Meaningful Practices to Meet the Needs of Every Learner

It's about the Process

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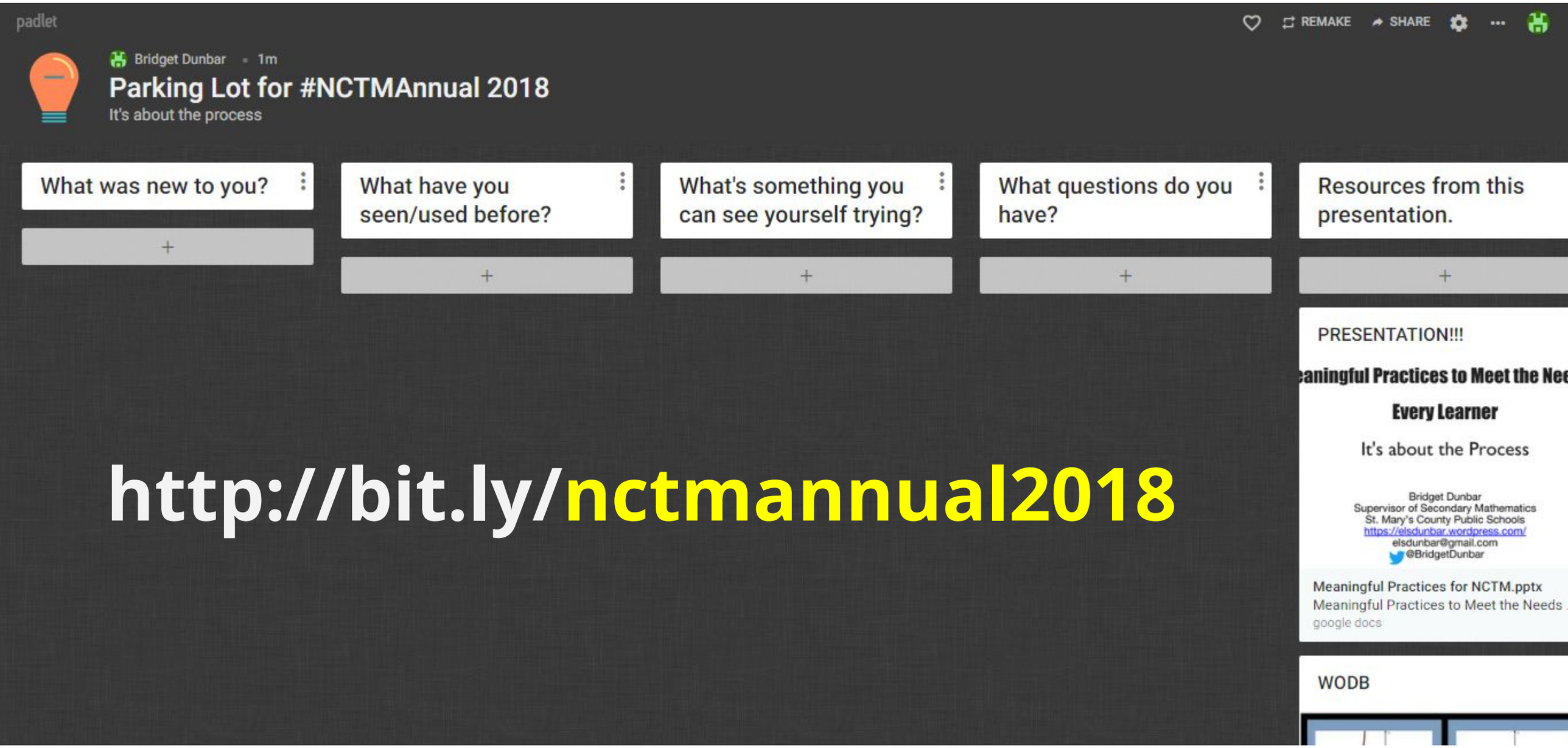
Padlet Parking Lot



http://bit.ly/nctmannual2018

"Everything I learned about teaching, I learned from teaching students with special needs.”

