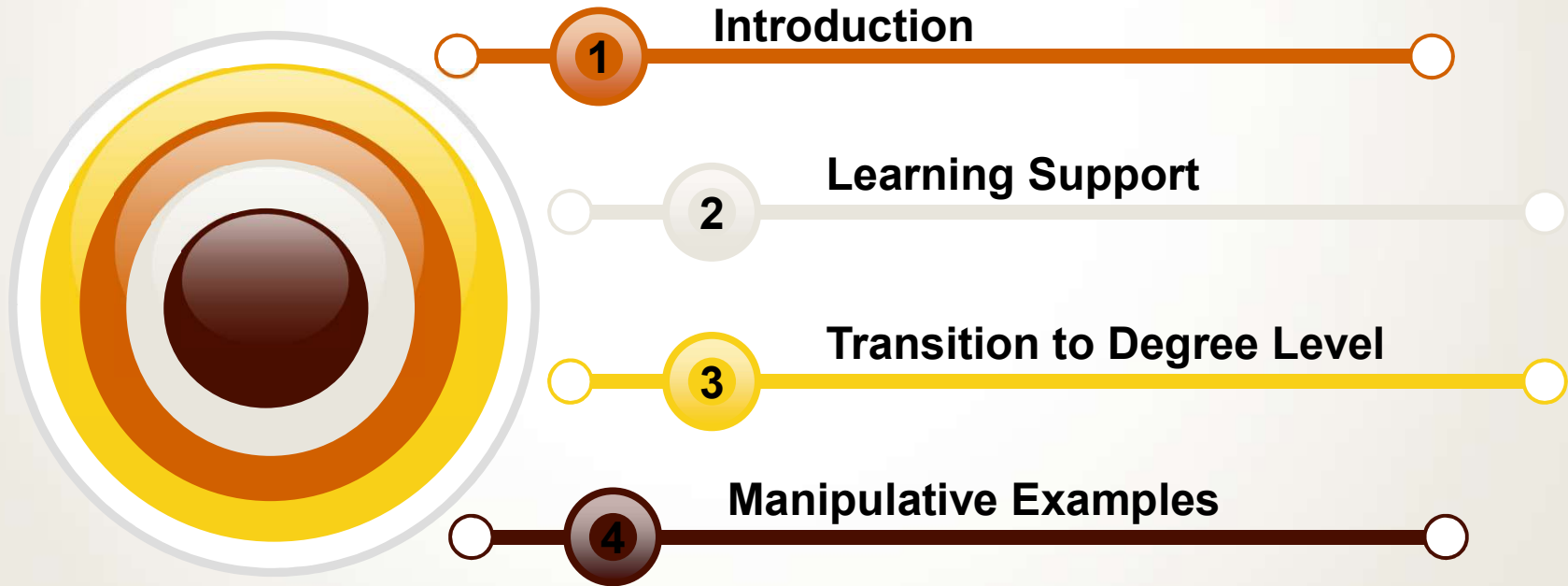


**I Can See Clearly Now:
How to Remove
Obstacles in the Way of
Student Success**

**Marsha Fields, Georgia Gwinnett College
Susan Baker, Lanier Technical College**

Our Progression



Introduction



Susan Baker



Dr. Ray Perren, President

Ms. Donna Brinson, Vice-President for Academic Affairs

Dr. Joanne Tolleson, Vice-President for IE and Operations

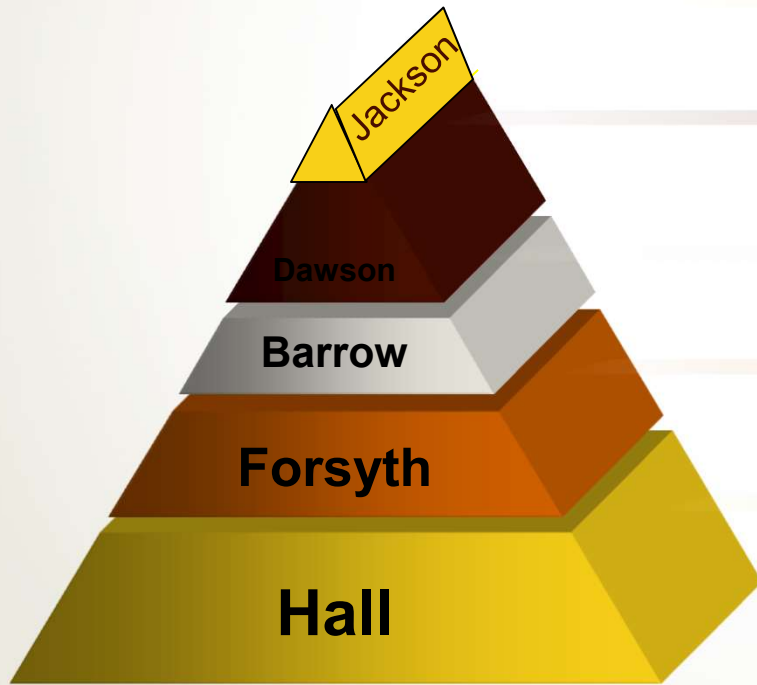
Mr. Brad Gadberry, Director of Institutional Effectiveness

Ms. Kathy Alden, Dean of General Education

Mr. Tim Thomas, Program Chair, General Education,
Mathematics Instructor

Ms. Marlene Haller, Mathematics Chair, Mathematics
Instructor

5 LTC Campuses



Jackson

Dawson

Barrow

Forsyth

Hall



Awards



Technical
Certificate
Of Credit



Diploma



Associate
Degree

Accreditation

Commission on Colleges of the Southern
Association of Colleges and Schools

LTC Serves 8 Counties and offers 48 Programs

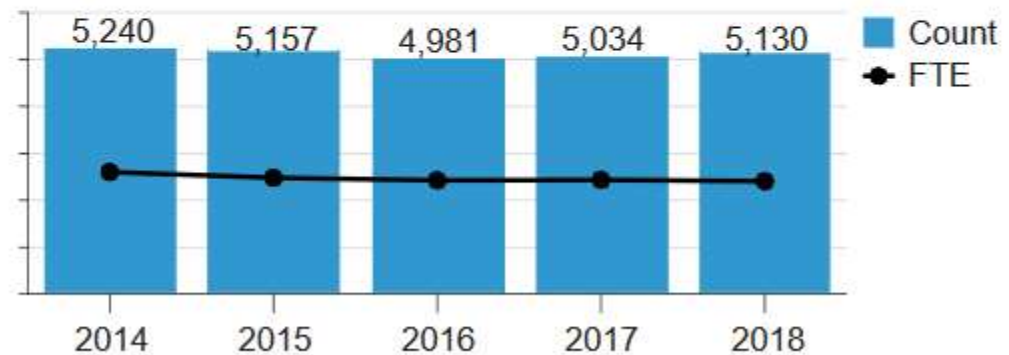
College: Lanier Technical College

Year: Academic Year 2018

Student Count: 5,130 Students

Enrollment: Summary

Count and FTE Trends		
Year	Count	FTE
2014	5,240	2,600
2015	5,157	2,479
2016	4,981	2,424
2017	5,034	2,433
2018	5,130	2,407



Count is an unduplicated credit student count. FTE is the Full Time Equivalent based on the sum of total credit hours for all students.



What is a QEP?

A **Q**uality **E**nhancement **P**lan is a carefully designed course of action that reflects and affirms an institution's commitment to enhancing the quality of higher education.

A QEP:

- Identifies key issues that emerge from assessment
- Focuses on learning outcomes
- Is within the institution's capability
- Mobilizes broad-based involvement of the College's constituencies
- Identifies and assesses measureable and meaningful goals

How Did We Choose MMO?

- Here's what we learned from **TCSG Data Center Reports (KMS)**:
 - Most of our students are non-traditional (25 or older)
 - 38% need Learning Support
 - We were not doing a good job of getting students in to Learning Support when they enroll



How Did We Choose MMO?

Here's what we learned:

We analyzed the Fall 2014 MATH 0090 Student Summary

- Very few students complete their Learning Support requirement in a single term
- Degree students average 2.9 semesters to finish Learning Support
- Diploma students average 1.7 semesters to finish Learning Support



How Did We Choose MMO?

Here's what else we learned:

Students have VERY strong feelings about Math:

- Anxious
- Overwhelmed
- Stressed

Students believe this anxiety comes from not being well prepared:

- Not having a good foundation
- Not understanding the basics
- Do not have fundamentals





So What's The Plan?

Based on what we learned through a review of current literature, the Team defined the **purpose** of Lanier Tech's QEP:

“The purpose of Lanier Tech’s QEP is to increase student learning in the Mathematics Learning Support program such that students complete their Learning Support requirements in a timely way and emerge with the skills and attitudes necessary for success in college-level mathematics courses.”



