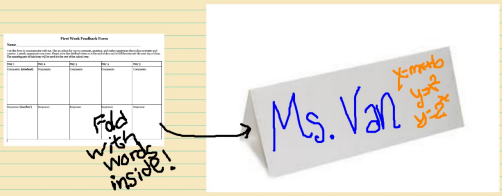
High School
Advanced Algebra

Week 1 Slides

8/24/15 Do Now!

Welcome!!!

1. Find your assigned table and select a seat.
2. Make a NAME TENT writing your first name on BOTH SIDES



Learning Target:

I can learn at least 5 peoples names today.

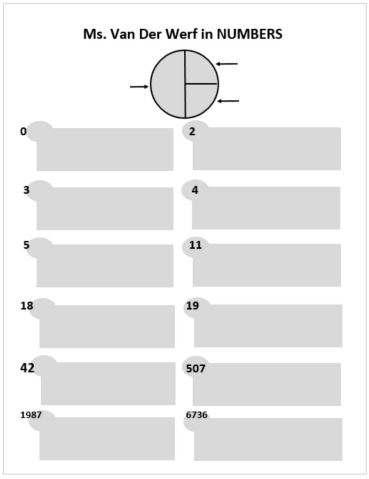
Ms. Van Der Werf

What do you know about Ms. Van?

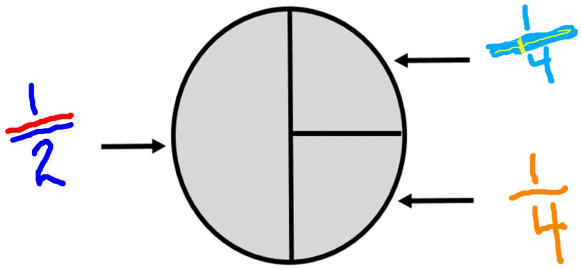
Each number on this sheet represents a fact about Ms. Van.

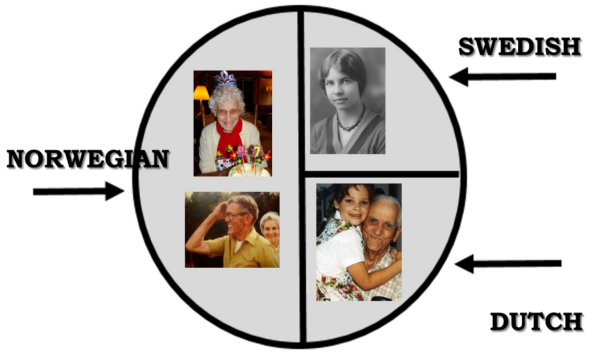
GUESS what each number represents.

INTRODUCE yourself to the people at your table.



Ms. Van Der Werf in Numbers





0

Cats!

I'm allergic. :(

2

Siblings!

3

Nephews!

4

Schools!

Henry HS - 13 yrs

Barton Open - 4 yrs

District Office - 5 years

Ramsey - 2 yrs

South - 1 yr

5

The # of times I am going to the state fair this year.

11

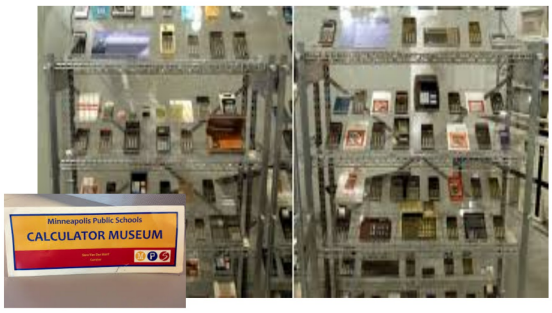
Key Lime White Chocolate Mousse Cakes!

18

My birthdate!

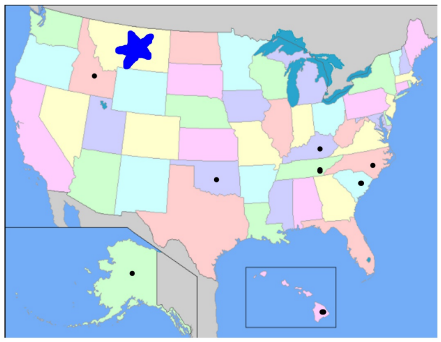
19

Calculators in my calculator musuem!



42

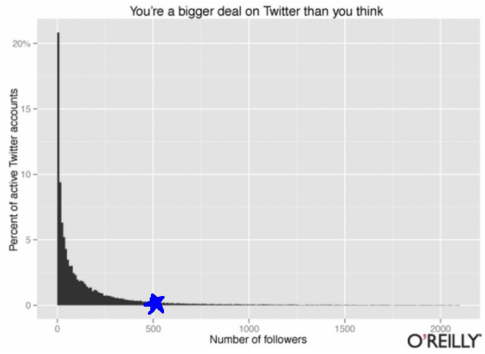
States I've visited!



507

Twitter Followers!

It's a Lonely World: The Median Twitter User Has 1 Measly Follower



It's a Lonely World: The Median Twitter User Has 1 Measly Follower

Minnesota Council of Teachers of Mathematics

An affiliate of the National Co
The MCTM is an organization o
teaching and learning of meani
supporting educators in their ef

HOME | ABOUT MCTM | MEMBERSHIP/BOARD | GRANTS/SCHOLARSHIPS

MCTM Officers

Below is the list of present MCTM Officers. A list of Past State Officers can also be viewed.

Last Name	First Name	Position	Term Ends	Email
Van Der Werf	Sara	President	May 17	sara.vanderwerf@mpls.k12.mn.us
Delaney	Ellen	Past President	May 16	ellendelaney3047@gmail.com
Wallace	Patty	Recording Secretary		patty.wallace@isd181.org

1987

The year I graduated HS!

6736

My parents street address!

Your turn..

Write down 2 numbers that represent something about your life.

Have you learned 5 names yet?

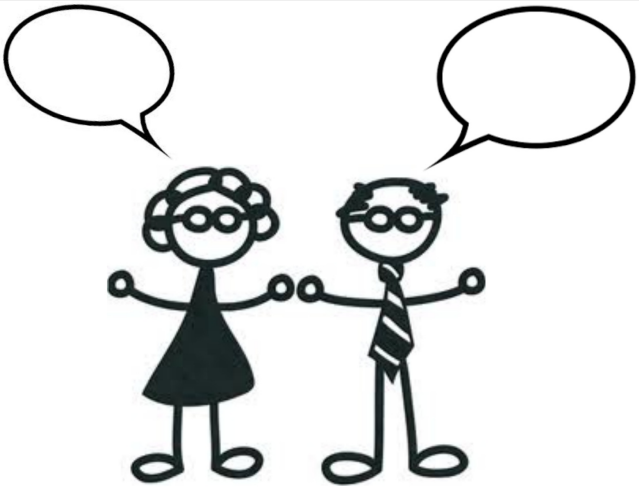
What STUFF do I need for math class?

You will need 1-3 graph paper notebook(s) or a binder with graph paper for this class. You will also need a lot of pens or pencils & a folder.