Today’s Goals

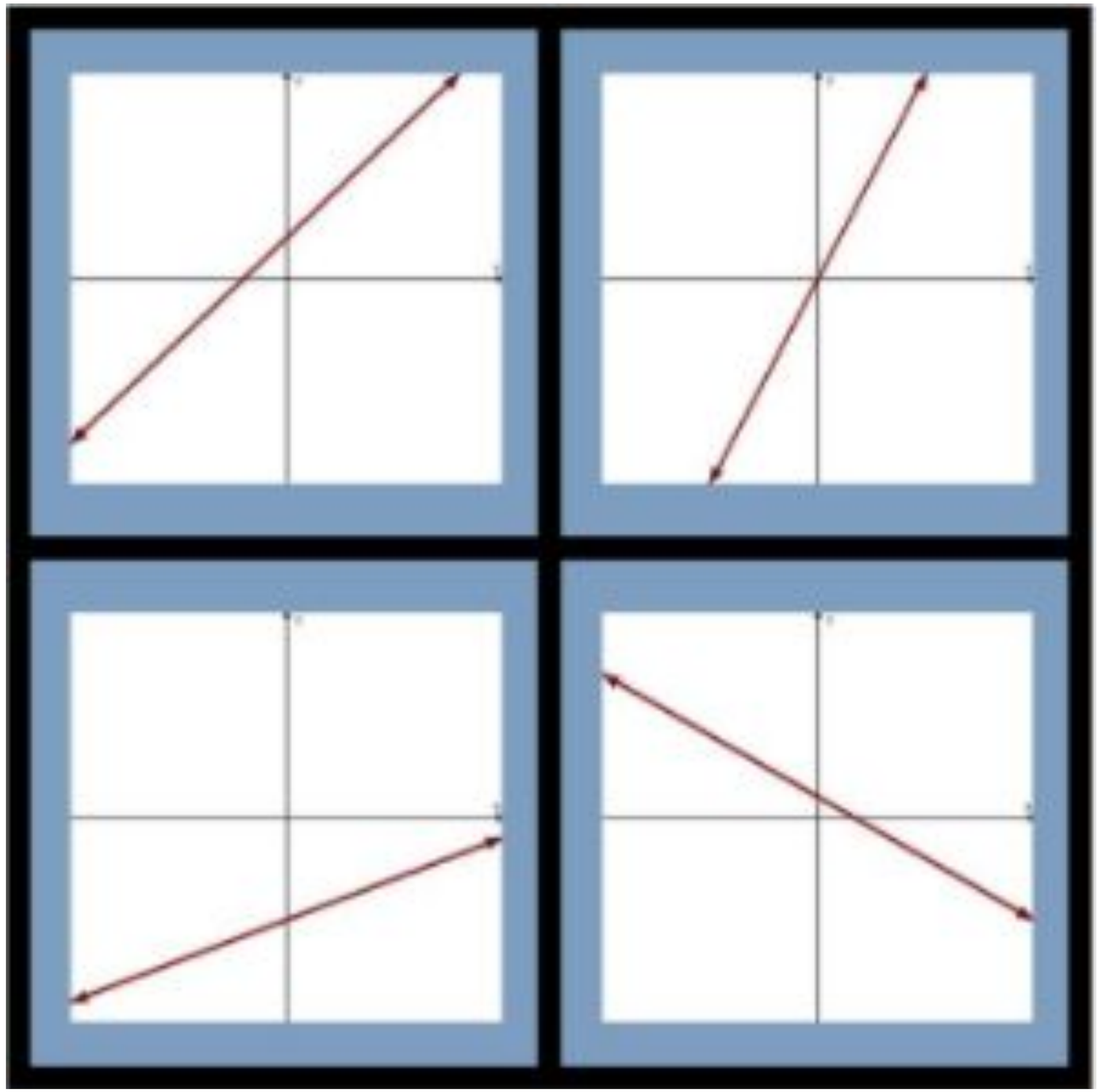
(I) **WHAT**

(2) **HOW**

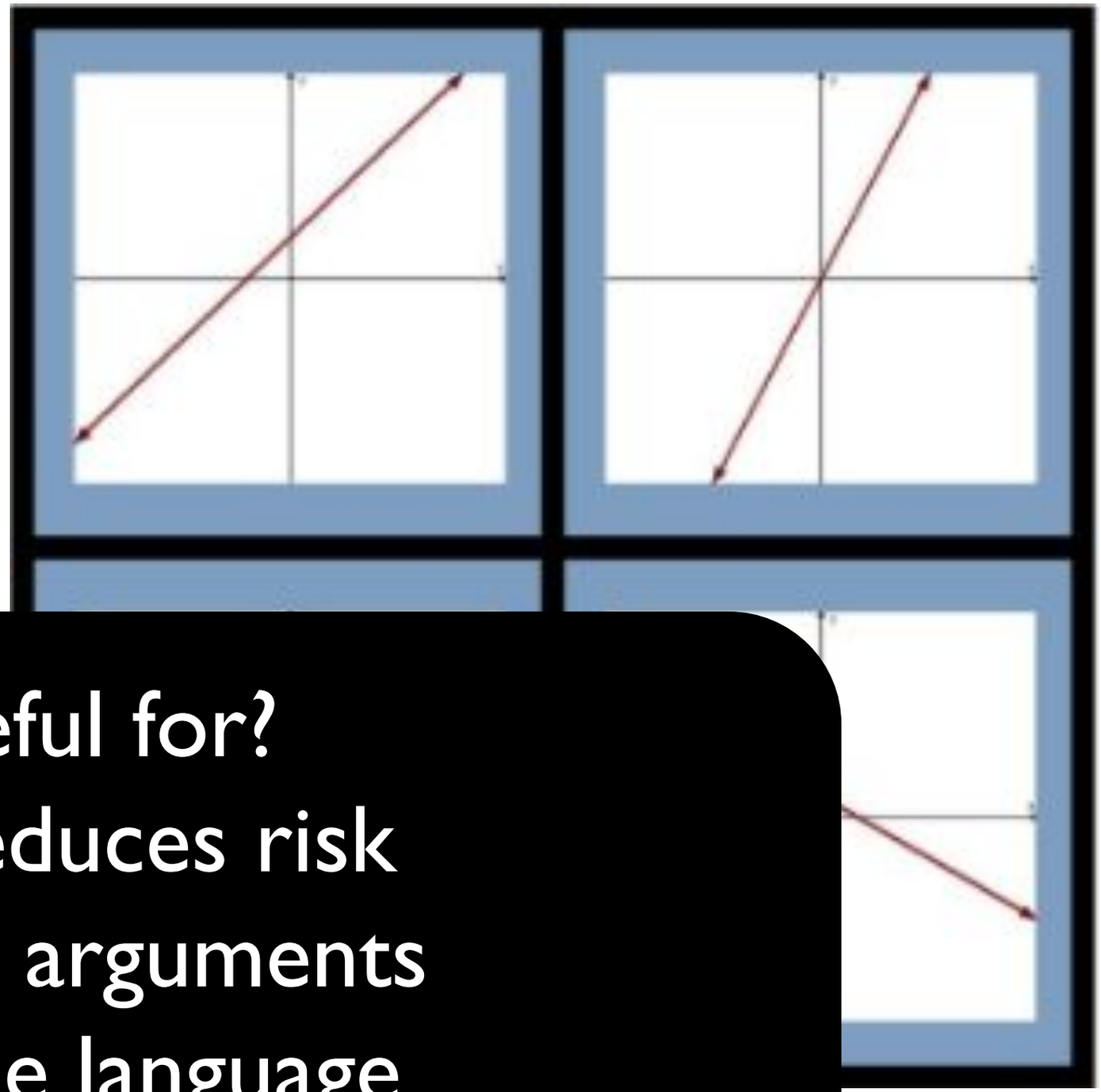
(3) **WHY**

Language

Which One Doesn't Belong



Which One Doesn't Belong



What is this useful for?

- Low entry-reduces risk
- Constructing arguments
- Use of precise language
- Discriminating between mathematical objects

Desmos Polygraph Lines

Desmos Polygraph Lines

Hey, students!

Go to student.desmos.com

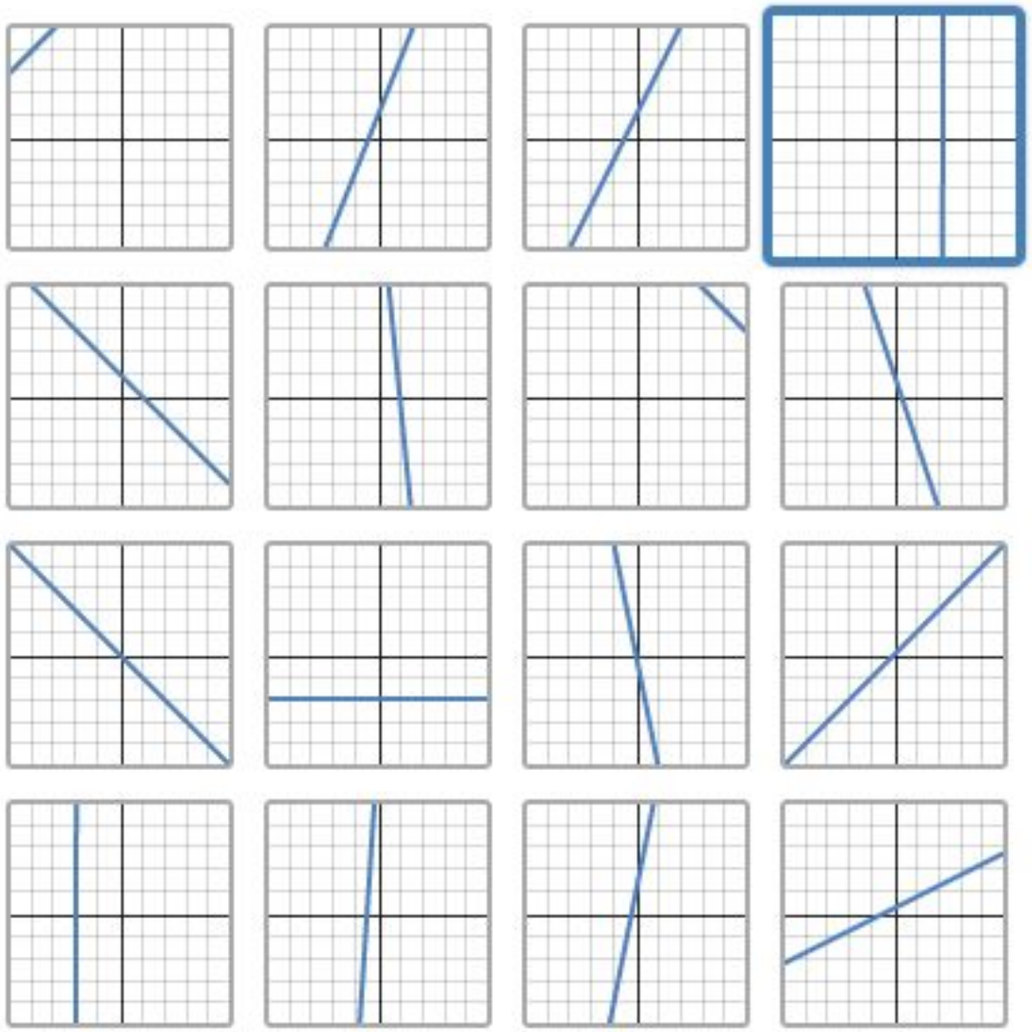
and type in:

VPY PFK

Desmos Polygraph Lines

PICKER
jasmine

GUESSER
Bree



4 questions

BREE ASKED
is your slope positive

JASMINE CHOSE
No

BREE ASKED
is it negative?