Learning Support

Course Redesign

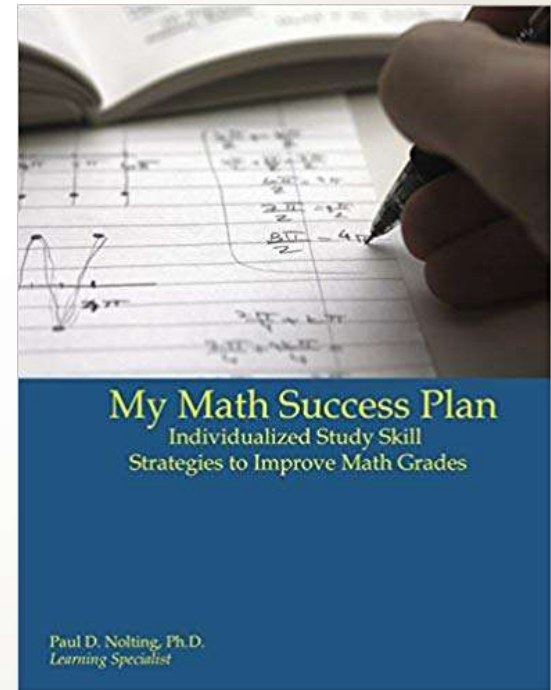
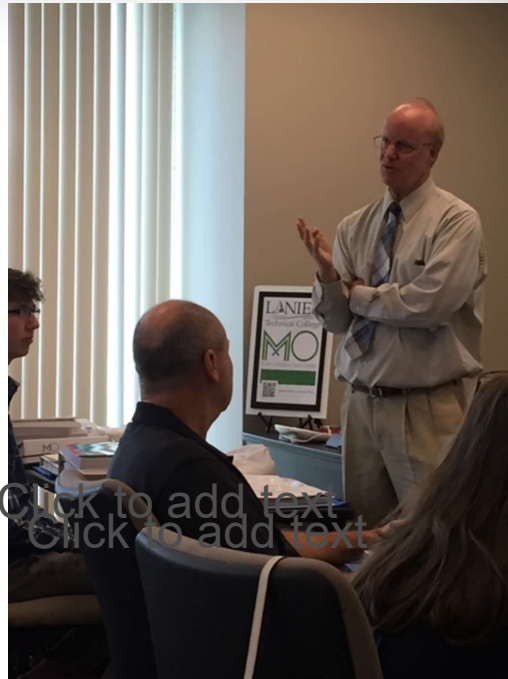
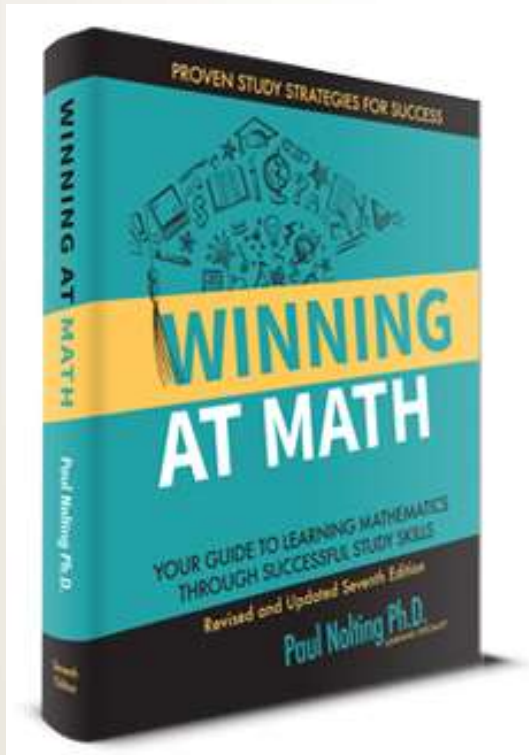


Here's The Plan

Strategy 1: **Course Redesign**

- All traditional delivery
- Co-requisite courses addressing math anxiety, study skills, and other outcomes in the affective domain
 - For diploma students: MATH 1012A + 0090A
 - Math skills outcomes such as calculations and formulas are covered in MATH 1012A, and MATH 0090A helps the students with attitudes and skills needed to succeed in math
 - For degree students: MATH 0090B + MATH 0090Q
 - MATH 0090B is LTC's Learning Support pre-algebra and basic algebra course. Learning Support students who need algebra also take MATH 0090Q, which covers math anxiety, math self-concept, study skills, etc.

Dr. Paul Nolting





Manipulatives – Examples

- Counting Chips
- Cards – Signed Numbers (Adding, Subtracting, Multiplying), Equivalent Fractions, Ratios
- White Boards – Graphing Linear and Quadratic Functions, Inequalities, Geometry
- Index Cards – Matching Functions
- Exponents – Simplifying
- Rational Expressions - Reducing, Adding, Subtracting, Multiplying, Dividing
- Escape Room
- Group Work
- Hands-On Equations



**Math 90B & 90Q
Final Project**

My chosen field of study...

Surgical Technologist

**Making a difference in the
Operating Room**

Surgical Technology!!!




It is fascinating!!!

How do Surgical Techs use math?

By counting surgical
supplies...
just to make sure
nothing
gets left behind.



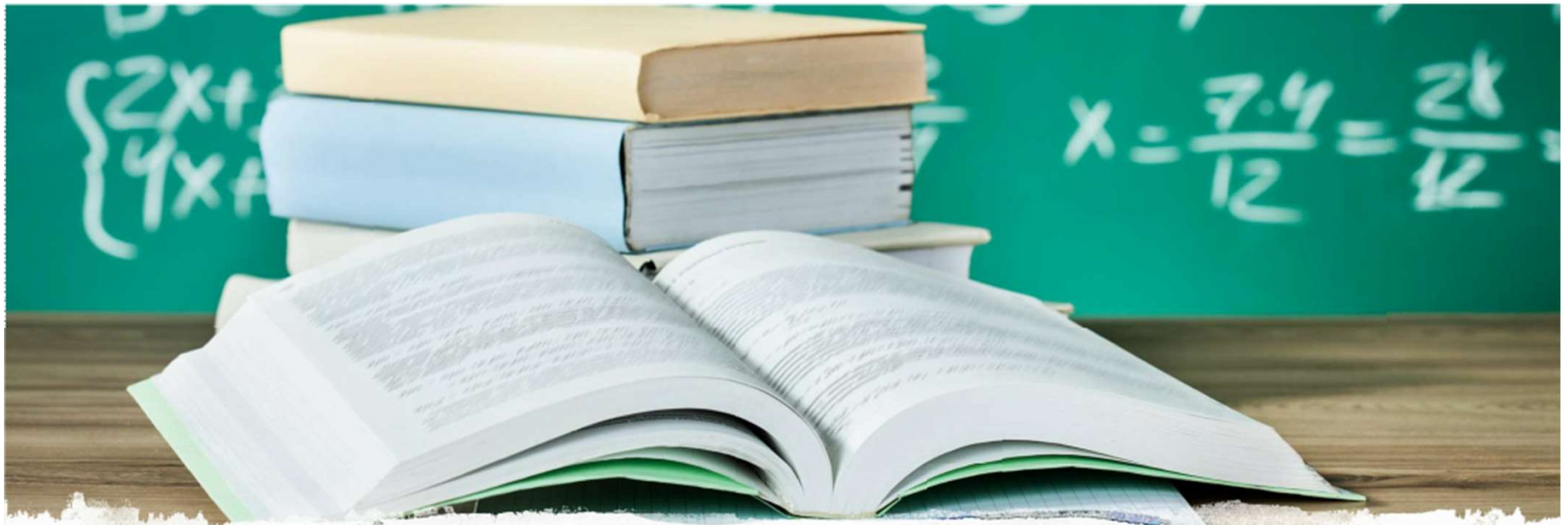
The image shows two glass bottles, likely Erlenmeyer flasks, containing a liquid. The bottle on the left contains a pale, yellowish liquid, while the bottle on the right contains a darker, reddish-brown liquid. Both bottles are covered in condensation, suggesting they are cold. They are sitting on a metal wire rack. A white circular overlay is positioned on the left side of the image, containing green text. The background is a blurred laboratory setting.

**They may
also be
required to
measure
specimen.**



Surgical tech can also assist doctors on choosing the right measurement of screws or **instruments needed.**





**Because of this class I am now ready to dive
into college algebra.**



Where will I be in 5 yrs?

Hopefully finished with school and working in a hospital as a surgical technologist.



Or working in a hospital as a surgical nurse.



Student Success Center



Enhanced Tutoring



Here's the Plan

Strategy 2: **Enhanced Tutoring**

- Student Success Centers will be built on the Hall and Forsyth Campuses
- LTC will hire two Student Success Center Coordinators and three tutors
 - The three tutoring positions may be split among several people to better cover day/evening students and students at Barrow and Dawson
 - Success Center Coordinators will also tutor students
 - Success Center Coordinators will train the math tutors
 - Tutoring staff will use TEAMS to communicate with faculty and keep records of tutoring delivered



Secret to My Success

Jessica K. (Interdisciplinary Studies) ...tutor lab provides me with 2 services. The help I need to feel successful in college algebra and the confidence to believe that I can do math!

Why I Tutor Math

Zoe L.

