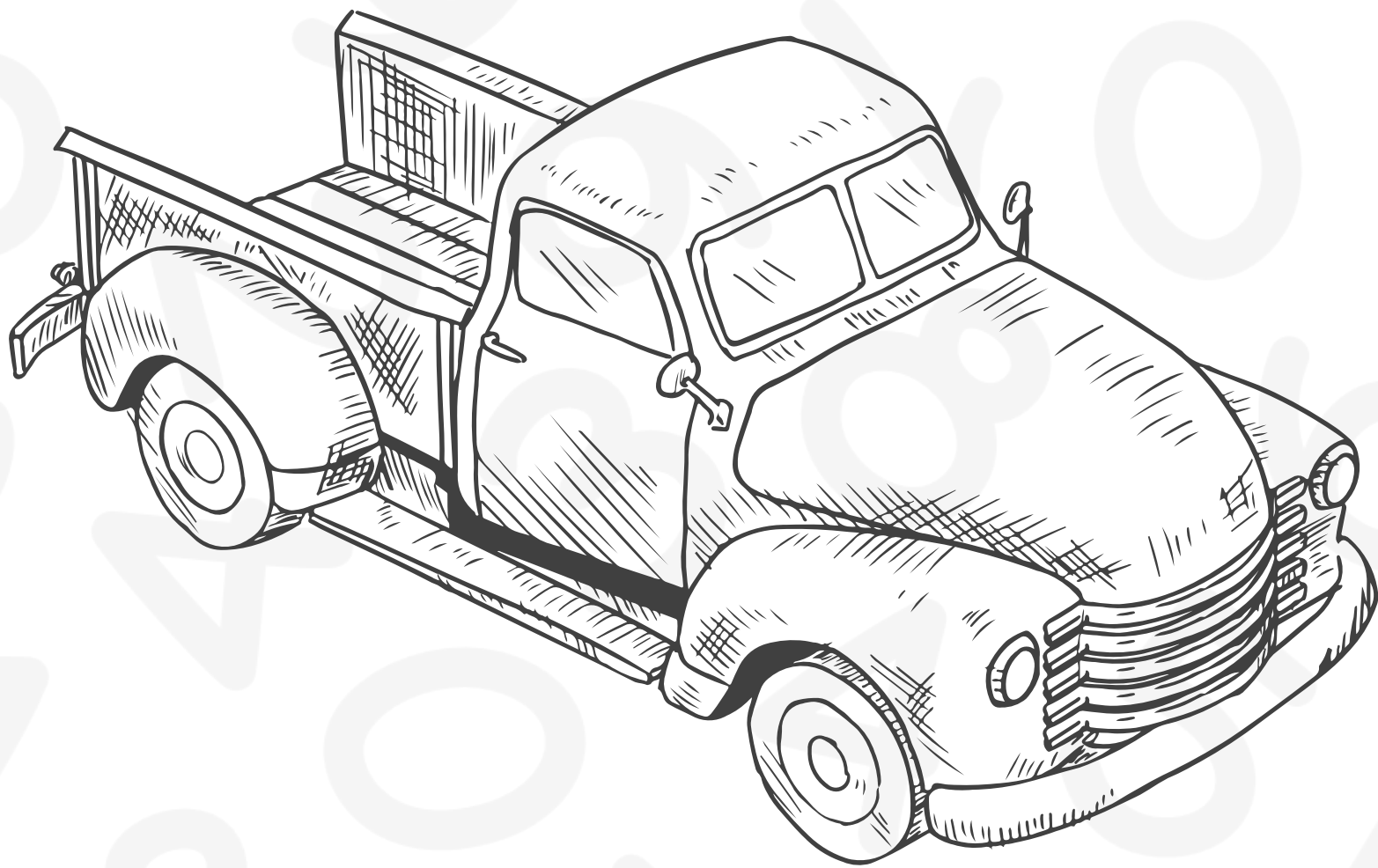
**DANA**



**ELI**



# **DIFFERENTIATED ASSESSMENT**



**Years  
Teaching**



**Average  
Class Size**



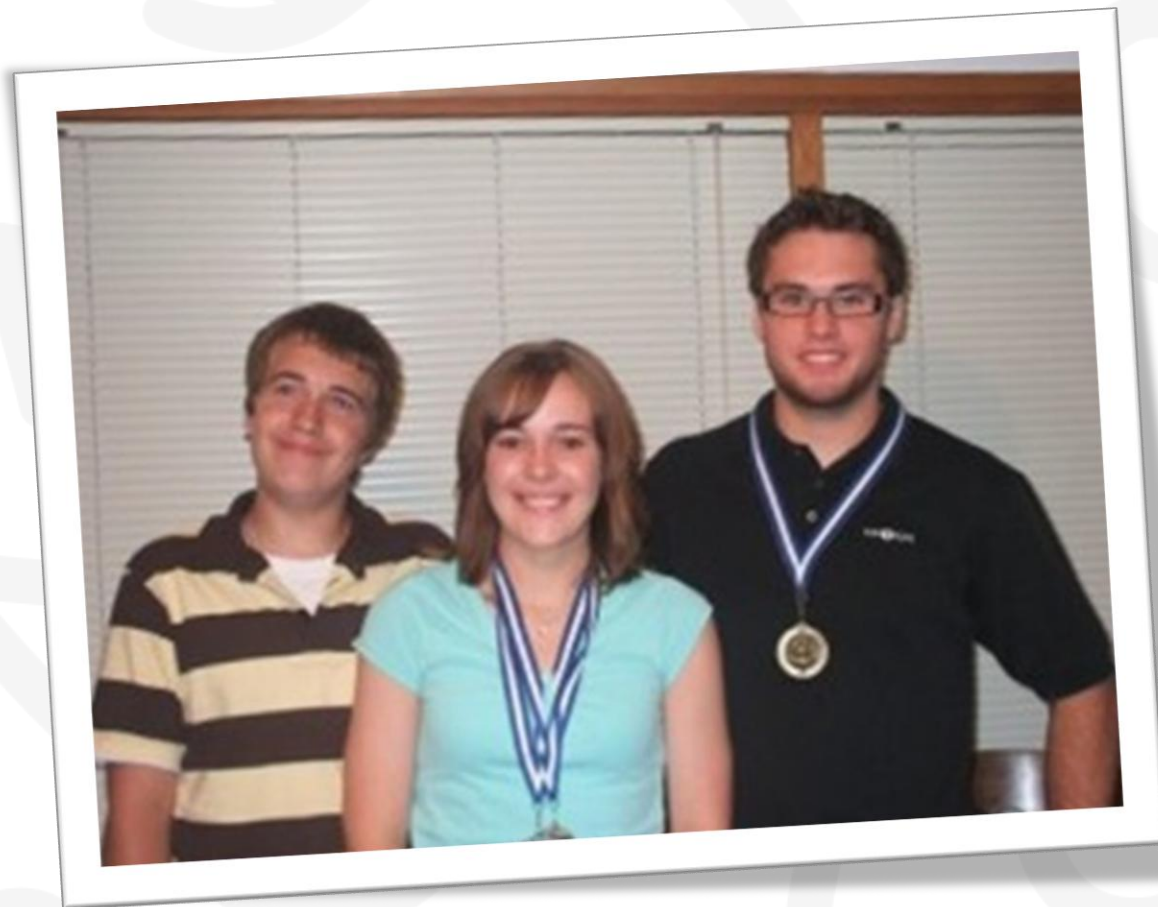
**Products  
per  
student  
per week**



**30 weeks**



**Sections  
or  
Subjects**





# Webb of Thoughts

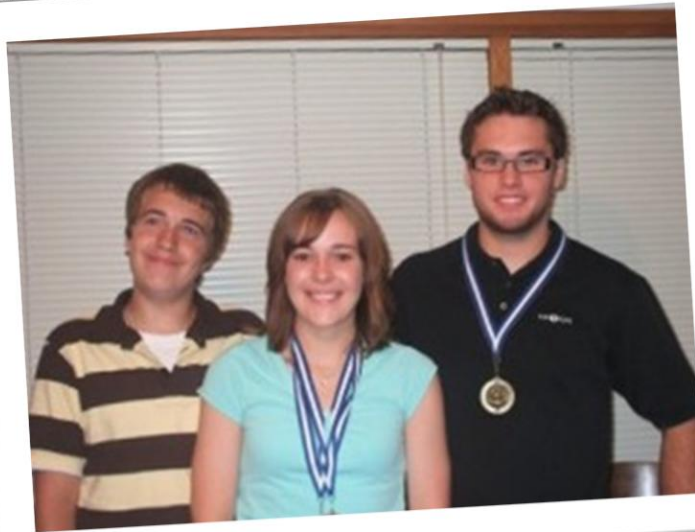
A preservice teacher's attempt to prepare for the world of teaching

[HOME](#) [ABOUT ME](#) [CONTACT ME](#) [MY 365](#) [SCHOOL WORK](#) [TUTORIALS](#)

[ASSIGNMENTS](#) [FEATURED](#) [MENTORSHIPS](#) [UNCATEGORIZED](#)

## The Honour Roll

KYLE WEBB ON MARCH 7, 2018



Right now, my younger brother, Kent, is on the final stretch of his high school career, and set to graduate at the end of June. Just like anyone in his shoes, he couldn't be more excited to be done and is counting down the days. I remember how slowly those final few months seemed to go by. As Kent's older brother I am extremely proud of him.

Kent is *profoundly deaf* which, as you might imagine, has made his education a struggle over the years. When he was three years old, he was a recipient of a



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# THANK YOU!

**SLIDES**



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[kyle@buildingthinkingclassrooms.com](mailto:kyle@buildingthinkingclassrooms.com)