JASMINE CHOSE
No

BREE ASKED
does your line go through quadrant 2

JASMINE CHOSE
No

BREE ASKED
does it go through quadrant 3

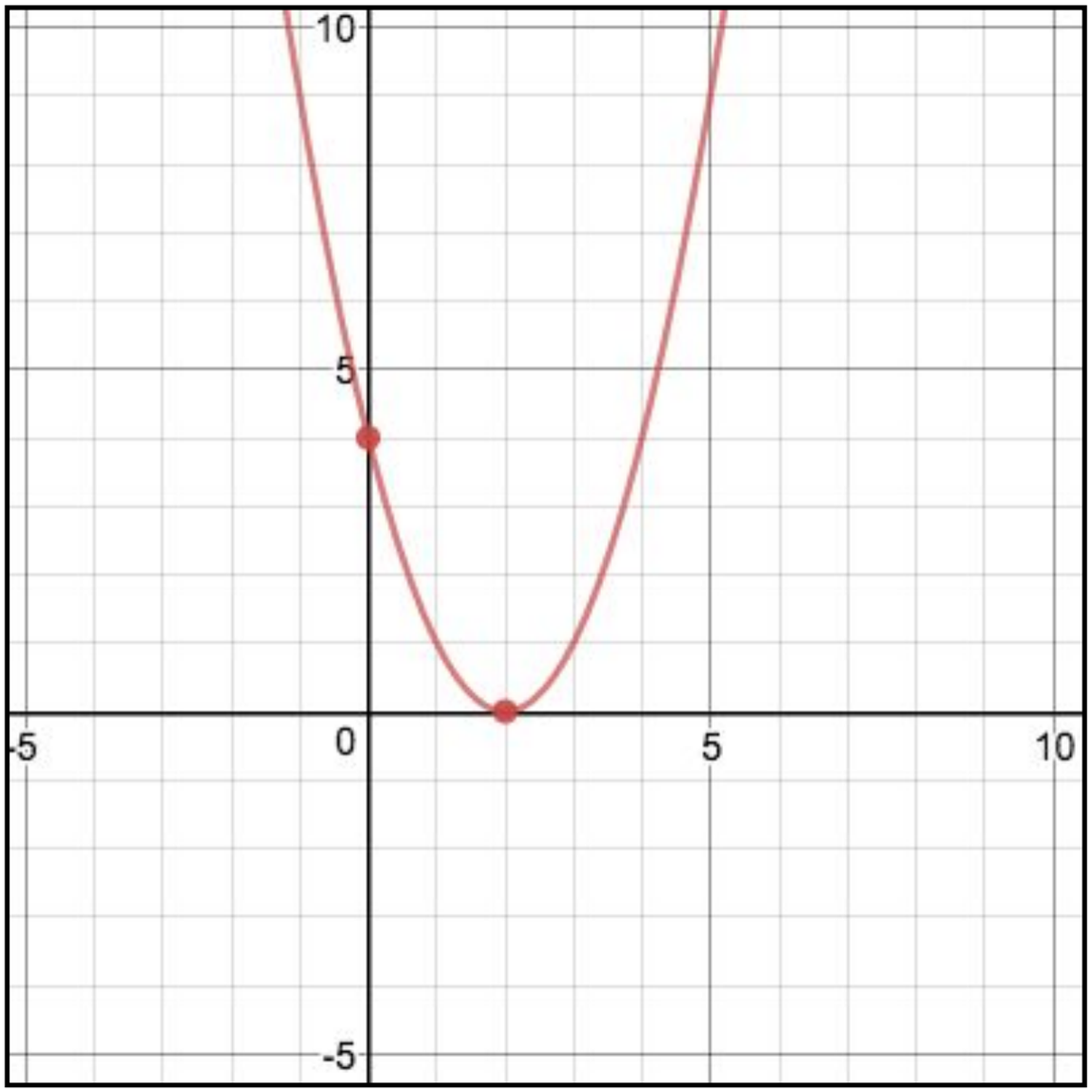
JASMINE CHOSE
No

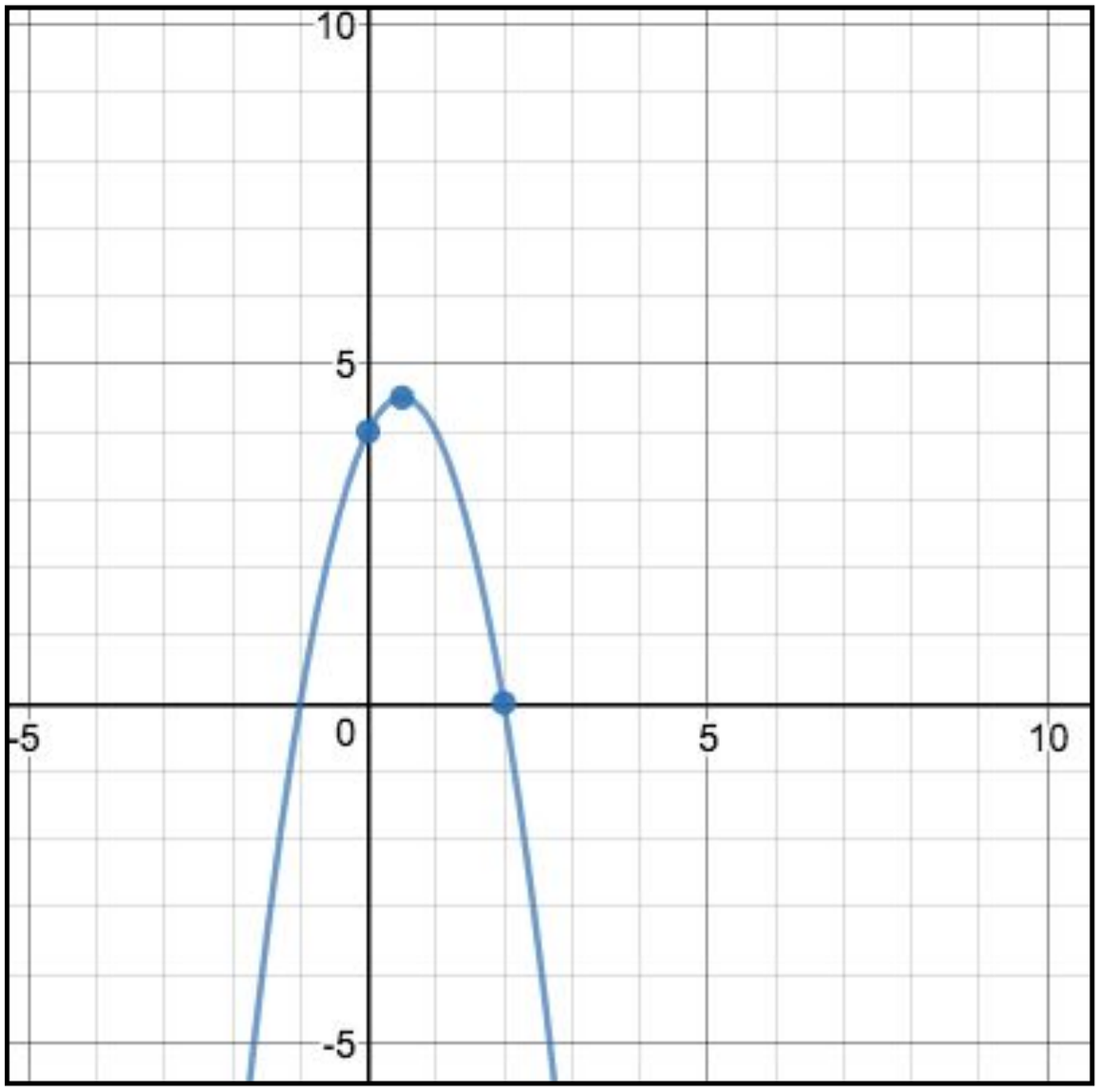
Word Bank

Slope	Positive	Negative	Undefined
Zero slope	Quadrant	Proportional	Origin
Y-intercept	X-intercept	Greater than	Less than

@mr_stadel

What is the same?



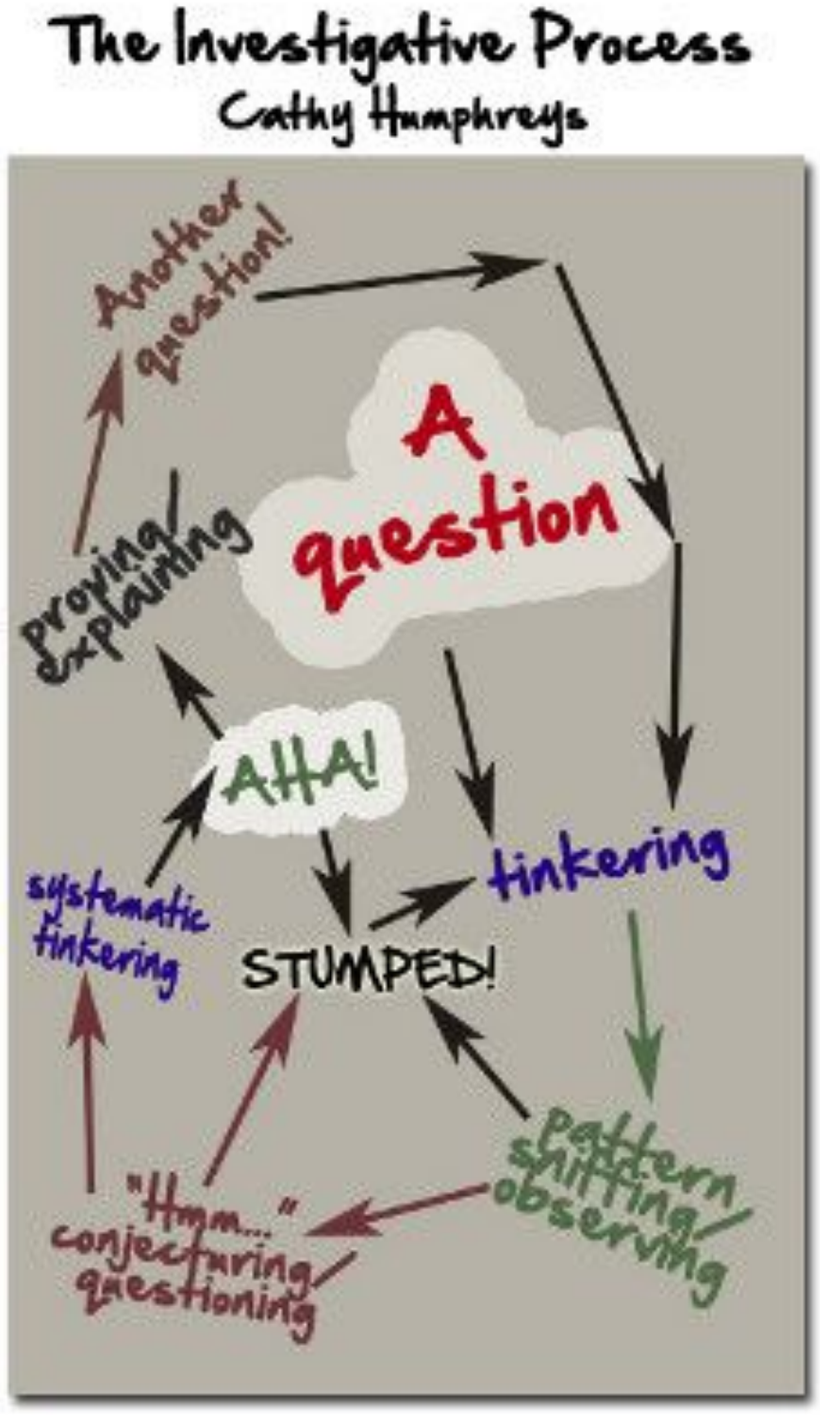


What is different?