I tutor math because I believe that the concepts learned can be applied to every subject and career! Gaining a strong grasp on the concepts presented in math courses strengthens abilities in seemingly non-math related areas as well. I hope to empower students with problem solving, critical thinking, and studying skills to allow them to achieve their goals.

Tutors



Secret to My Success

Lisa M.(Interdisciplinary Studies) I learned to build time in my schedule to get help with homework and study for tests...I was able to finish college algebra because of solid teaching and the support of wonderful tutors in the math lab.



Tutoring Stats

18 Math Tutors
11 Writing Tutors

Student Success Center Math Visits

Month	FY 2017	FY 2018	FY 2019	FY 2020
August	55	122	372	202
September	361	323	443	719
October	482	535	432	913
November	479	380	251	544
December	202	75	0	314
January	244	287	45	294
February	468	627	573	692
March	347	664	579	
April	338	436	437	
May	96	70	187	
June	181	156	256	
July	33	68	265	
Total	3286	3743	3840	3678

Student Success Center Writing/Other Visits

Month	FY 2020	FY 2021	FY 2022	FY 2023
August	14			
September	73			
October	66			
November	51			
December	44			
January	49			
February	190			
March				
April				
May				
June				
July				
Total	297	0	0	0

60.5% increase in math over 2017, so far



QEP Instructors and Tutors

**Training and
Professional Development**



Here's the Plan

Strategy 3: **Training & Professional Development**

- Expert training for Math faculty on teaching:
 - Affective domain learning outcomes
 - Assessing student learning and progress for affective outcomes
 - Use of manipulatives in the classroom
 - Alternate teaching strategies
- Expert training for Math tutors
- Supplemental TEAMS
(TCSG's Early Alert Management System)
training for Math faculty and tutors
- Advisement training

Training



Learning Support Math Stats Overall

Summary of QEP Success Rates based on all grades				
Class	FY 2016	FY 2017	FY 2018	FY 2019
		Final Class Grade	Final Class Grade	Final Class Grade
MATH 0090	51%			
MATH 0090A	71%	92%	67%	72%
MATH 1012A		83%	61%	62%
MATH 1012	72%	77%	79%	77%
MATH 0090B	46%	63%	52%	53%
MATH 0090C		63%	66%	41%
MATH 0090Q	80%	83%	70%	

Summary of QEP Success Rates without I, W, WP, WF				
	FY 2016	FY 2017	FY 2018	FY 2019
		Final Class Grade	Final Class Grade	Final Class Grade
MATH 0090				
MATH 0090A		97%	83%	82%
MATH 1012A		93%	74%	72%
MATH 1012		89%	88%	85%
MATH 0090B		70%	63%	67%
MATH 0090C		67%	70%	55%
MATH 0090Q				

201512 * **17%** completed math Learning Support in one term. **38%** completed math Learning Support regardless of number of attempts

While students may have been receiving a passing grade in MATH 0090, that did not mean they completed all the modules in order to fulfill the requirements for math Learning Support. They may have completed through the next "bench mark" module.

Learning Support Math Stats Deeper

Summary of QEP Success Rates - based on all grades

Class	201512	201514	201516	201612	201614	201616	201712	201714	201716	201812	201814	201816	201912	201914	201916	202012
		Final Class Grade	Final Class Grade	Final Class Grade	Final Class Grade	Final Class Grade	Final Class Grade	Final Class Grade	Final Class Grade	Final Class Grade	Final Class Grade	Final Class Grade	Final Class Grade	Final Class Grade	Final Class Grade	Final Class Grade
MATH 0090	17%	57%	47%	55%	44%	94%										
MATH 0090A					100%	50%	93%	83%	100%	70%	68%	25%	68%	72%	100%	59%
MATH 1012A					100%	50%	79%	87%	100%	65%	60%	25%	48%	74%	71%	55%
MATH 1012		72%	82%	72%	69%	73%	71%	82%	76%	80%	79%	79%	76%	77%	80%	76%
MATH 0090B					41%	50%	64%	57%	73%	56%	46%	NA	47%	52%	81%	53%
MATH 0090C							60%	52%	67%	47%	82%	NA	33%	30%	73%	85%
MATH 0090Q					79%	82%	78%	82%	84%	71%	68%	NA	63%	78%	87%	72%
										*Accuplacer Scores Changed		*Attendance Policy Change		*WAM & MMSP first two weeks of class, revised 0090A manipulatives		
										*0090A Changed from 3 hour class to 1 hour						

Number of Students

Class/ Semester	201614	201616	201712	201714	201716	201812	201814	201816	201912	201914	201916	202012
MATH 0090	312											
MATH 0090A	3	4	43	30	5	37	25	4	40	39	7	22
MATH 1012A	3	4	43	30	5	37	25	4	40	39	7	22
MATH 1012	183	106	214	217	80	169	162	57	176	123	85	113
MATH 0090B	56	82	317	165	44*	188	129	NA	216	170	47	180
MATH 0090Q	56	82	317	165	43	188	129	NA	216	170	47	180
MATH 0090C			10	21	9	15	17	NA	18	33	15	20
						Accuplacer Scores		Attendance Policy Change				
* An exception was made for one student.												

Percent of Students Withdrawing from Class

Class/ Semester	201614	201616	201712	201714	201716	201812	201814	201816	201912	201914	201916	202012
MATH 0090	7%											
MATH 0090A	0%	50%	12%	10%	0%	22%	16%	0%	8%	18%	0%	18%
MATH 1012A	0%	50%	12%	10%	0%	22%	16%	0%	13%	18%	0%	23%
MATH 1012	17%	17%	16%	11%	14%	11%	9%	11%	9%	10%	9%	9%
MATH 0090B	14%	7%	13%	10%	7%	12%	25%	NA	25%	19%	6%	26%
MATH 0090Q	14%	7%	13%	10%	7%	12%	25%	NA	25%	12%	6%	24%
MATH 0090C			30%	5%	0%	0%	12%	NA	22%	33%	13%	5%
						Accuplacer Scores		Attendance Policy Change				



What Do Student Say?

Most helpful to me:

Time management. How to handle stress

Winning at Math helped teach me habits that I love and will take with me in the future.

Manipulatives.

Memory Data dump.

Working together.

Group projects and manipulatives.

Study skills for tests.

How to reduce anxiety helped build my confidence in math.

The tutoring lab.

Test taking study skills.

Tutoring

The WAM book helping me study in new and different ways.

Working in groups.

The tutors.

Data dump.

I am better at taking tests now, and I have learned how to study by doing my homework.



What Do Students Say?

Favorite part of the course:

The group project.

Study skills

How to manage stress

The last day of class.

Manipulatives.

My class teacher.

Playing with blocks to learn how to do equations.

Hands on activities.

Tutoring in class increased my confidence.

My teacher.

I would improve this class by:

Less homework

More manipulatives

WAM was not helpful at all

Less word problems.

Going to tutoring more often.

I did not understand any of the manipulatives.

Doing more hands on activities.

Nothing, I have learned a lot.

Math 90Q should be taught first, then get into the actual math work so you can apply those skills.

Transition to Degree Level



Marsha Fields



Techniques

- Funds of Knowledge
- In-Class Activities
- Effective Technology Use
- Test Taking Strategies



Funds of Knowledge

- Get to know students
- Build rapport
- Have students get to know each other and form groups



In-Class Activities

- Tutor in Class
- Note-taking Skills

Demonstrate the proper way to take notes

Color Coding

Organization

- Group Project

Hospital

By: Winnonah, Gwenyth, Ana, Megan

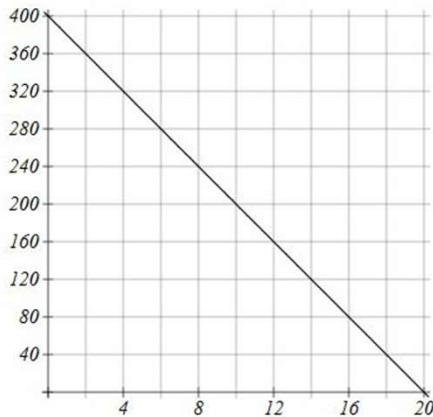


656th TACTICAL HOSPITAL

Unit One: Psychology

Determine the intercepts of the graph below

Situation A negative correlation between an increased amount of patients taking therapy for their illness and a decrease in their illness symptoms that will most likely occur. It would be based on a survey given to patients at the hospital before and after treatment.



Vertical Intercept
(as an ordered pair)

Vertical Intercept(y):

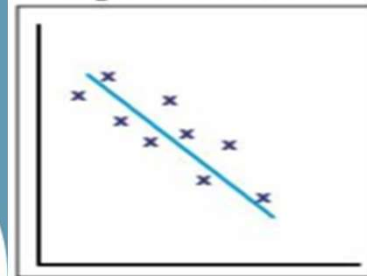
(0,400)

Horizontal Intercept
(as an ordered pair)

Horizontal Intercept(x):

(20,0)

Negative correlation



The points lie close to a straight line, which has a negative gradient.

This shows that as one variable **increases**, the other **decreases**.

Unit Two: Psychology

You were diagnosed with depression and your therapist is charging you \$85.55 a session, plus \$90.00 for antidepressant pills per a month.