Math Supplies for Home:

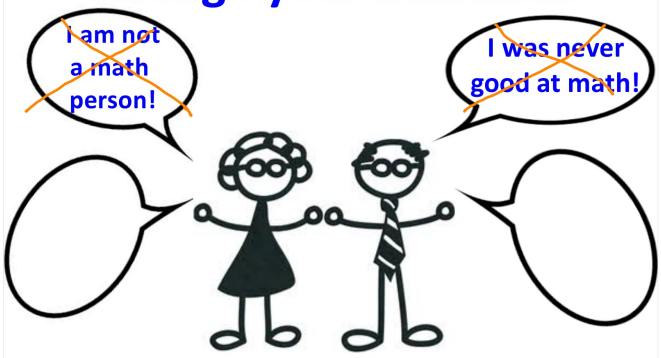
1. **Graphing Calculator** (TI-84) or download **DESMOS app** on phone, bookmark on compuer...

2. **Optional:** Download scientific calculator app.
3. **Optional:** Ruler, markers/colored pencils....




I am not a math person!
I was never good at math!

Change your words.
Change your Mindset!



How many AVACODOS are there?

What do you notice?
What do you wonder?

$3A + 2B - 4C + 5D + 3E + 2F = 74$

$4A - 5B + 2C + 3D - 2E + 5F = 53$

$6A - 3B + 7C - 2D + 3E + 5F = -6$

$-2A + 4B - 3C + 7D - 4E + 3F = 120$

$3A + 7B - 4C + 5D + 6E + 2F = 87$

$-4A + 5B - 3C - 6D + 7E + 2F = -49$

First Week Feedback Form

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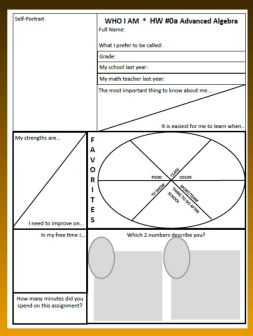
Day 1	Day 2	Day 3	Day 4	Day 5
Comments: **(student)**	Comments:	Comments:	Comments:	Comments:
Response: **(teacher)**	Response:	Response:	Response:	Response:

We will have
Daily Practice
EVERY DAY
in this class.

NO Late Homework.

DAILY PRACTICE



#ØA
Who am I?

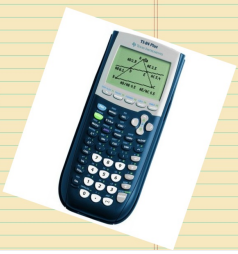
High School
Advanced Algebra

Unit 0
Day 2

Syllabus & Calculators

8/25/15 Do Now!

1. Find your assigned table.
2. Put up your Name Tent!
3. Open your notebook and label the first page:
   8/25/15 Do Now
   Graphing Calculator Basics
4. Take out a TI-84 calculator. Start pressing buttons. Record 5 things in your notebook you know how to do.



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Comments: **(student)**	Comments:	Comments:	Comments:	Comments:
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Math Supplies for Home:

1. Graphing Calculator (TI-84) or download DESMOS app on phone, bookmark on compuer...
2. Optional: Download scientific calculator app.
3. Optional: Ruler, markers/colored pencils....

You will need 1-3 graph paper notebook(s) or a binder with graph paper for this class. You will also need a lot of pens or pencils & a folder.

Learning Target:

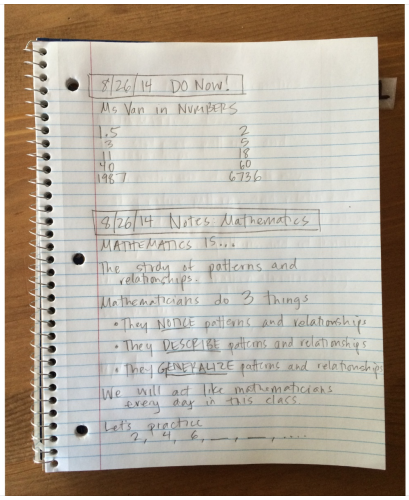
I can NAVIGATE the basic functions of a calcuator

(and learn more names of my classmates)

8/25/15 Notes

5 things I need to know about Ms. Van's math class!

Notebook Requirements



Notebook Expectation #1

Write down anything on the board written in BLUE or ORANGE ink.

8/25/15 Do Now!

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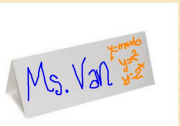
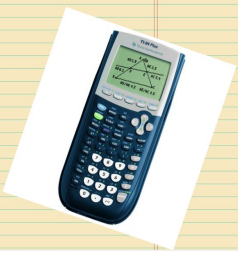
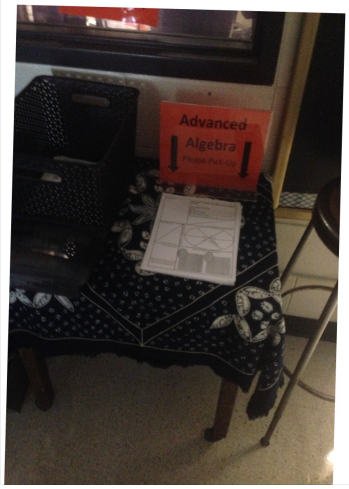
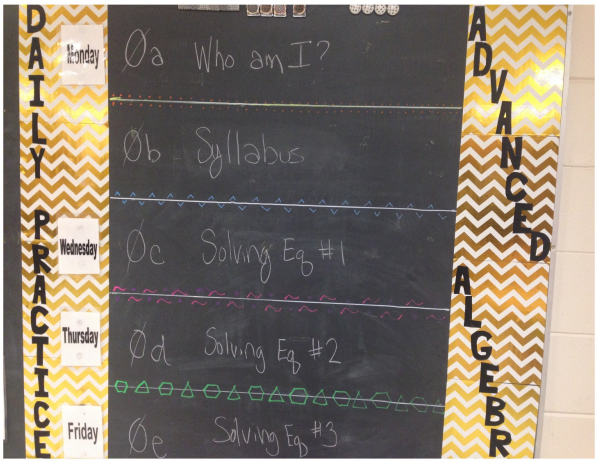






We will have
Daily Practice
EVERY DAY
in this class.

NO Late Daily Practice will be accepted.


DAILY PRACTICE
Monday
Wednesday
Thursday
Friday
Øa Who am I?
Øb Syllabus
Øc Solving Eq #1
Ød Solving Eq #2
Øe Solving Eq #3
ADVANCED ALGEBR


Advanced
Algebra
Daily Practice
& Handouts

- Everyone can get smarter at mathematics.
- We will work on math every day all class period.
- We will talk out loud about mathematics everyday.

Ms. Van Der Werf's Norms for Math Class

Everyone can learn math to the highest levels ★	Mistakes are valuable	Questions are really important	Math is about creativity and making sense	Math is about connections and communicating	Math class is about learning not performing	Depth is more important than speed

Effort = Ability

https://www.youtube.com/watch?v=47rQkTPWW2I

We do math in this class the entire 50 minutes. Everyone!

OUT OF CLASS PASS *OR*
FREE *Daily Practice Assignment*
1st Quarter : 2015-16

Good for 4 minutes to: _____

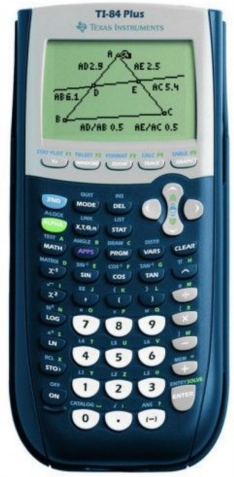
Name: _____

Date: _____ *Time:* _____

Signed: _____

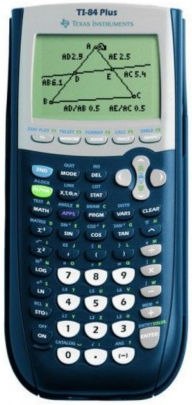
Sara VanDerWerf Room 224

We do math in this class the entire 50 minutes. Everyone!