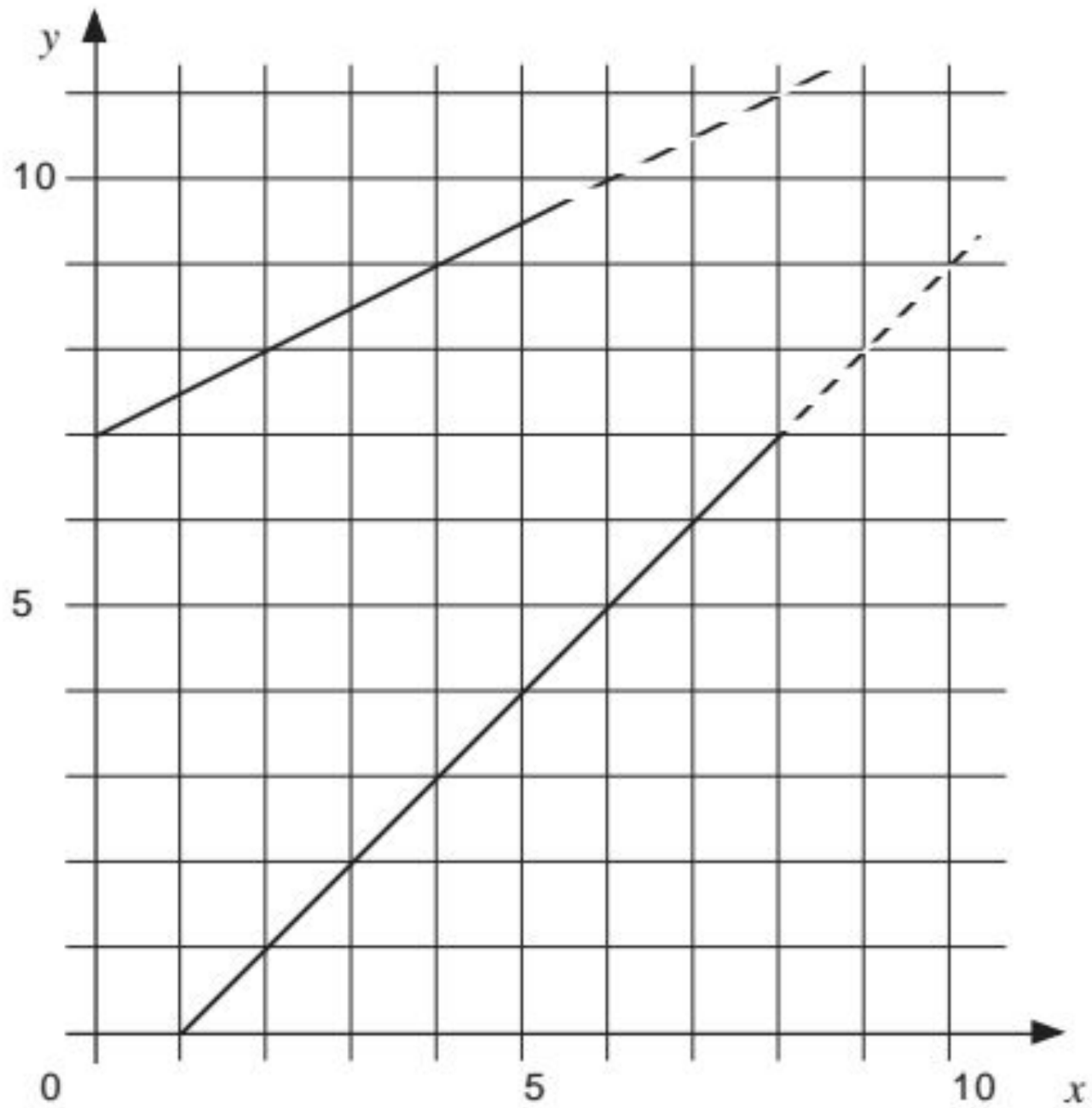
Representations

THIS or THAT???

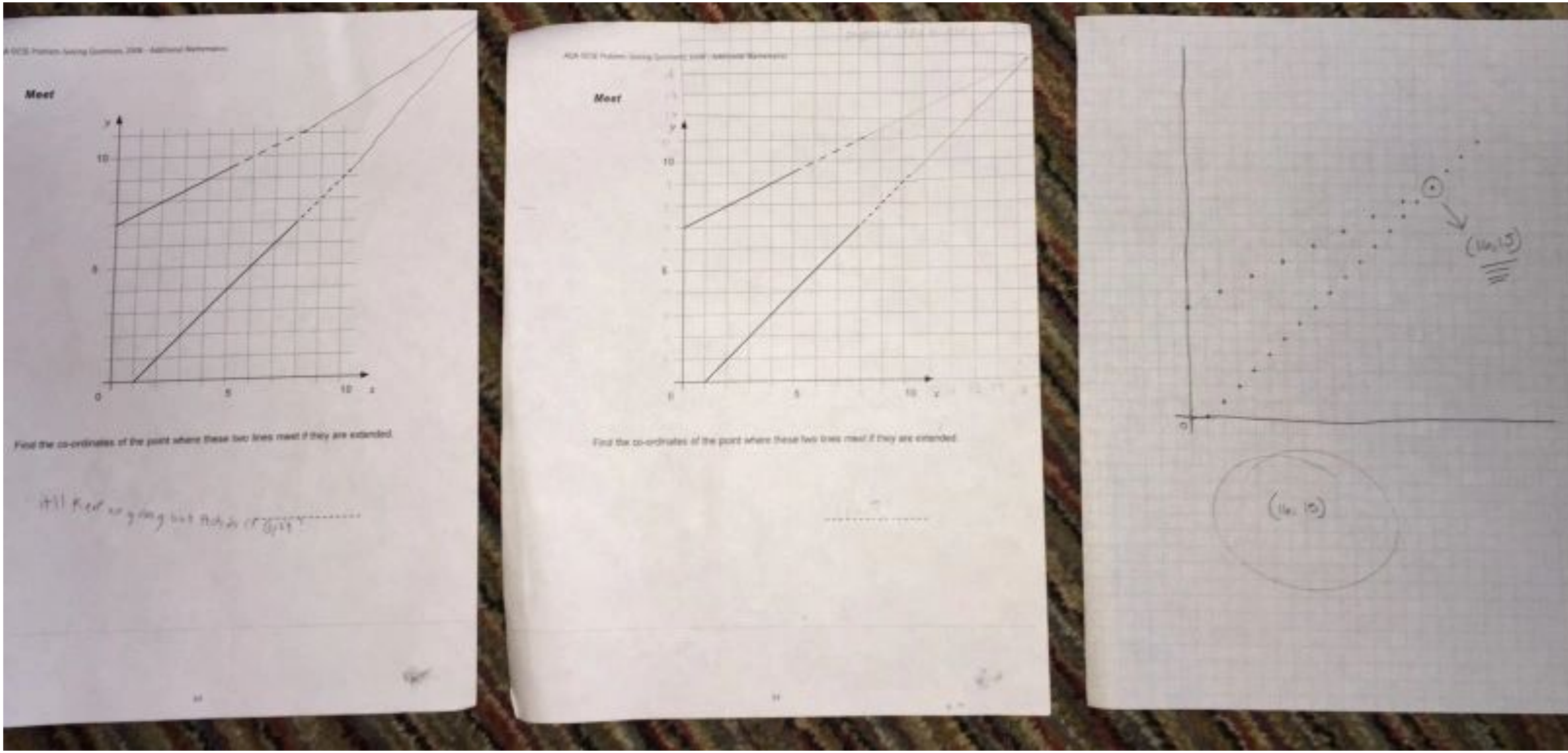
Problem → **Answer**



Meet

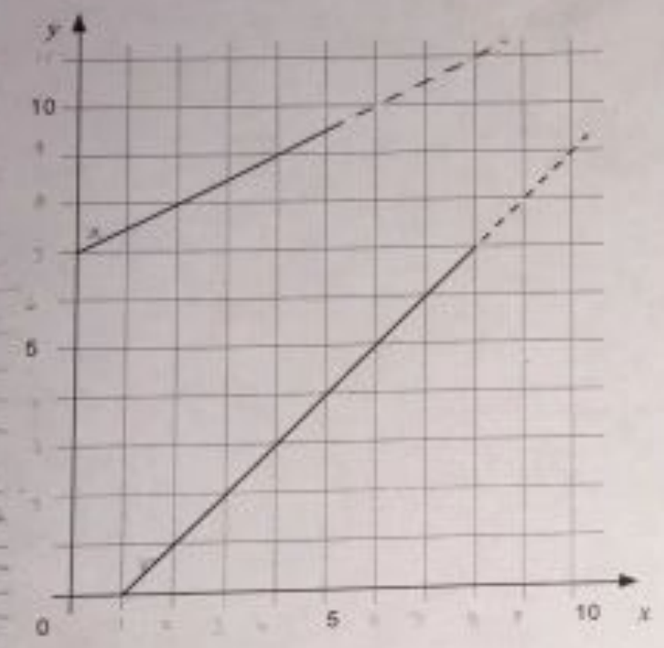


Find the co-ordinates of the point where these two lines meet if they are extended.