-Give the formula for $C(d)$. Make sure to give the complete formula as an equation. $C(d)=85.55+90.00d$

-Total cost of session plus antidepressant pills for 3 months. Choose correct unit

-Suppose you have \$300 to get antidepressant pills per a month. How many

months can you pay for it? Round your answer to the nearest whole number

and choose the correct unit.

$$300=85.55+90.00d$$

$$214.45=90.00d$$

$$2.3=d$$

$$2 \text{ months}=d$$

$$C(d)=3$$

$$C(d)=85.55+90.00(3)$$

$$C(d)=85.55+270$$

$$C(d)=355.55 \text{ dollars}$$

Unit Three: Psychology

A patient is prescribed two medications to help with their illness. The sum of the first medication and its square is the total dosage for both medications in one day.

$$X + X^2 = 6$$

Find out the dosage for both medications.

Solve the quadratic equation to find the positive and negative solutions.

$$X^2 + X - 6 = 0$$

$$(x-2)(x+3)$$

$$X = 2, -3$$

The first medication requires 2 pills taken a day & the second requires 4 pills taken a day.

Unit Four: Psychology

A patient has PTSD (Post Traumatic Stress Disorder). The hour, H , in weeks, of the patient x weeks after diagnosed is given by: $H(x) = -x^2 + 8x + 8$

1. How many weeks does it take for Zoloft pill to work?

$$x = -8/2(-1)$$

$$x = 4 \text{ weeks (1- 4 weeks)}$$

2. How many hours does the patient have to wait to take another Zoloft pill?

$$y = -(4)^2 + 8(4) + 8$$

$$y = 24 \text{ hours (in the morning)}$$

$$y = -16 + 32 + 8$$

Vnr 57 53 57
Zoloft[®]
100 mg SERTRALIN.

28 tabletter

Förvaras utom syn- och räckhåll för barn.
Förvaras vid högst 30°C.
Läs bipacksedeln före användning.

Unit Five: Psychology

Simon has an anxiety disorder and takes 10 mg of Lexapro once daily. The amount, A , of Lexapro remaining in his body after n hours is given by the formula $A = 10(.73)^n$. How much of the Lexapro remains in his body after 7 hours? Round to the nearest hundredth place if needed.

$$A = 10(.73)^7$$

$$A = 10(.1104)$$

$$A = 1.1$$

Simon will have 1.1 mg's of Lexapro remaining in his body after 7 hours.



Effective Technology Use

- MUST Teach the Technology First
- Use supplemental Web-Sites:
 - DESMOS.COM
 - YOUTUBE
 - QUIZIZZ
 - KAHOOT
 - REMIND 101



Test Taking Strategies

How to Study

1. Do Your Homework
2. Choose a Place to Study
3. Study the Most Difficult First
4. Choose the Best Time to Study
5. Take Breaks
6. Form Study Groups
7. Attend Tutoring
8. Rewrite Your Class Notes
9. Do Practice Tests
10. Prepare a Memory Data Dump (*MDD*)

How to Take a Test

1. Write Your *MDD* on the Test
2. Preview the Test
3. Revise Your *MDD*
4. Develop a Test Schedule
5. Answer Easiest Questions
6. Answer Difficult Questions
7. Answer Toughest Questions
8. Guess at Remaining Questions
9. Review Test
10. Use all Your Test Time

Based on *Winning at Math* by Dr. Paul Nolting

College Algebra

Fall, Spring, Summer Semesters

FY2018

		INCLUDING WITHDRAWALS										%s		
		Grade												
		Tutor	A	B	C	D	F	W	WF	WP	Grand Total	A-C	D-F	W's
All Semesters	All Marsha		43	94	74	23	31	53	10	0	328	64.3%	16.5%	19.2%
		Tutor	8	13	13	1	2	11	1	0	49	69.4%	6.1%	24.5%
		No Tutor	35	81	61	22	29	42	9	0	279	63.4%	18.3%	18.3%
	Everybody													
	Else		236	303	265	137	165	190	27	3	1326	60.6%	22.8%	16.6%

		EXCLUDING WITHDRAWALS							%s	
		Grade								
		Tutor	A	B	C	D	F	Grand Total	A-C	D-F
All Semesters	All Marsha		43	94	74	23	31	265	79.6%	20.4%
		Tutor	8	13	13	1	2	37	91.9%	8.1%
		No Tutor	35	81	61	22	29	228	77.6%	22.4%
	Everybody									
	Else		236	303	265	137	165	1106	72.7%	27.3%

College Algebra

Fall, Spring, Summer Semesters

FY2019

		INCLUDING WITHDRAWS										%s		
		Grade												
		Tutor	A	B	C	D	F	W	WF	WP	Grand Total	A-C	D-F	W's
All Semesters	All Marsha		72	117	103	31	33	57	18	0	431	67.7%	14.8%	17.4%
		Tutor	31	32	34	7	4	14	5	0	127	76.4%	8.7%	15.0%
		No Tutor	41	85	69	24	29	43	13	0	304	64.1%	17.4%	18.4%
	Everybody Else		314	426	410	202	239	254	35	3	1883	61.1%	23.4%	15.5%

		EXCLUDING WITHDRAWS										%s	
		Grade											
		Tutor	A	B	C	D	F				Grand Total	A-C	D-F
All Semesters	All Marsha		72	117	103	31	33				356	82.0%	18.0%
		Tutor	31	32	34	7	4				108	89.8%	10.2%
		No Tutor	41	85	69	24	29				248	78.6%	21.4%
	Everybody Else		314	426	410	202	239				1591	72.3%	27.7%