8/25/15 Notes

Top 10 things you need to know about the TI-84 graphing calculaor.



Once you know these 10 things...

Don't ask me about them again this year!

Take great notes!

TOP TEN THINGS YOU NEED TO KNOW ABOUT THE GRAPHING CALCULATOR

1. How to turn ON ☐ and OFF ☐ ☐
2. The Alpha Button ☐
3. Brightness ☐ ☐ ☐
4. Un-Mess up the Calculator
   a. Clear ☐
   b. Quit ☐ ☐
   c. Reset ☐ ☐ ☐ ☐ ☐

5. Equals

a. Entry

6. Fractions

Example: .25

7. Previous Answer

8. Negative vs. Subtraction

9. Graphing Buttons

a. Y =

b. Window

c. Zoom

d. Trace

e. Graph

10. Mode

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DAILY PRACTICE

HW Øb Name:

Part 1: What is Math?

1) What is the definiton of mathematics? Do not look up or google the definition. Simply write (or draw) what you believe mathematics is in your own words.

Math is...

2) Ask 2 people (who are not South students or staff) what the definition of mathematics is. Write down what they say.

Person # 1's name:
Math is....

Person # 2's name:
Math is....

Draw a picture in the box

#ØB

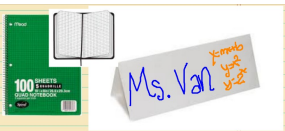
High School Advanced Algebra

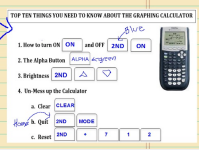
Unit 0
Day 3

Finish Calculators
Group Work 100!

8.26.15 Do Now!

1. Find your assigned table.
2. Put up your Name Tent!
3. Do you have a graph paper notebook?
4. Take out a calculator.
5. Take out your Top 10 calculator sheet from yesterday and glue it in your notebook.





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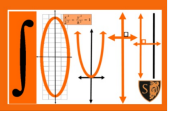
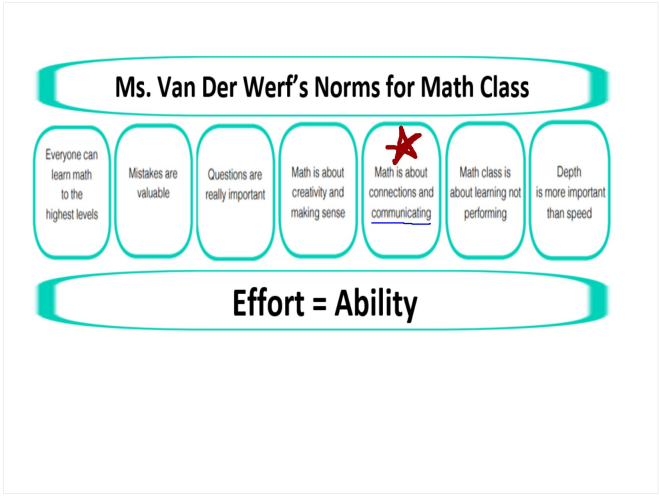
Response: **(teacher)**	Response:	Response:	Response:	Response:

Learning Target:

I can define what great group work looks like.

(and learn more names of my classmates)





OUT OF CLASS PASS *OR*
FREE *Daily Practice Assignment*
1st Quarter : 2015-16

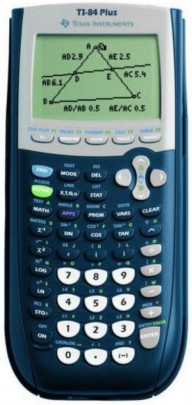
Good for 4 minutes to: _____

Name: _____

Date: _____ *Time:* _____

Signed: _____

Sara VanDerWerf Room 224



Once you know these 10 things...

Don't ask me about them again this year!

Take great notes!

TOP TEN THINGS YOU NEED TO KNOW ABOUT THE GRAPHING CALCULATOR

1. How to turn ON [ON] and OFF [2ND] [ON] (Blue)
2. The Alpha Button [ALPHA] (green)
3. Brightness [2ND] [▲] [▼]
4. Un-Mess up the Calculator
   - a. Clear [CLEAR]
   - b. Quit (Home) [2ND] [MODE]
   - c. Reset [2ND] [+] [7] [1] [2]

5. Equals ENTER

a. Entry 2ND ENTER

6. Fractions

Example: .25 Math 1

7. Previous Answer

8. Negative vs. Subtraction

9. Graphing Buttons

a. Y =

b. Window

c. Zoom

d. Trace

e. Graph

10. Mode

- Some of you might have noticed a pattern
- Keep it a secret! You are now going to compete with your group against the rest of the class.
- Talk with your team and come up with a plan to get all the numbers circled.

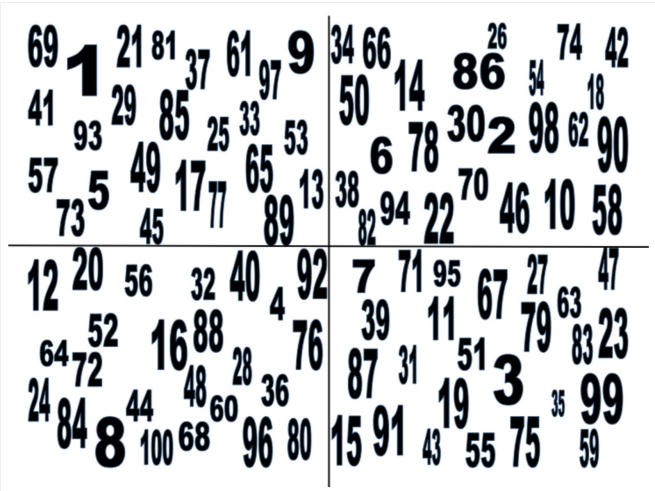
Shoulder Partner

Share what worked or did not work with your group completing this task.

Was there a pattern you noticed?

How did working as a group help us accomplish more?

How did knowing the pattern make your work easier?



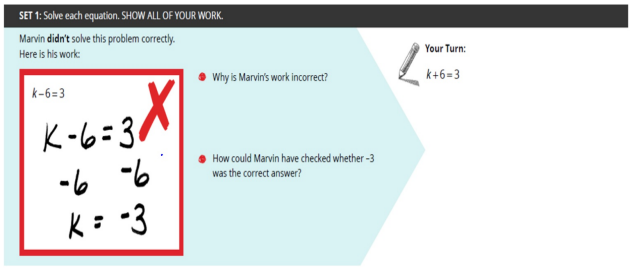
Group work looks like...

Sounds like

8/26/15 Notes
What does excellent group work look like?

Daily Practice #ØC * Solving Equations #1 **Name:**

Use the examples and non-examples to review solving equations.



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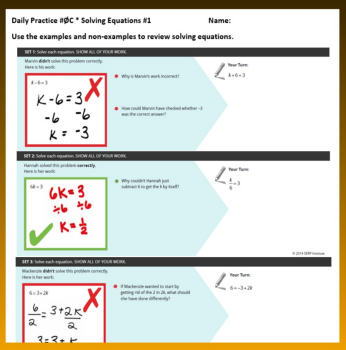
DAILY PRACTICE


Daily Practice #ØC * Solving Equations #1 Name:

Use the examples and non-examples to review solving equations.