Meet
Find the co-ordinates of the point where these two lines meet if they are extended.
Meet
Find the co-ordinates of the point where these two lines meet if they are extended.
(16, 15)
(16, 15)

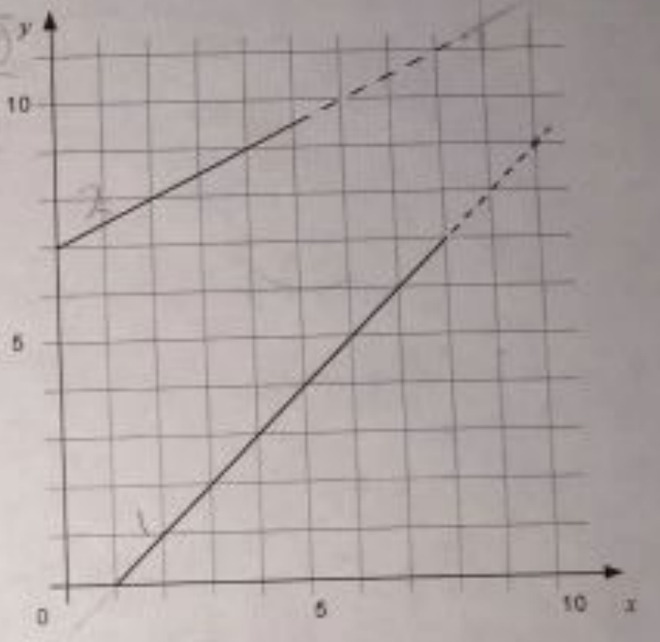
Meet



Find the co-ordinates of the point where these two lines meet if they are extended.

.....

Meet



Find the co-ordinates of the point where these two lines meet if they are extended.

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1: $y = mx + 1$

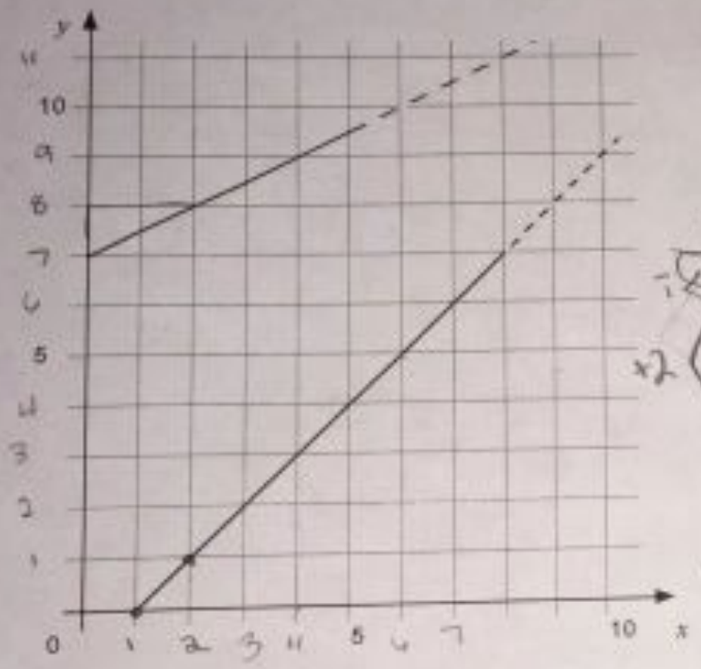
$2x - y = -5$

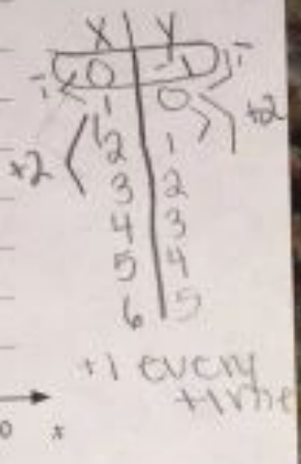
(18, 16)

Answer

.....

Meet





Find the co-ordinates of the point where these two lines meet if they are extended.

$-1+(16)=15$

$Y=-1+X$

(16, 15)

$Y=7+\frac{1}{2}X$

$7+\frac{1}{2}(16)$

$7+8=15$

$-1+X=7+\frac{1}{2}X$

$-\frac{1}{2}X \quad -\frac{1}{2}X$

$-1+\frac{1}{2}X=7$

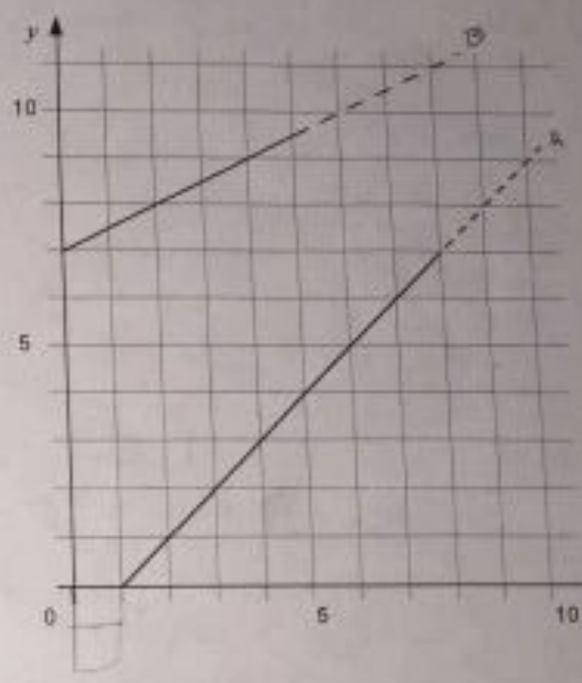
$+1 \quad +1$

$\frac{1}{2}X=8$

$\times 2 \quad \times 2$

$X=16$

Meet



Find the co-ordinates of the point where these two lines meet if they are extended.

Table A

x	y
0	-1
1	0
2	1
3	2
4	3
5	4

$y=1x-1$

$11=+7=15$

Table B

x	y
0	7
1	6.5
2	6
3	5.5
4	5
5	4.5

$y=-.5x+7$

15

(16, 15)

$1x-1=.5x+7$

$-.5x \quad -.5x$

$.5x-1=7$

$+1 \quad +1$

$.5x=8$

$\div .5 \quad \div .5$

$x=16$

From Principles to Actions

Students should be able to approach a problem from several points of view and be encouraged to switch among representations until they are able to understand the situation and proceed along a path that will lead them to a solution.

This implies that students view representations as tools that they can use to help them solve problems, rather than as an end in themselves.

Use the representations as tools

Equations and Inequalities

A Mr. Arimoto lives 29 miles from the airport. Write and solve an equation to find the remaining distance to the airport when Mr. Arimoto has driven 14 miles.