Manipulative Examples

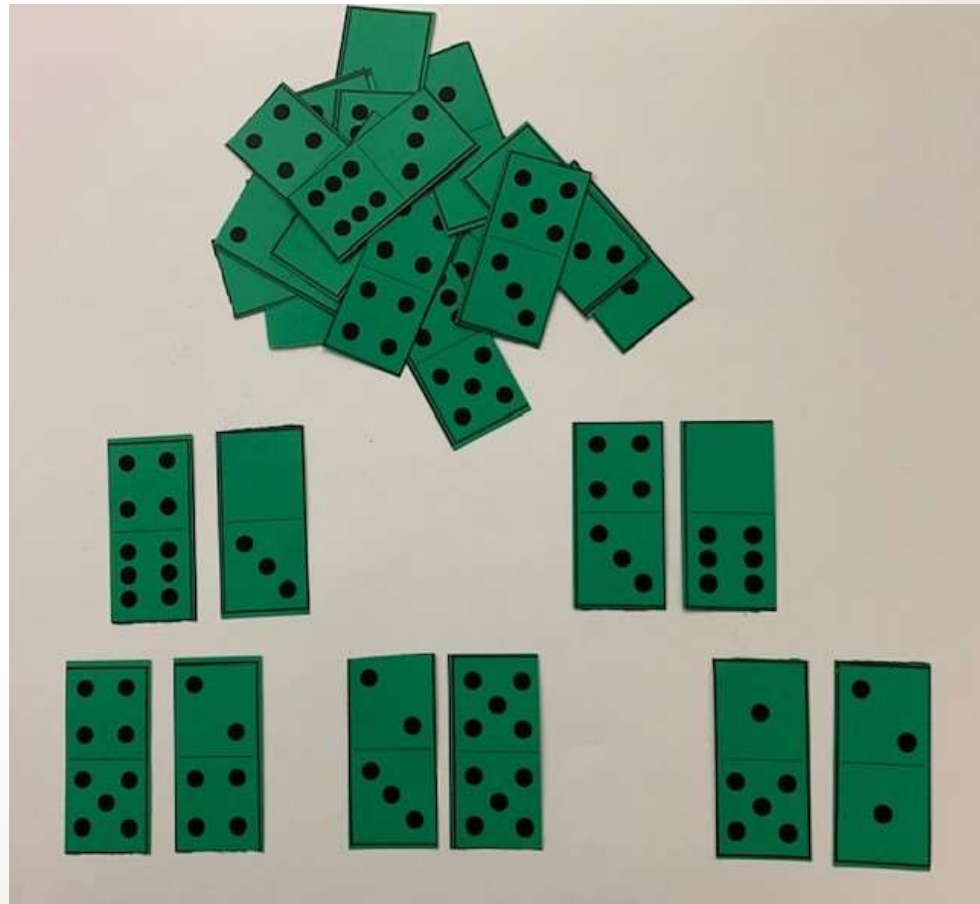
Marsha Fields

Susan Baker

MATH 0090A

Dominoes

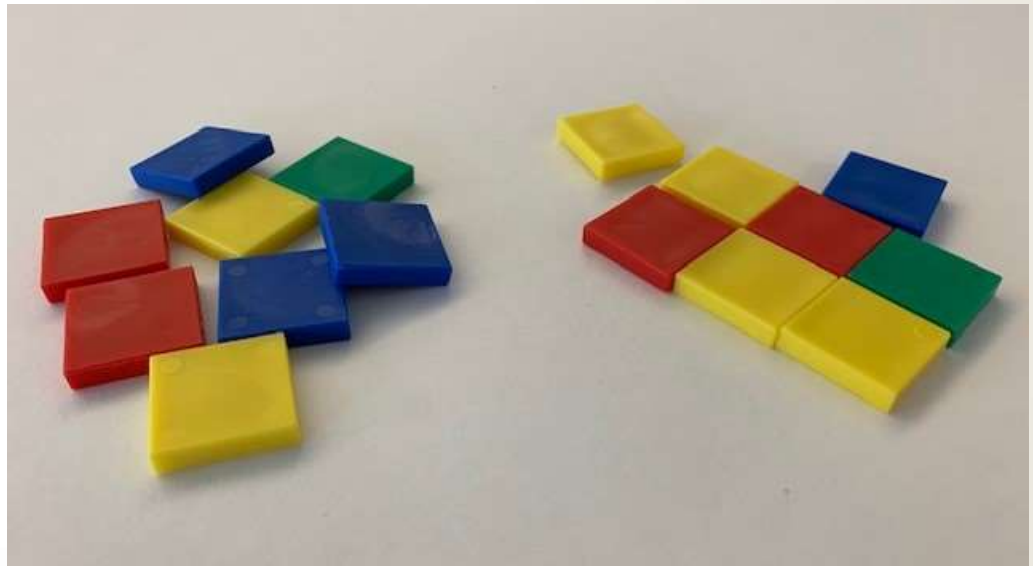
- Equivalent Fractions
- Adding/Subtracting Fractions
- Multiplying/Dividing Fractions



MATH 0090A

Counting Chips

- Visualize Ratios
- Visualize Proportions
- Introduction to Combinations
- Introduction to Permutations



MATH 0090A

Tape Measures

- Measurement
- Area
- Perimeter
- Volume
- Discovering Pi



MATH 0090A

Dice

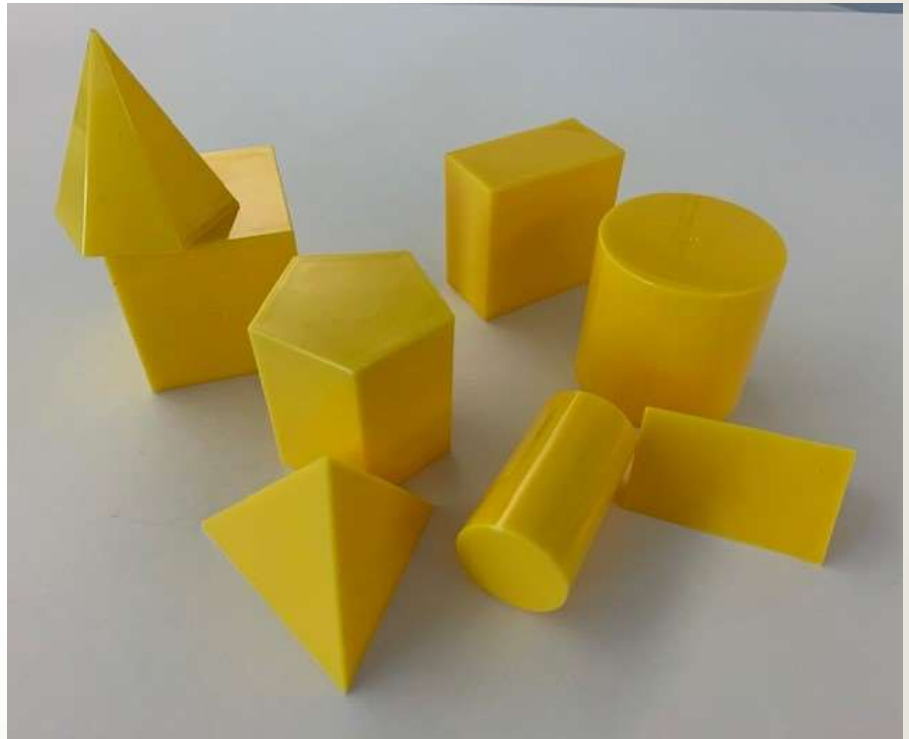
- Ratios
- Proportions
- Introduction to Statistics
- Introduction to Probability



MATH 0090A

Geometric Solids

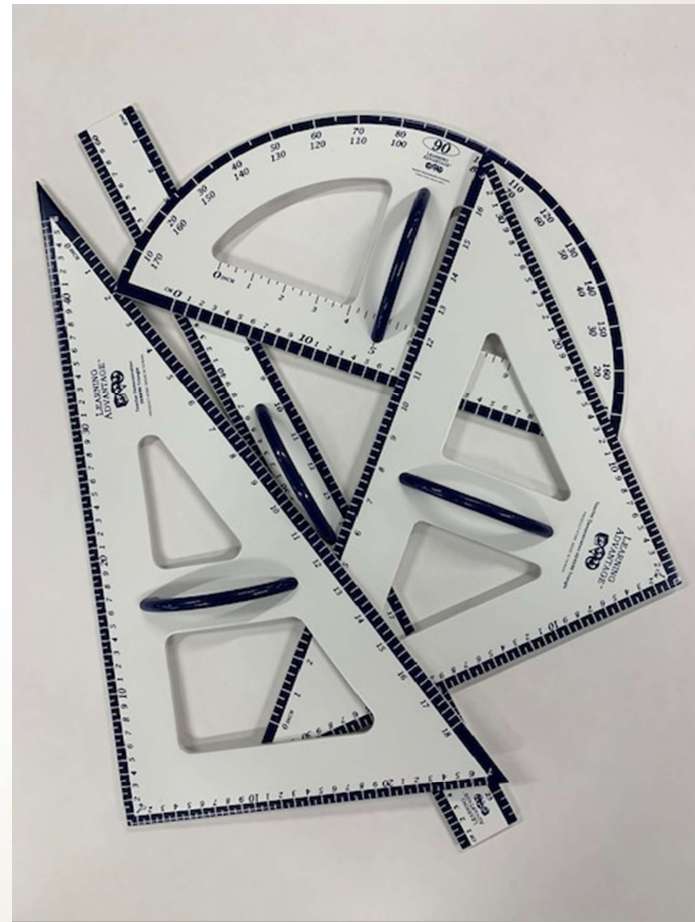
- Visualize 3D Objects
- Perimeter
- Area
- Volume
- Surface Area



MATH 0090A

Geometric Tools

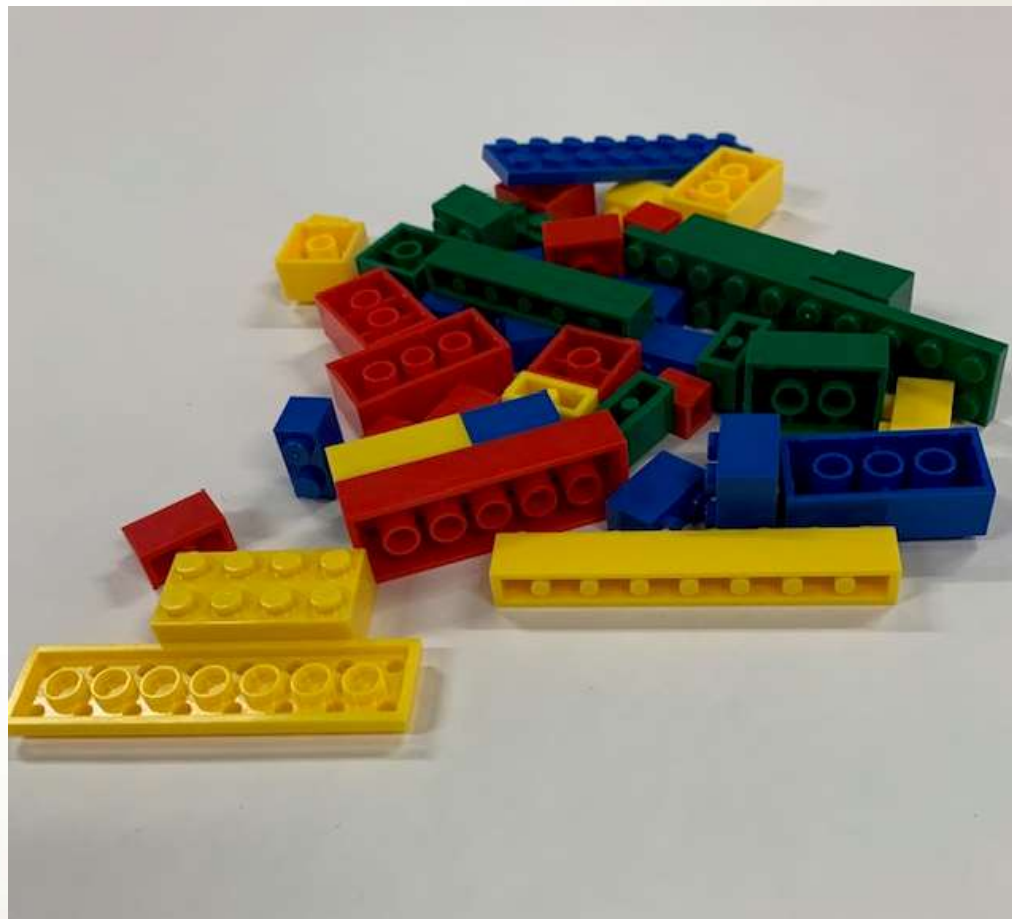
- Aids in Instruction
- Teaches students the correct way to use.