SET 1: Solve each equation. SHOW ALL OF YOUR WORK.

Marvin **didn't** solve this problem correctly.
Here is his work:

$k-6=3$

$k-6=3$ ✗
$-6 \quad -6$
$k=-3$

- Why is Marvin's work incorrect?
- How could Marvin have checked whether -3 was the correct answer?

Your Turn:
$k-6=3$

SET 2: Solve each equation. SHOW ALL OF YOUR WORK.

Hannah solved this problem **correctly.**
Here is her work:

$6k=3$

$6k=3$ ✓
$\div 6 \quad \div 6$
$k=\frac{1}{2}$

- Why couldn't Hannah just subtract 6 to get the k by itself?

Your Turn:
$\frac{k}{6}=3$

© 2014 EDP Institute

SET 3: Solve each equation. SHOW ALL OF YOUR WORK.

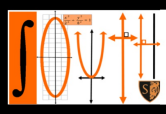
Mackenzie **didn't** solve this problem correctly.
Here is her work:

$6=3+2k$

$\frac{6}{2}=\frac{3+2k}{2}$ ✗
$3=3+k$

- If Mackenzie wanted to start by getting rid of the 2 in 2k, what should she have done differently?

Your Turn:
$6=-3+2k$



High School
Advanced Algebra

Unit 0
Day 4

Noah's Ark
Group Task

8.27.15 Do Now!

1. Find your assigned table.
2. Put up your Name Tent!
3. Use the answer key (yellow at your table to check your Daily Practice from last night.
4. What number goes in the box below? Why? Explain your Thinking.

$8 + 11 = \square + 13$

$8 + 11 = \square + 13$

Explain your Thinking.

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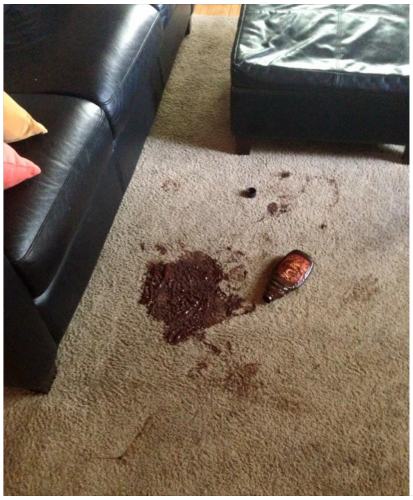


The scene of the crime!

SET 4: Solve each equation. SHOW ALL OF YOUR WORK.

Lupe solved this problem **correctly.**
Here is her work:

$6(x+3)=12+4x$

$6x+18=12+4x$
$-4x \quad -4x$
$2x+18=12$
$-18 \quad -18$
$2x=-6$
$\div 2 \quad \div 2$
$x=-3$

- Where did Lupe get $6x + 18$ from?

She distributed the 6 to x and 3.

Your Turn:

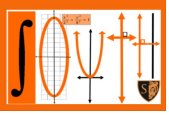
$-3(x+6)=4-5x$

Learning Target:

I can show my thinking as I complete algebra problems.

I can be an excellent group member.

(and learn more names of my classmates)



HW Øb Name:

Part 1: What is Math?

1) What is the definition of mathematics? Do not look up or google the definition. Simply write (or draw) what you believe mathematics is in your own words.

Math is...

2) Ask 2 people (who are not South students or staff) what the definition of mathematics is. Write down what they say.

Person # 1's name:
Math is.....

Person # 2's name:
Math is.....

8.27.15 Notes

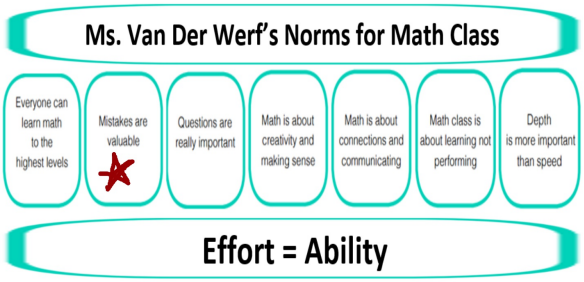
MATHEMATICS IS....

Mathematicians do 3 things:

WE WILL ACT LIKE MATHEMATICIANS EVERY DAY IN THIS CLASS.

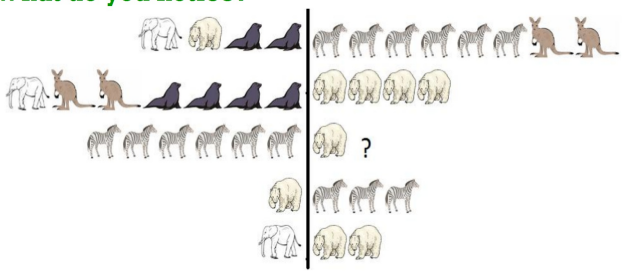
LET'S PRACTICE:

What comes next?
2, 4, 6, ___, ___, ___,....



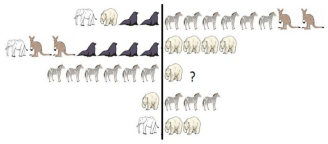
What does group work look like in mathematics class look like?

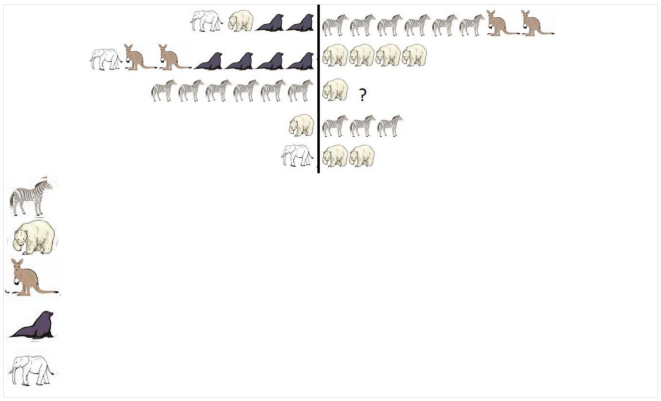
What do you notice?



What does great GROUP WORK look like?

Show your thinking....





First Week Feedback Form

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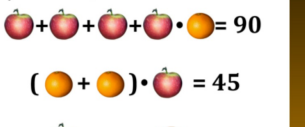
Day 1	Day 2	Day 3	Day 4	Day 5
Comments: **(student)**	Comments:	Comments:	Comments:	Comments:
Response: **(teacher)**	Response:	Response:	Response:	Response:

Write Ms. Van a question.

DAILY PRACTICE #ØD

Daily Practice #ØD



Directions: Glue this assignment in your notebook. Find the value of one apple and one orange. Show ALL of your thinking (20 minutes worth) as you solve the problem, including any mistakes you made along the way.

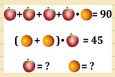
Complete assignment in notebook!

8.28.15 Do Now!

1. Find your assigned table.
2. Put up your Name Tent!
3. Make sure to get a graph paper notebook by Monday.
4. Write down 10 things you know about this equation.