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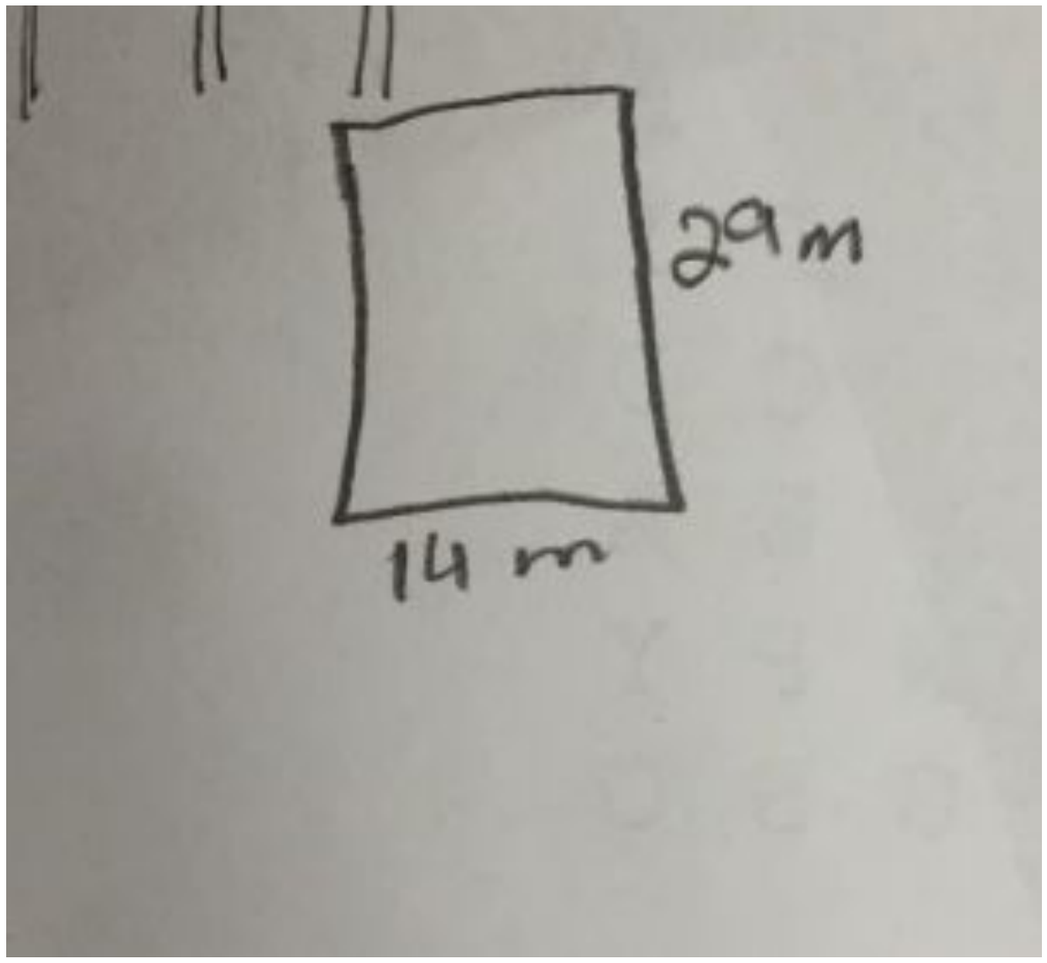
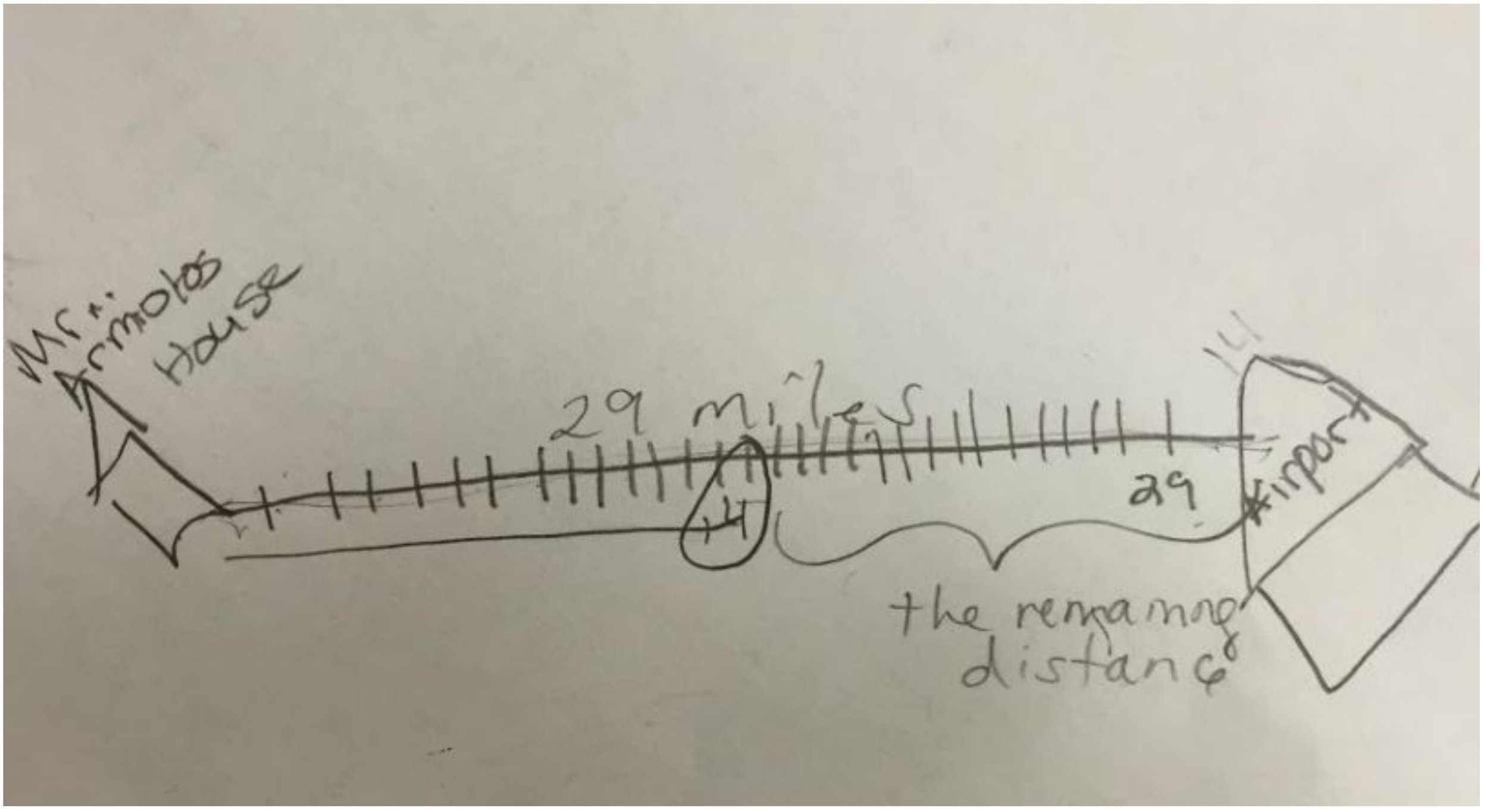
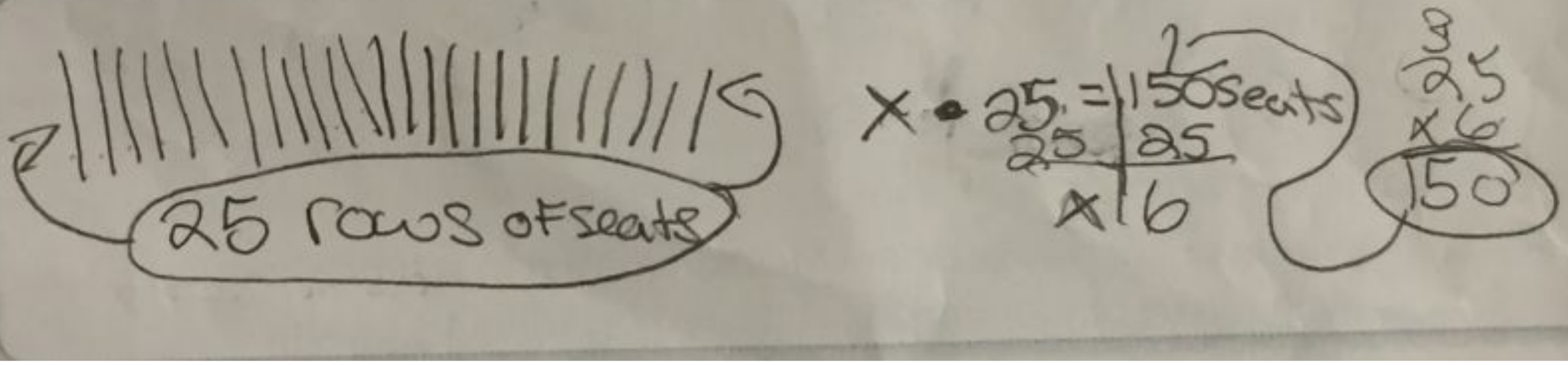



Mr. Armolds House
29 miles
29
the remaining distance

There are 25 rows of seating in coach. Write and solve an equation to determine the number of seats in each row.



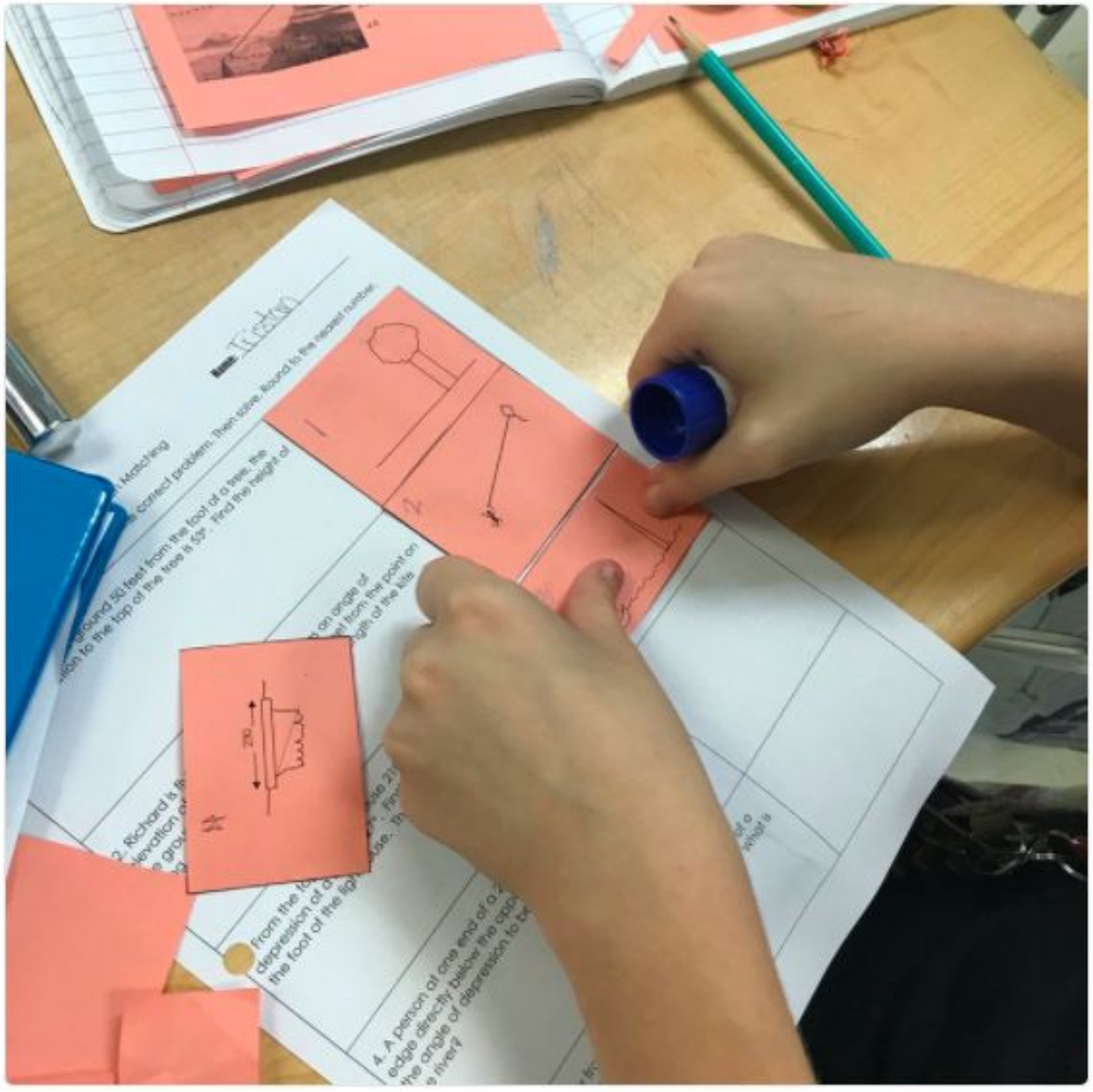
Creating Math Drawings to Represent Word Problems *Name:* _____