MATH 0090A

Legos

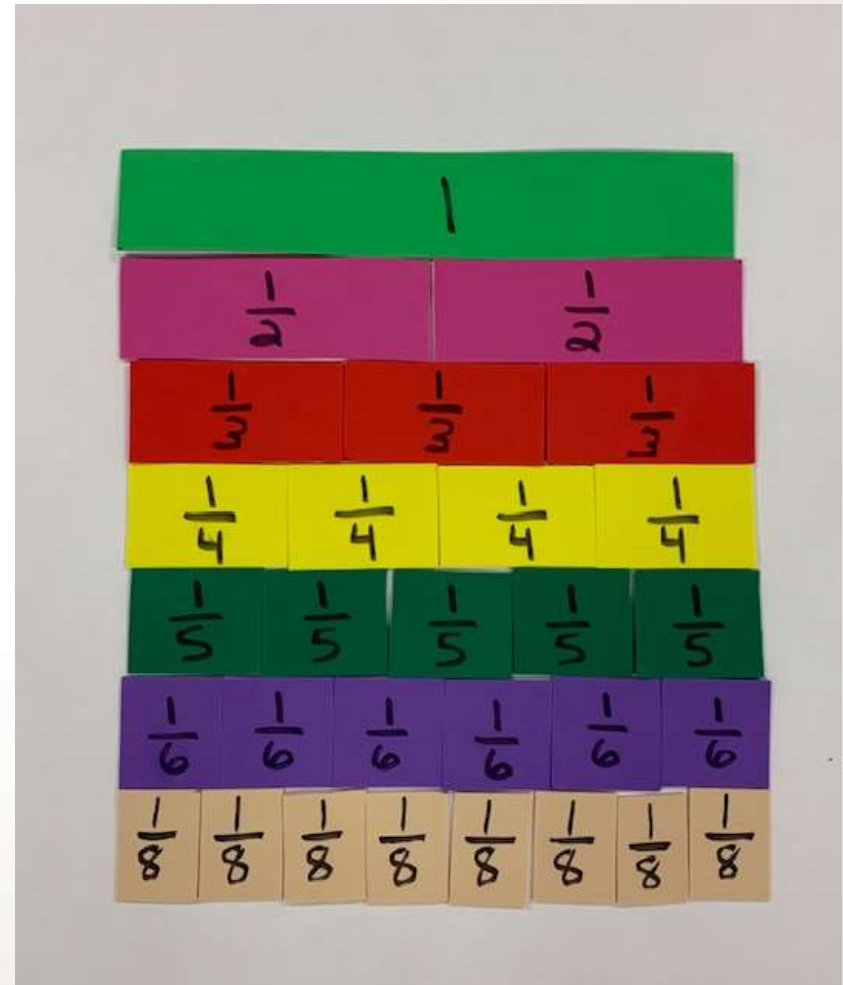
- Visualize 3D Objects
- Perimeter
- Area
- Volume
- Ratios
- Proportions



MATH 0090A

Fraction Strips

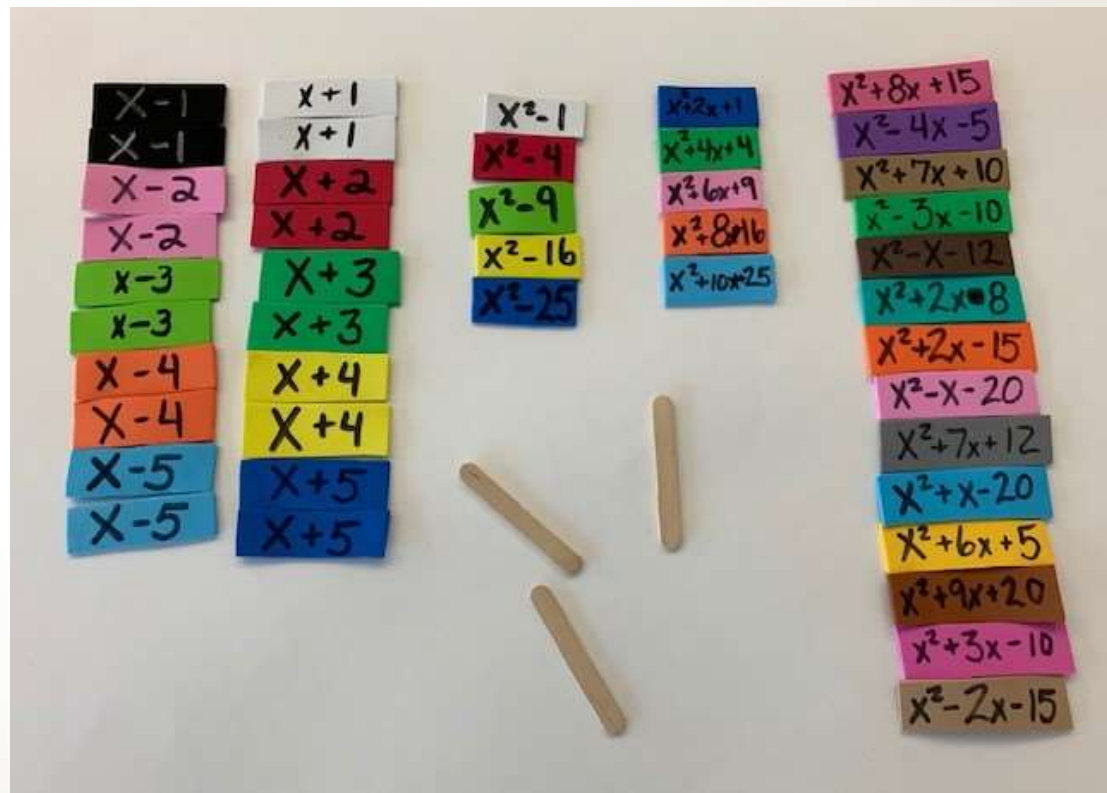
- Comparing Fractions
- Adding Fractions
- Subtracting Fractions
- Measurement



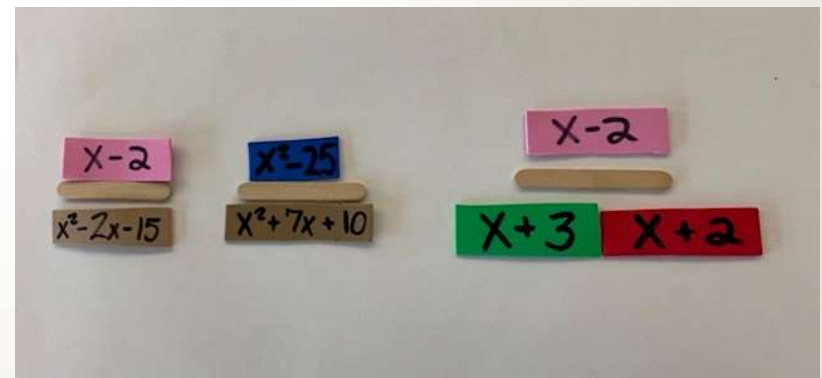
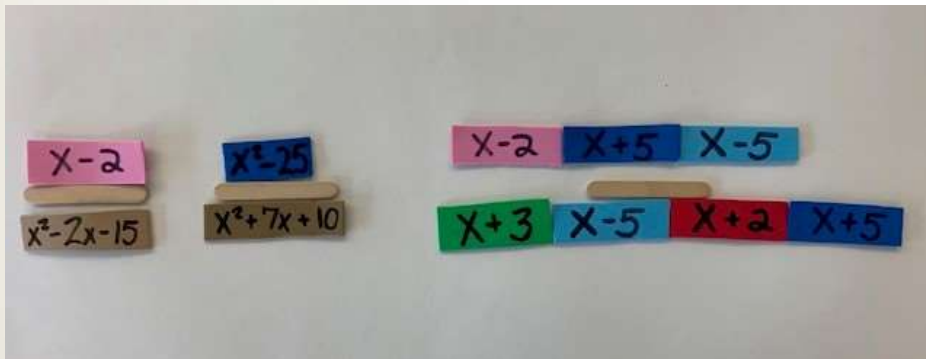
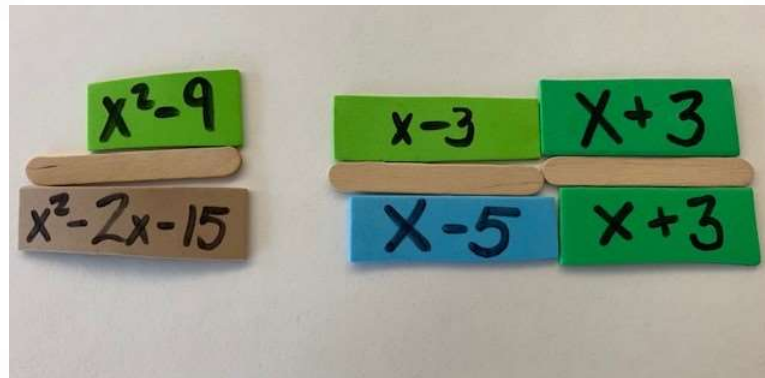
MATH 0090Q