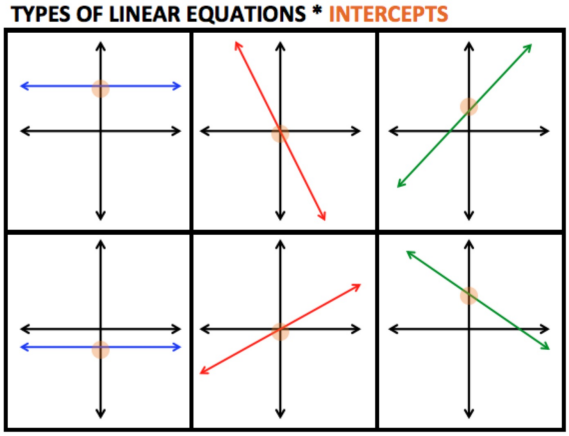
$$y = \frac{-1}{2}x + 3$$

5. Be prepared to talk about your Daily Practice Problem.

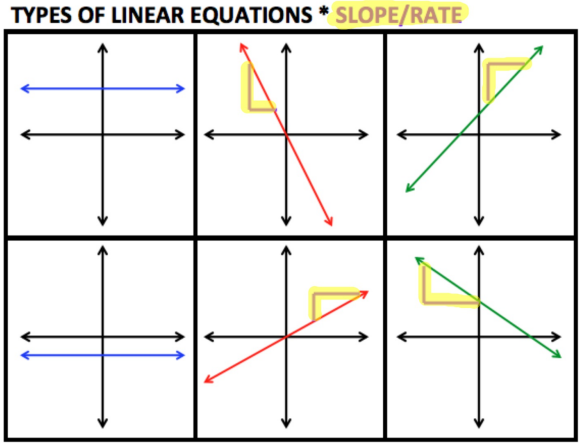


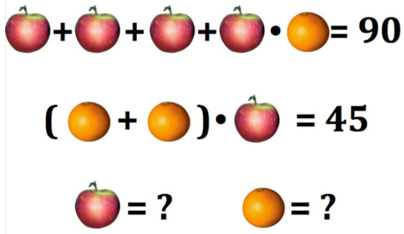
$$y = \frac{-1}{2}x + 3$$

TYPES OF LINEAR EQUATIONS * INTERCEPTS



TYPES OF LINEAR EQUATIONS * SLOPE/RATE





Learning Target:

I can describe linear equations and graphs using precise mathematical language.

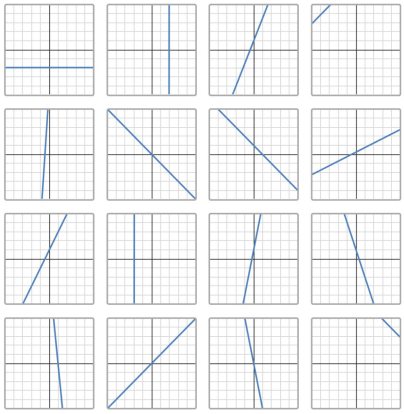
(and learn more names of my classmates)

Ms. Van Der Werf's Norms for Math Class

Everyone can learn math to the highest levels	Mistakes are valuable	Questions are really important	Math is about creativity and making sense	Math is about connections and communicating	Math class is about learning not performing	Depth is more important than speed

Effort = Ability

Polygraph on Desmos



CLASS CODE:

wezp

Students enter this code on

student.desmos.com

Linear Equation Vocabulary

x-intercept 

y-intercept

positive slope 

negative slope 

horizontal 

vertical 

origin 

rate of change 

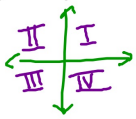
greater than

less than 

increasing 

decreasing 

1st, 2nd, 3rd, or 4th quadrant



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Comments: **(student)**	Comments:	Comments:	Comments:	Comments:
Response: **(teacher)**	Response:	Response:	Response:	Response:

DAILY PRACTICE #ØE

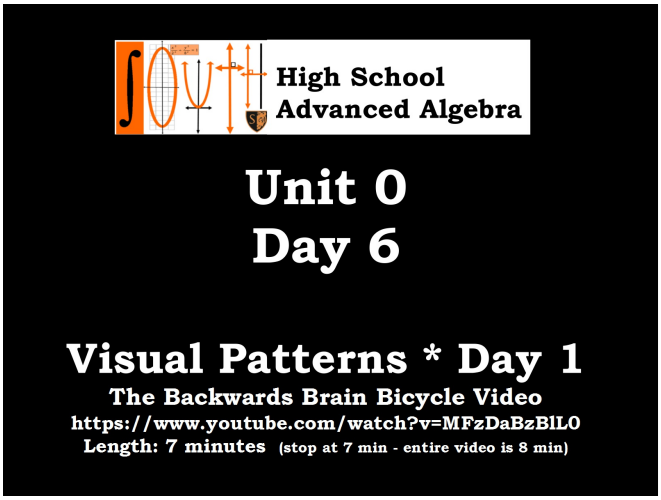
Daily Practice #ØE

Explain your thinking for each problem below in your **notebook**.

	Column B
1	$3x - 5 = 7$
2	$3c + 7 = 34$
3	$5a + 4 = -6$
4	$-3n - 1 = 20$
5	$2a - 3 = -3$
6	$6n + 5 = 8$
7	$\frac{x}{4} + 8 = 11$
8	$\frac{r}{4} - 5 = -4$

9. How many minutes did you spend on this assignment?

Complete assignment in notebook!



3rd Hour **Find your new seat** - you will select your own seat in 2-3 weeks.

Group #8 Walker F Diana M Jack V	**#7** Iona H Lindsey M Zak W	**#6** Nick H Sagal M Yahya Y	**#5** Avery H Kevin P Rene L
#1 Mang C Abdi M Guillermo V	**#2** Jasper C Rose L Elvis T Axel V	**#3** Amarti B Desmond L Harun S Sainab N	**#4** Maeve B Jayce K Elias S

5th Hour **Find your new seat -** you will select your own seat in 2-3 weeks.

Group #8 (none)	**#7** Ben A Yasmine O Luke W	**#6** Lizett C Isabel Q Alex Z	**#5** Sage H Inga S Hao L Sagal M
#1 (none)	**#2** Faiza A Oscar J Sarah S	**#3** Sahra A Emma K Rebecca S	**#4** Kai A Austin M Charlie T

6th Hour **Find your new seat -** you will select your own seat in 2-3 weeks.

Group #8 Jack G Adrianna M Amanda S	**#7** Cian C Haley K James R	**#6** Isaiah J Hamdi O Makylah W	**#5** Jo A Nina K Tor O
#1 Ridwan H Douglas M Learned W Freddy J	**#2** Sage C Robera L Haylee S	**#3** Amos H Maya N Isabel W Habon M	**#4** Jose B Sabin K Malik O

8.31.15 Do Now!

- Do you have a GRAPHING notebook with you today?
- Add the numbers from 1-100.

1 + 2 + 3 + 4 +....+ 97 + 98 + 99 + 100

- Introduce your self to your group!
- WRITE DOWN your group members names.
- Each day, one group will introduce their group members to the class.

Today: Group #3

3rd Hour

Group #8	#7	#6	#5
#1	#2	#3 Desmond Harun Amarti Sainab	#4

5th Hour

Group #8	#7	#6	#5
#1	#2	#3 Suhra Emma Rebecca	#4

6th Hour

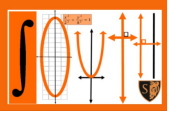
Group #8	#7	#6	#5
#1	#2	#3 Amos Maya Izzy	#4

Learning Target:

I can work as a group.