WORD PROBLEM	MATH DRAWING	SOLUTION
1. What is the length of a garden hose that is stretched diagonally corner-to-corner across a yard that measures 72 meters long and 60 meters wide? Round to the nearest meter.		
2. You're locked out of your house. The only open window is on the second floor, 25 feet above the ground. There are bushes along the edge of the house, so you will need to place the ladder 10 feet from the house. What length ladder do you need to reach the window?		
3. The diagonal of a TV screen is 26 inches. The screen is 18.8 inches wide. How high is the screen?		

Elissa Miller
@misscalcul8

Following

Day 41/180: Matching angle of elevation and depression diagrams #teach180



Informal to formal

Find the Mystery Number!

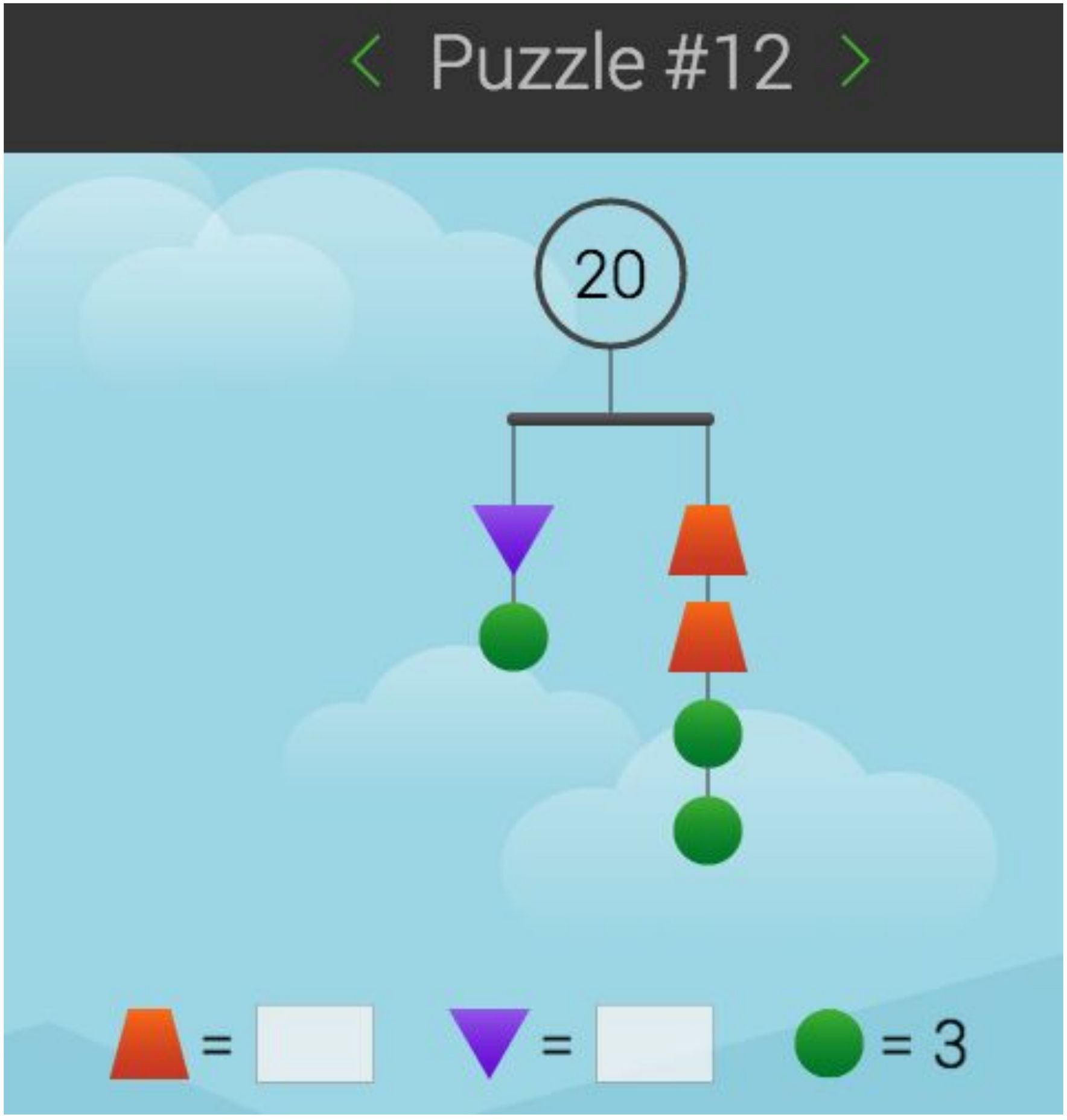
Rules

- You must make both sides of the equals sign the same
- You must use the same number in each box within a question, e.g.

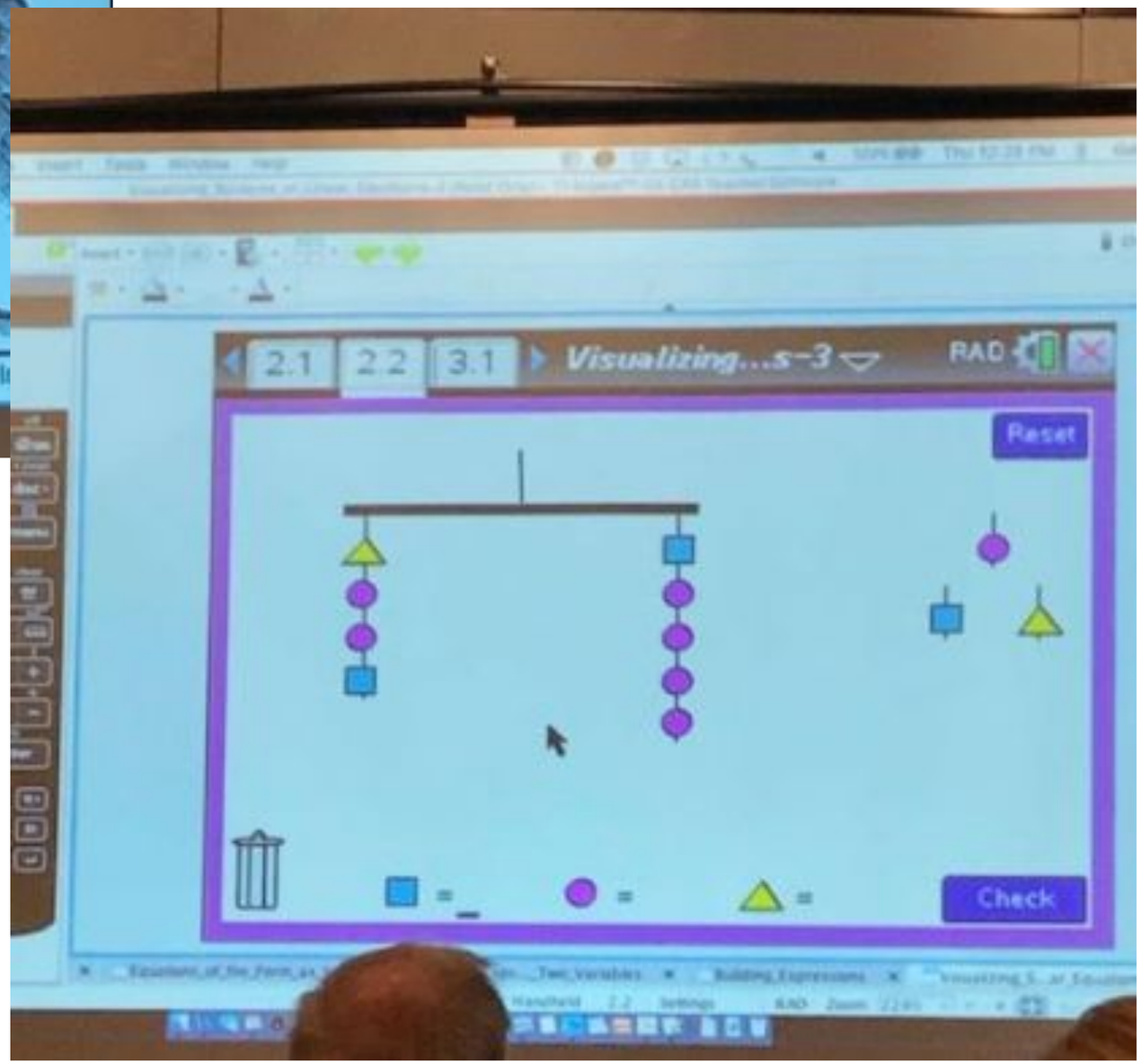
$$\boxed{5} + \boxed{5} + \boxed{5} + 10 = \boxed{5} + 20$$