Rational Expressions

- Simplifying
- Equivalent Expressions
- Adding Expressions
- Subtracting Expressions
- Multiplying Expressions
- Dividing Expressions



Examples



MATH 0090Q

Cards

- Adding/Subtracting Integers
- Multiplying/Dividing Integers
- Working on positive/negative signs
- Ratios
- Proportions



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Radical Expressions

- Simplifying Quotients
- Simplifying Radicals
- Understanding positive/negative exponents

$$\frac{2x^4y^2z}{2^2 \cdot 3x^2yz^2}$$

$$\sqrt{5^2 \cdot 7 \cdot y^2 \cdot z^3}$$

MATH 0090A

Hands-On Equations

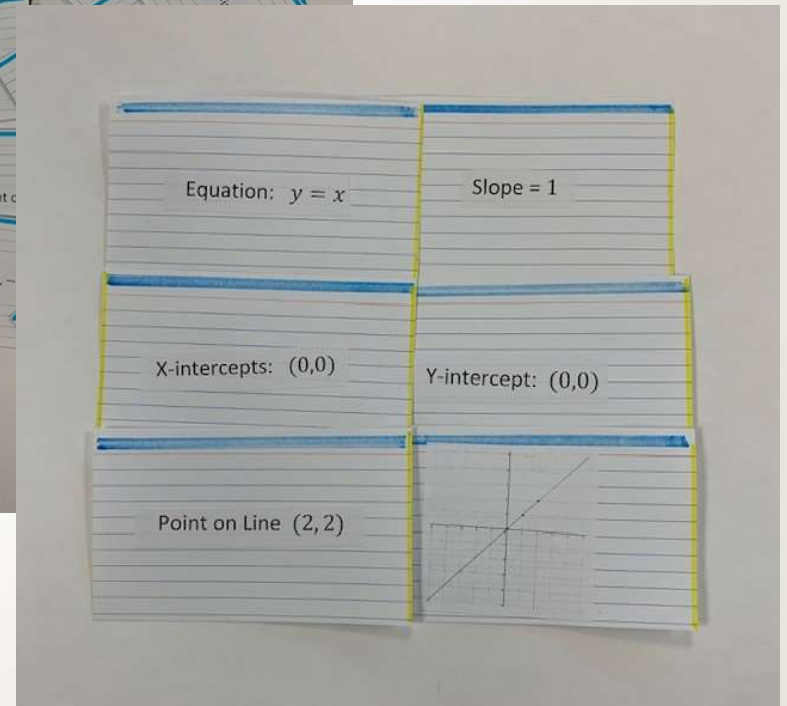
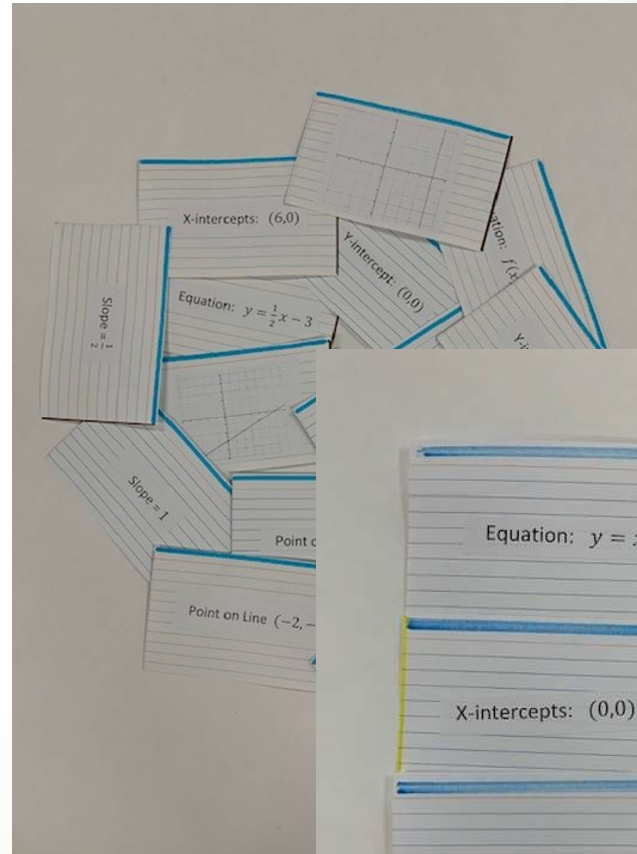
- Understanding Addition Principle
- Understanding Multiplication Principle
- Solving Equations



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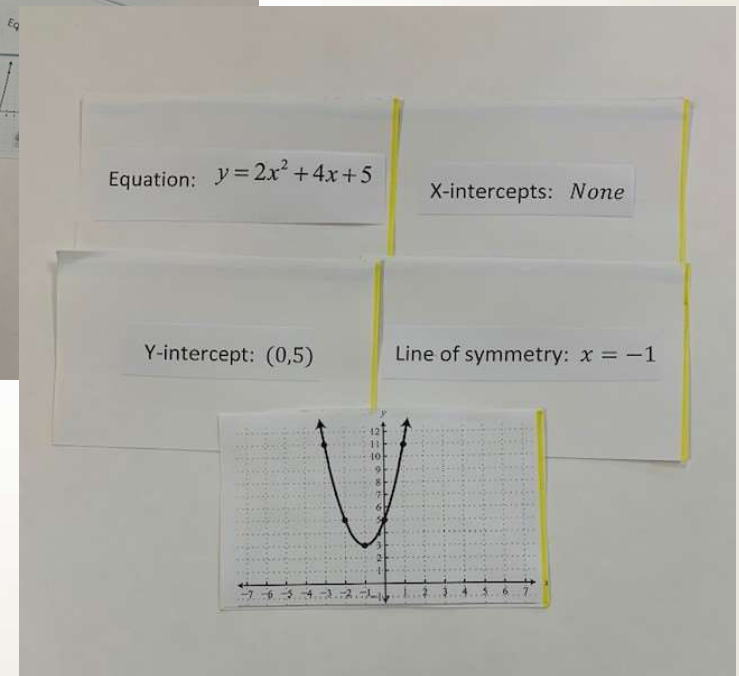
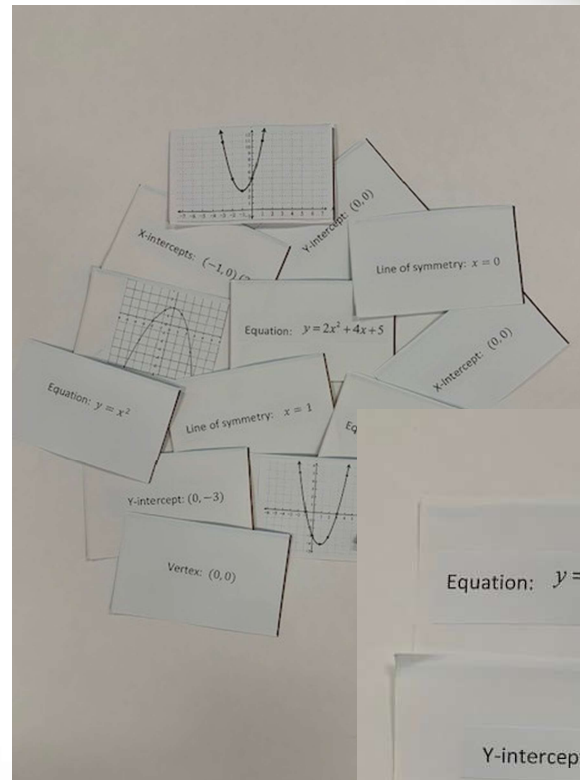
Linear Equations

- Sorting the cards with the following concepts:
- Equation
- Slope
- X-intercept
- Y-intercept
- Point on the Line
- Graph