I can notice, describe and generalize patterns.

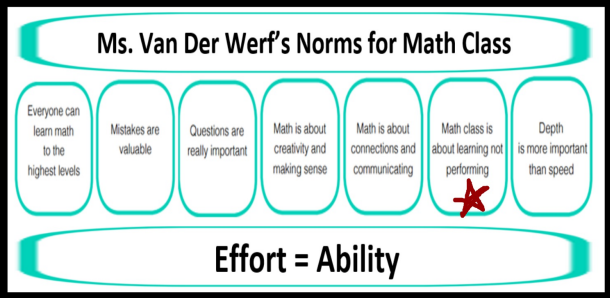
(and learn more names of my classmates)



Mathematics is
the study of patterns.

Mathematicians
notice, describe & generalize
patterns and relationships.

2, 4, 6, ____, ____...



Daily Practice #ØE

Explain your thinking for each problem below in your **notebook**.

	Column A
1	$2x - 3 = 5$
2	$5c + 4 = 49$
3	$4a + 5 = -3$
4	$-2n - 5 = 9$
5	$3a - 5 = -5$
6	$10n - 2 = 3$
7	$\frac{x}{6} + 11 = 13$
8	$\frac{r}{2} - 3 = -1$

9. How many minutes did you spend on this assignment?

Daily Practice #ØE

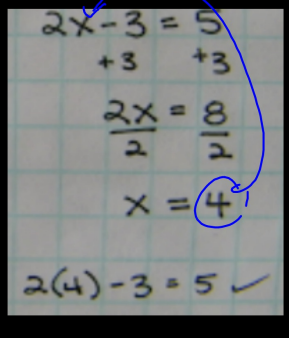
Explain your thinking for each problem below in your **notebook**.

	Column B	
1	$3x - 5 = 7$	4
2	$3c + 7 = 34$	9
3	$5a + 4 = -6$	-2
4	$-3n - 1 = 20$	-7
5	$2a - 3 = -3$	0
6	$6n + 5 = 8$	$\frac{1}{2}$
7	$\div \frac{x}{4} + 8 = 11$	12
8	$\frac{r}{4} - 5 = -4$	4

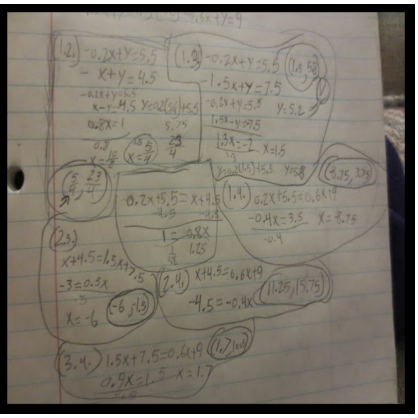
9. How many minutes did you spend on this assignment?

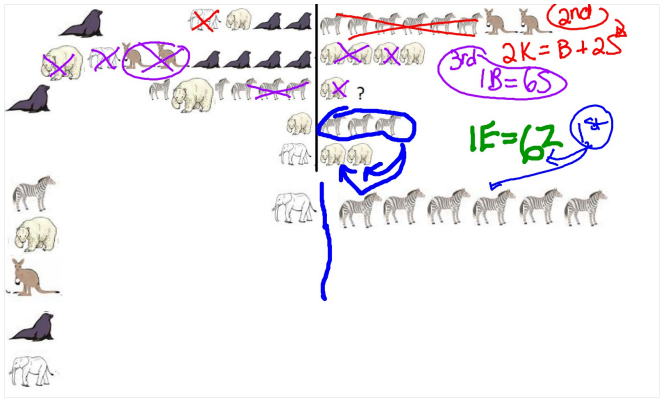
Explain your Thinking!

Directions: Solve for x. 2x - 3 = 5



Explain your thinking!

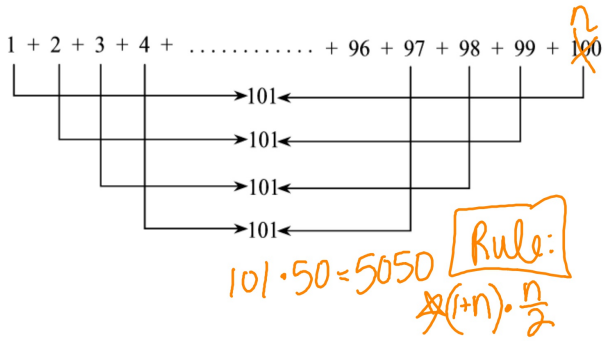




1 + 2 + 3 + 4 +....+ 97 + 98 + 99 + 100

1777-1855

1 + 2 + 3 + 4 + ….+ 97 + 98 + 99 + 100



Gauss noticed that if he was to split the **numbers** into two groups (**1** to 50 and 51 to **100**), he could **add** them together vertically to get a sum of 101. Gauss realized then that his final total would be 50(101) = 5050.

$$S = \frac{n(n+1)}{2}$$

$$\frac{100}{2}(100+1)$$

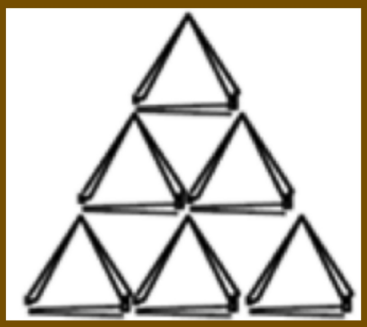
$1 + 2 + 3 + 4 + \ldots\ldots\ldots\ldots + 96 + 97 + 98 + 99 + 100$

101

101

101

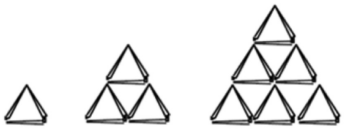
101



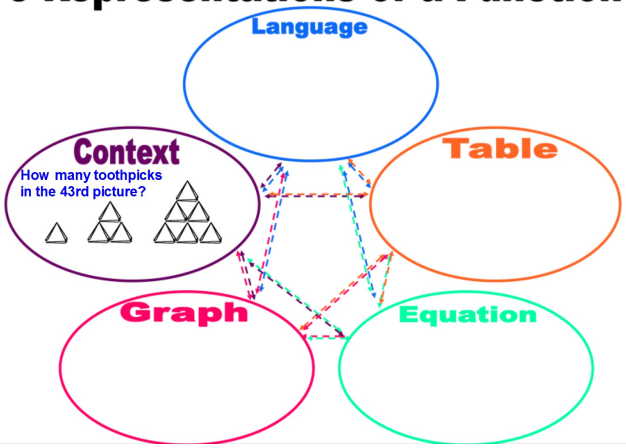
What do you notice?
wdyN?

What do you wonder?
wdyW?

How many toothpicks in the 43rd picture?