A. $\square + \square + \square + 2 = \square + 8$

B. $\square + \square + 3 = \square + \square + \square + 2$


Puzzle #12
20
= 3

@GailBurrill



Be Intentional

Solve for x: $3(x + 1) = 15$

$$3(x + 1) = 15$$

$$3x + 3 = 15$$

$$3x = 12$$

$$x = 4$$

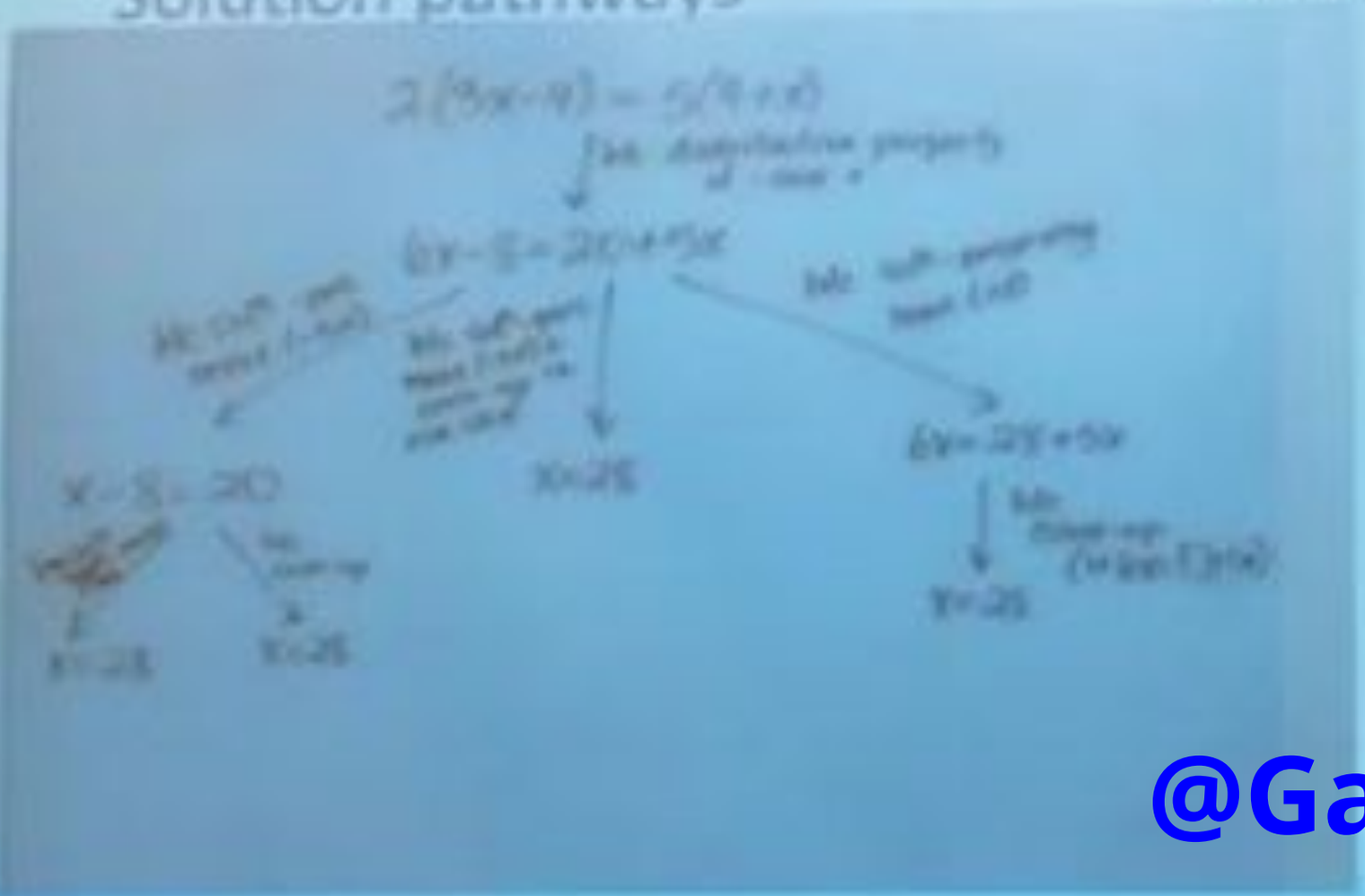
$$3(x + 1) = 15$$

$$x + 1 = 5$$

$$x = 4$$

Flexible Procedural Knowledge

Solution pathways



Make Connections

Which is more efficient? When does it make sense to use the strategy in the middle? The others?

@GailBurrill

One variable	Two variable	Two equations in two variables
Stella has $75 dollars in her savings account. She is going to add $12 each week. How long will it take her to reach $130 in her savings account?	Eli has $80 in his savings account. He is going to add $15 to his account each week. Write the formula that will determine the amount of money in his account based on the number of weeks he has been saving.	Eli has $80 in his savings account. He is going to add $15 to his account each week. Lucas has $35 in his savings account and is going to add $20 to his account each week. When will the boys have the same amount in their savings account?

"I used to think learning math was about doing, doing, doing…

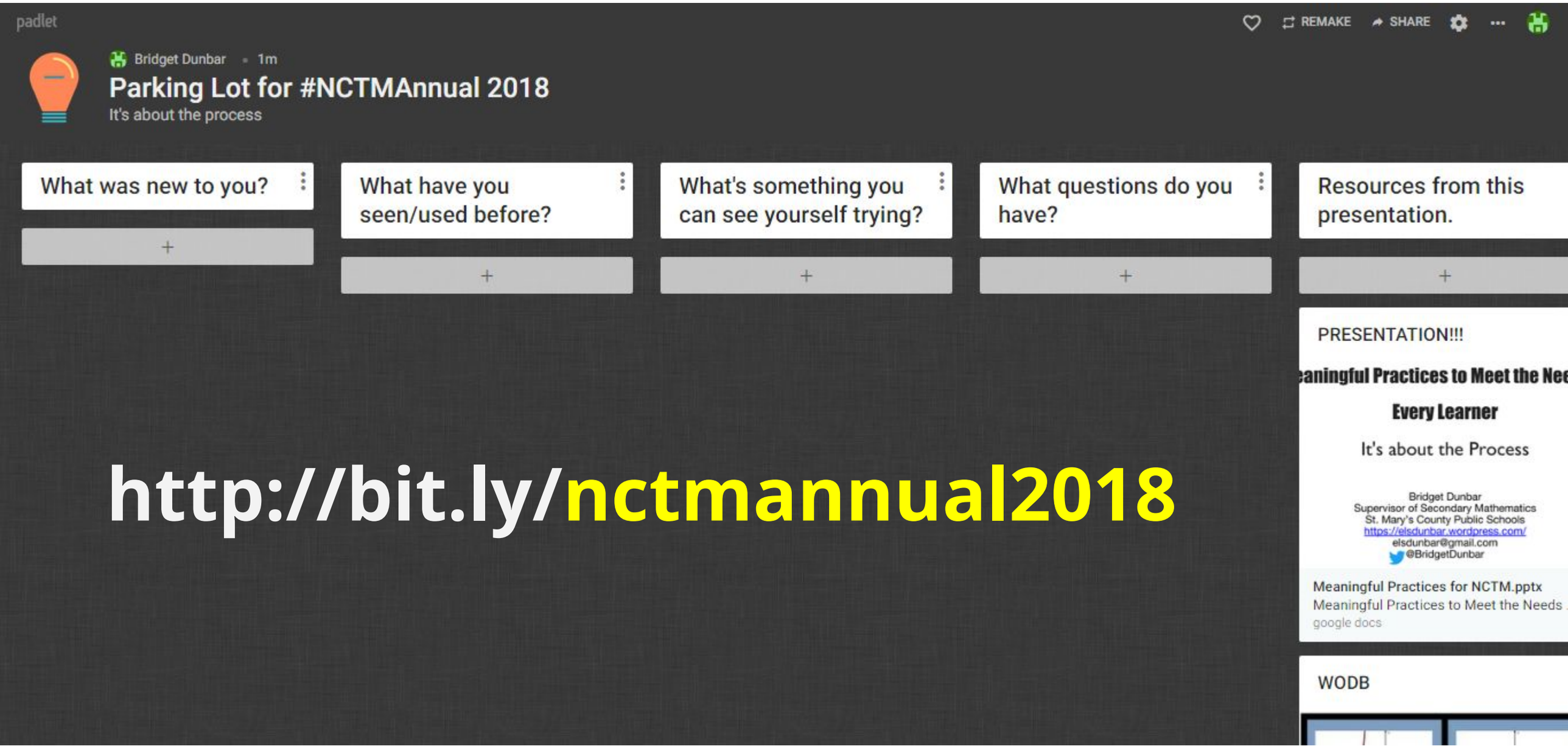
…and now I know it's about meaningfully doing."

(I) **WHAT**

(2) **HOW**

(3) **WHY**

Padlet Parking Lot



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