Quadratic Equations

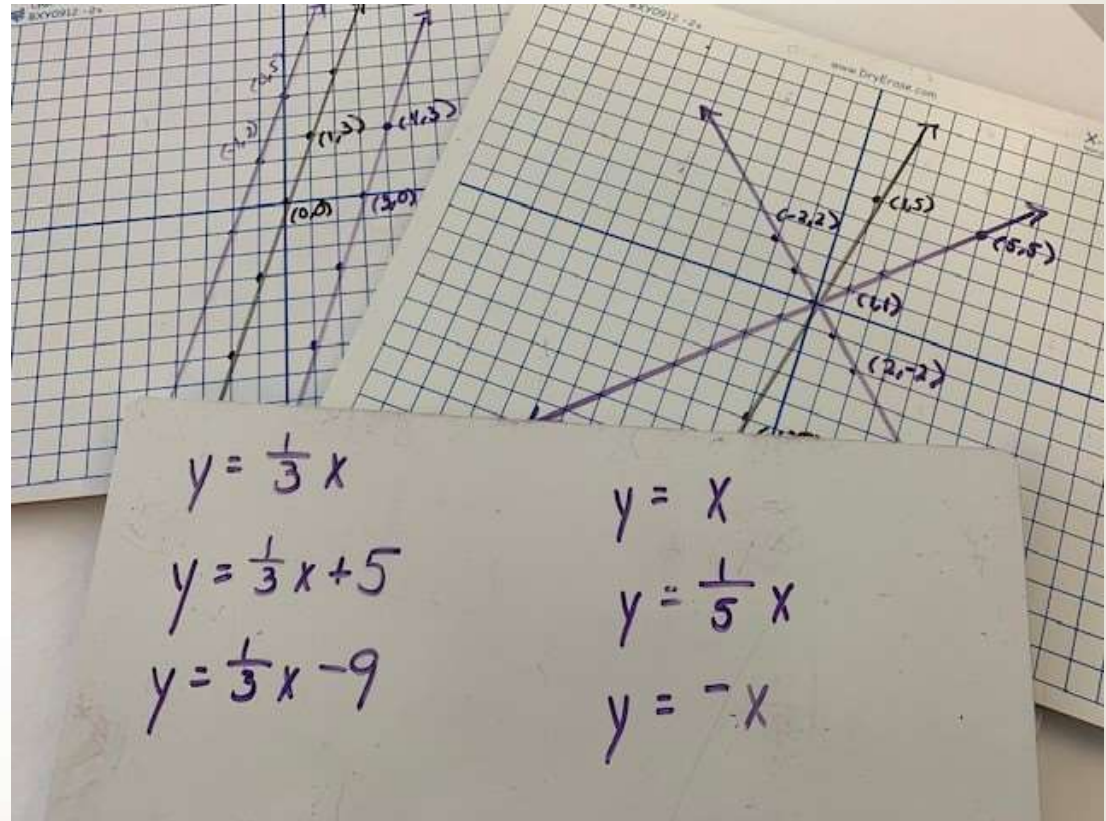
- Sorting the cards with the following concepts:
- Equation
- Line of Symmetry
- X-intercept
- Y-intercept
- Graph



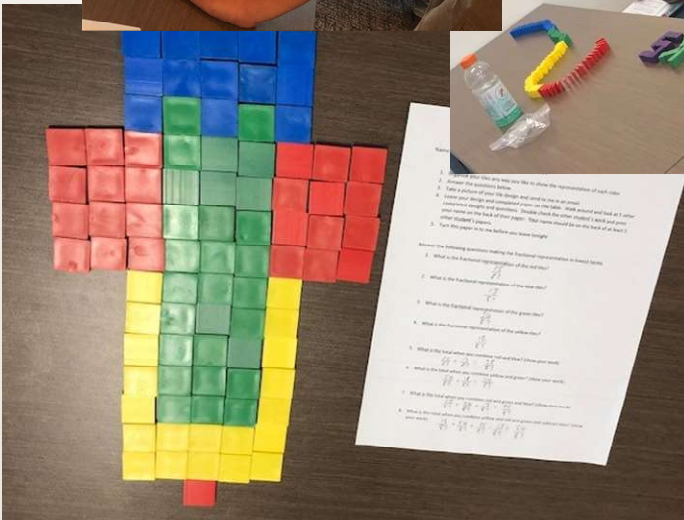
MATH 0090Q

White Boards

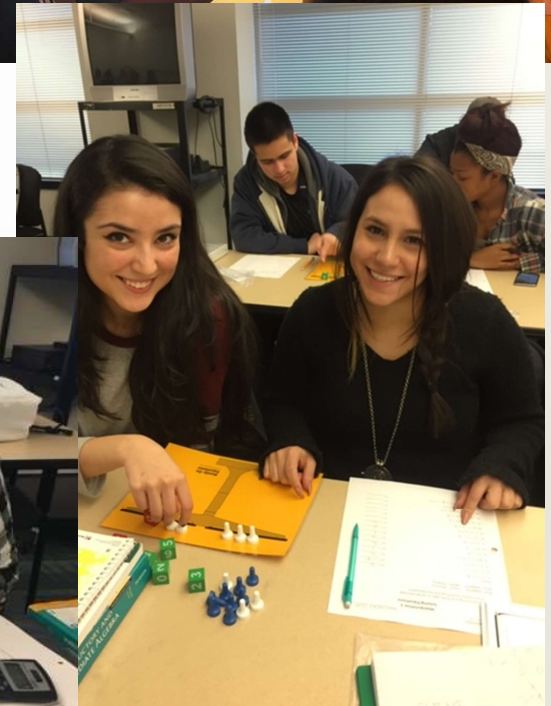
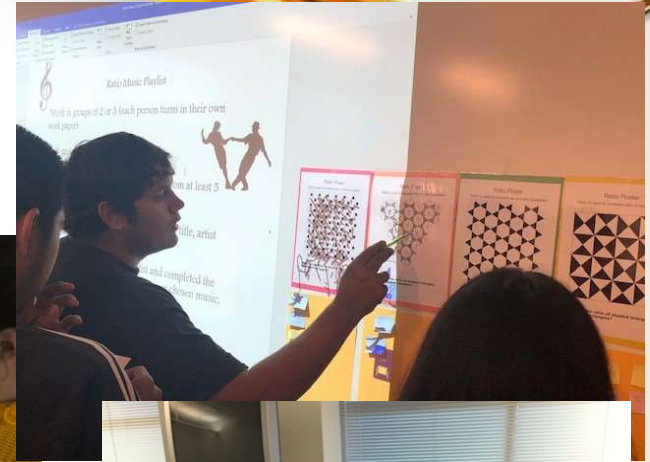
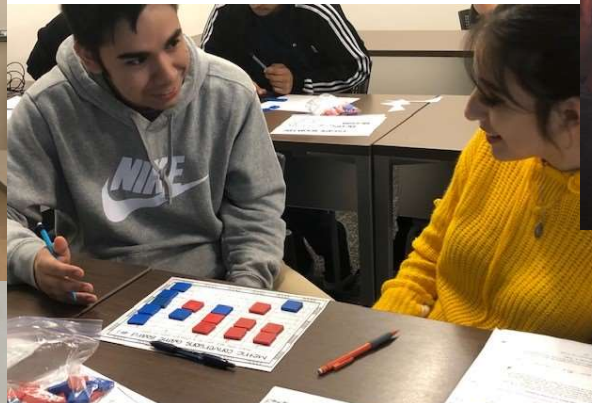
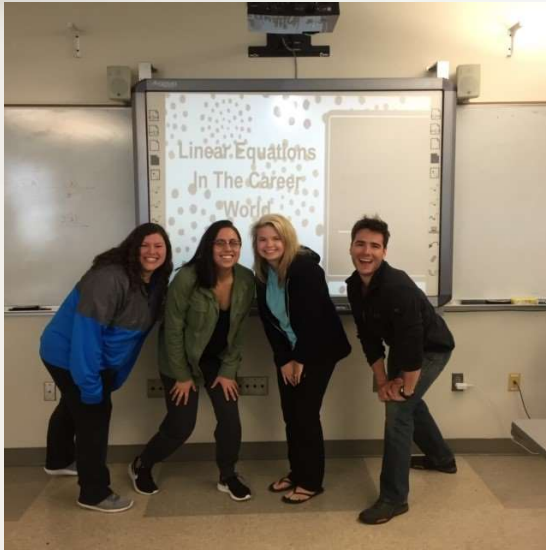
- Students' Favorite
- Used for finding perimeter, area, etc.
- Plotting points, graphing linear equations, quadratic equations, logarithmic equations, exponential equations, etc.
- Pythagorean Theorem



Students and Other Manipulatives



Students





Group Projects

Recipe Activity - fractions

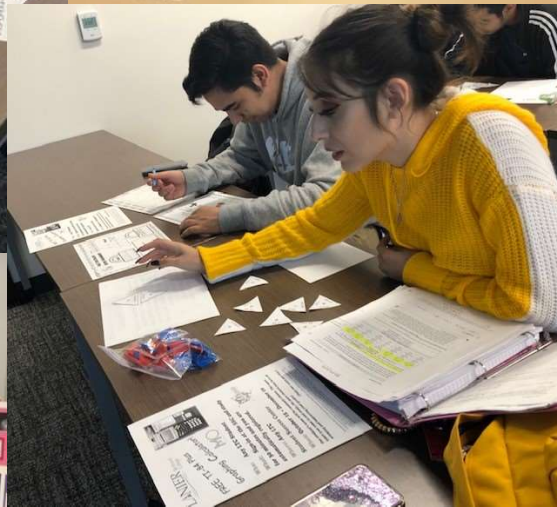
Finding the Cost of a Social Event – estimating skills, decimals, percent

Recipe Activity – US Customary/Metric System

Room Makeover – estimating skills, measuring, perimeter, area, cost

Filing Containers – estimating skills, 3D forms, volume, decimals, discounts, cost

It's All About the Students



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Thank You!