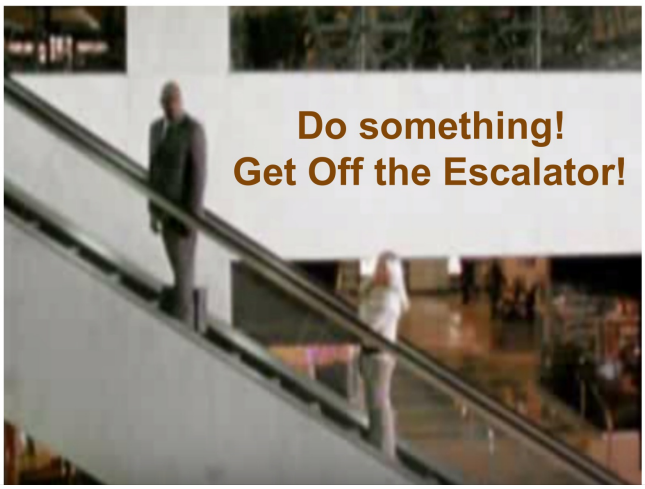
5 Representations of a Function

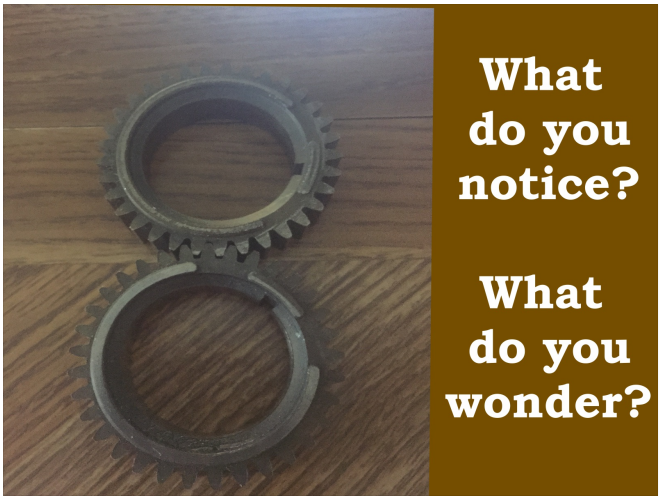


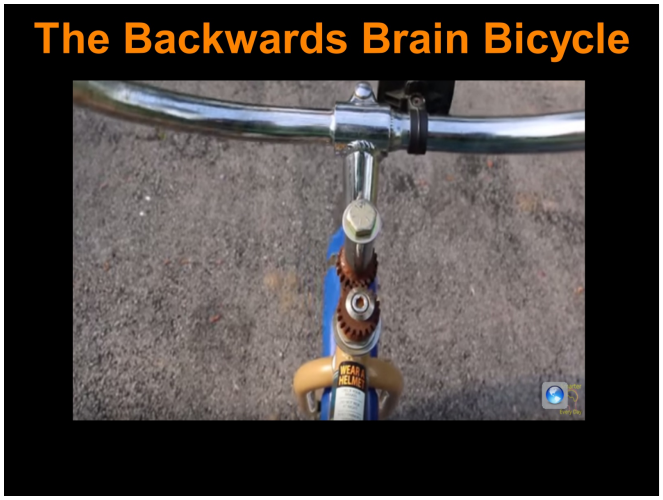

CHANGE YOUR WORDS.
CHANGE
YOUR
MINDSET!
Effort = Ability

Everyone can do well in math!

- There is no such thing as a 'math person'.
- You have an inate ability from birth to learn math.
- When you learn something your brain grows.
- Working on a task a few minutes a day for 6 weeks can GROW your brain.

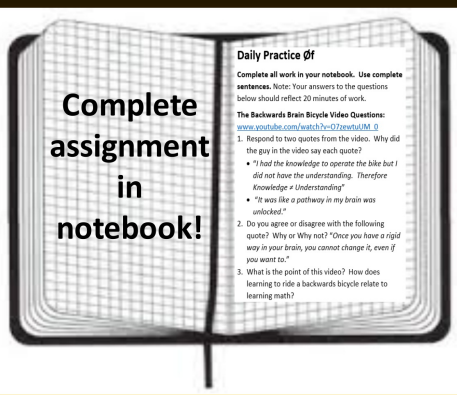



What
do you
notice?
What
do you
wonder?


The Backwards Brain Bicycle

DAILY PRACTICE #ØF

Complete assignment in notebook!



Daily Practice Øf

Complete all work in your notebook. Use complete sentences. Note: Your answers to the questions below should reflect 20 minutes of work.

The Backwards Brain Bicycle Video Questions:

www.youtube.com/watch?v=O7zewtuUM_0

1. Respond to two quotes from the video. Why did the guy in the video say each quote?
   - *"I had the knowledge to operate the bike but I did not have the understanding. Therefore Knowledge ≠ Understanding"*
   - *"It was like a pathway in my brain was unlocked."*
2. Do you agree or disagree with the following quote? Why or Why not? *"Once you have a rigid way in your brain, you cannot change it, even if you want to."*
3. What is the point of this video? How does learning to ride a backwards bicycle relate to learning math?

High School Advanced Algebra

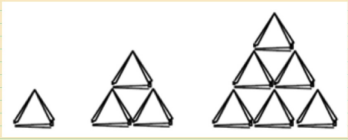
Unit 0
Day 7

Visual Patterns * Day 2

Video Neuro-plascity made easy.
https://www.youtube.com/watch?v=tJ93qXXYRpU
Length: 2 minutes

9.1.15 Do Now!

- Take out your homework.
- Today we will be introducing Group #6. How many of your classmates 1st names to you know?
- How many toothpicks are in the 43rd term?



3rd Hour

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#1	#2	#3 Desmond Harun Amarti Sainab	#4

5th Hour

Group #8	#7	#6	#5
#1	#2	#3 Suhra Emma Rebecca	#4

6th Hour

Group #8	#7	#6	#5
#1	#2	#3 Amos Maya Izzy	#4

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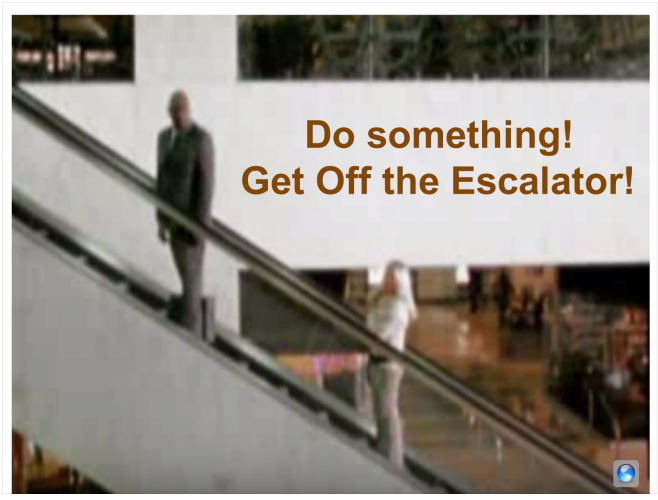
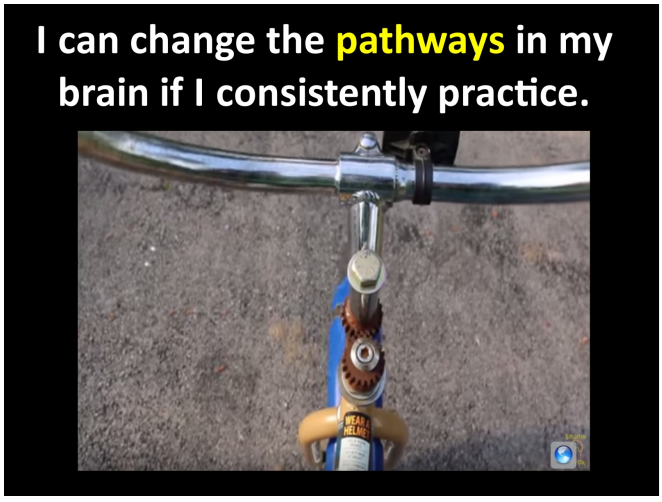
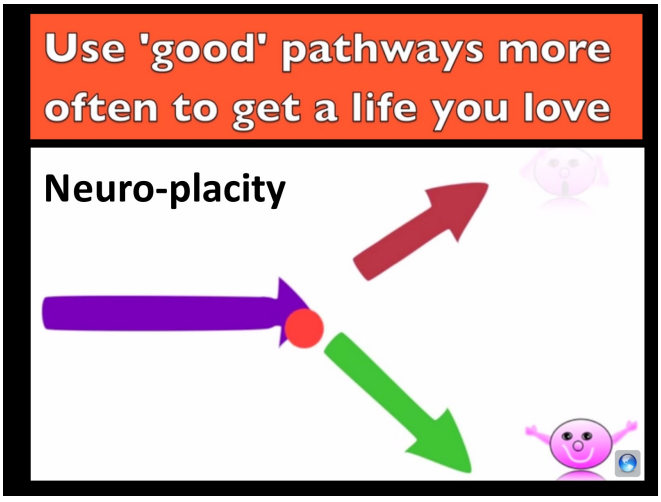

Do something!
Get Off the Escalator!


I can change the pathways in my brain if I consistently practice.



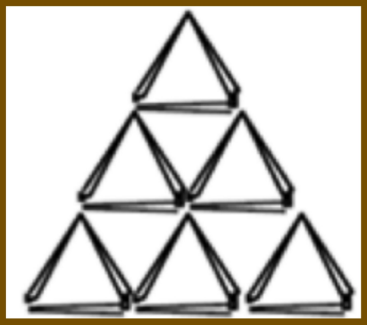
Learning Target:

I can work as a group.

I can notice, describe and generalize patterns.

(and learn more names of my classmates)

How many AVACODOS are there?



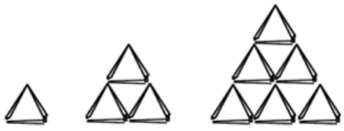
What do you notice?

Notice?

What do you wonder?

Wonder?

How many toothpicks in the 43rd picture?



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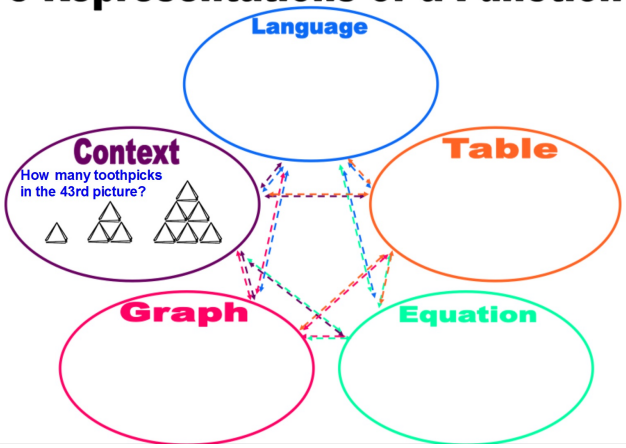


$5 \cdot 4 - 1 = 19$

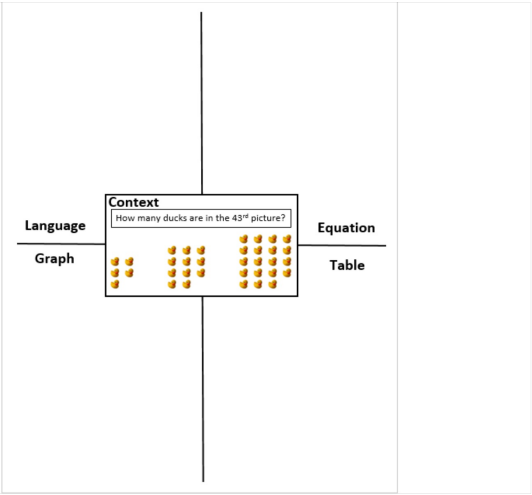
$3 \cdot 5 + 4 > 4 \cdot 4 + 3$

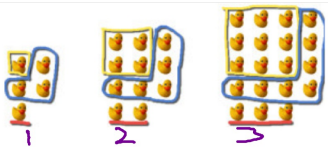
What do you notice?

Notice?

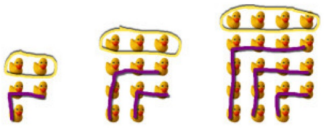
What do you wonder?

Wonder?

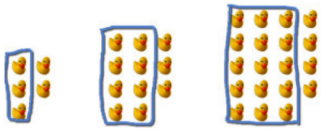




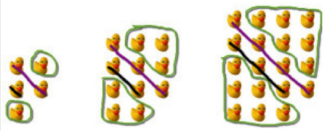
Ducks = $(n^2) + (2n+1) + n$



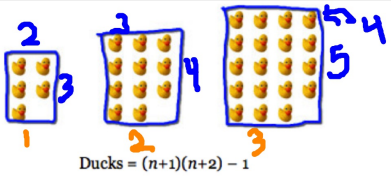
Ducks = $(n+1) + (3+2n+1)(n/2)$



Ducks = $n(n+2) + (n+1)$



Ducks = $2(1+n)(n/2) + (n+1) + n$



Ducks = $(n+1)(n+2) - 1$

Unit 1
Sequences & Series

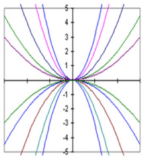
$$\begin{cases} a_0 = 100 \\ a_n = 2a_{n-1} \end{cases} \text{ where } n \geq 1$$

$u_0 = 500$

$u_n = (u_{n-1})\,(.6) + 24$ for $n \geq 1$

n	u_n
1	2
3	6
6	12
7	14

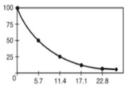
Unit 2
Families of Functions



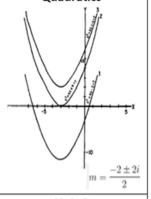
Unit 3
Exponential, Power and Logarithm Functions

$$\log_3(x+3) - \log_3(x-3) = \log_3 7$$

$$3^{8x} = 81^{3x-2}$$

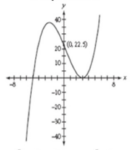


Unit 4
Quadratics



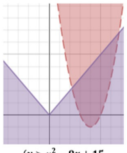
$$m = \frac{-2 \pm 2i}{2}$$

Unit 5
Polynomials



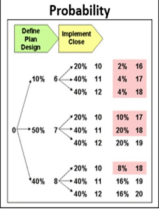
$$\frac{x^2+12x+27}{x^2+13x+36} \div \frac{x^2+3x}{x^2+6x+8}$$

Unit 6 Advanced Systems of Inequalities

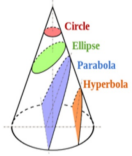


$$\begin{cases} y > x^2 - 8x + 15 \\ y \leq |x| \end{cases}$$

Unit 7
Probability



Unit 8
Conic Sections & Circle Trigonometry



DAILY PRACTICE #0G

Advanced Algebra HW 0g **Daily Practice**

Name _____

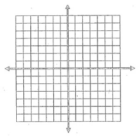
Directions: You may use a graphing calculator on all of these problems

Pre-requisite: graphing equations

1. Complete the tables of values and graph the following equations:

a) $2x - 7 = y$ **What is this equation's slope?** _____

X	W



b) $y = 3x^2 + 2x - 7$

X	Y