Illinois Math Badging Initiative

Showcase

April 19, 2023

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EDUCATION SYSTEMS CENTER *at* NORTHERN ILLINOIS UNIVERSITY

WELCOME!

Illinois Math Badging Initiative

Please let us know you're here in the chat!

- Name
- Title
- Organization

Feel free to unmute or use the chat for comments or questions anytime.

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Agenda

1. Introduction to Badges
2. Charleston High School
3. IMSA
4. Phoenix STEM Military Academy
5. Ridgewood High School
6. Round Lake High School
7. Virtual Transitional Math
8. For more information

Illinois Math Badging Initiative

What are Math Badges?

An Alternative Credentialing Mechanism

- Aligned to:
  - Illinois Learning Standards (incorporating CCSS)
  - Transitional Math competencies
- Stackable
- Translate into credit for:
  - Transitional Math
  - High school math courses
  - Early college credit

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How do Math Badges work?

Students can certify learning from a broad range of sources:

- Coursework
- Independent study
- Summer school
- Work-based learning, etc.

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Why Math Badges?

Improve math outcomes and advance racial equity through:

- Stronger **alignment** to math needed for secondary, postsecondary, and career success
- Students **demonstrate knowledge** not captured by grades
- Opportunities to **develop and reinforce** math knowledge and skills
- **Validate learning** outside of the classroom through work-based and other applied learning.
- **Customization** engages students with math directly related to college and career interests

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It’s not just about badges!

Badges are a **tool** to:

- Solve a problem
- Rework a system
- Change a structure
- Transform teaching
- Focus on learning

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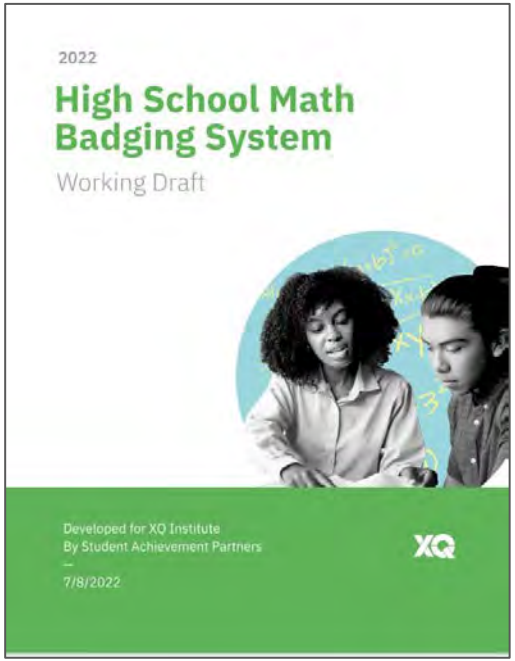
In partnership with XQ Institute

Deep Dive

What's in a Badge?

Each math badge includes these elements:

- Mathematical content and practice expectations
- Learning principles
- Examples of rich problems
- Evidence of learning (how badges can be assessed)



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As we go through the showcase consider:

I was intrigued by ...

I learned ...

I could apply this idea in my own work ...

Charleston High School Career Pathways

- Agriculture, Food & Natural Resources
- Arts and Communication
- Finance and Business Services
- Human and Public Services
- Health Sciences and Technology
- Information Technology
- Manufacturing, Engineering, Technology & Trades
- Education

Charleston High School Career Pathways Timeline

-7th and 8th Graders begin career exploration

- 9th graders continue career exploration

- Students choose a pathway by the end of their freshmen year

- 10th grade students take courses based upon their chosen pathway

-11th and 12th graders continue coursework, and participate in work based learning experiences (i.e internships, mentorships/ apprenticeships, job shadowing, co-op/ work experience.

- industry credentials/ certifications

- Adaptive competencies/ cornerstone projects

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Charleston High School
Geometry in Construction (GIC)

- Geometry for METT pathway
- Covers geometry and construction learning targets
- Project Based Assessments
- Gives students a meaningful learning experience

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Charleston High School Math Badges in GIC

- Students use portfolio to prove mastery of Geometric Concepts
- Students will earn 4 Math Badges as a requirement for the course
    - M151 Modeling with Geometry
    - M152C Reasoning and Proof Through Congruence
    - M152S Reasoning and Proof Through Similarity
    - M153 Coordinate Geometry
- Math Badges will ensure rigor necessary for advancement in mathematics

Charleston High School
Math Badging Portfolio for GIC

- Evidence for each learning target
  - Traditional class work
  - Quizzes
  - Tests
  - Pictures of onsight work
  - Journal Entries
- Student Binders
- Empower (Online Learning Platform)

Phoenix STEM Military Academy (PSMA)

How are we using the badges?

- **Acceleration** (Competency Based Education)
- **Engineering & Math Courses**
- Once students complete **project-based activities** in our courses offered during the summer.
- **Equity & Access** to Enrichment Opportunities: Robotics, Internships, Dual Enrollment Courses.

Why are we using badges?

- Promote **equity** amongst the students.
- **Encourage** students to explore STEM courses
- Give students the **opportunity** to reach higher level math classes
    - AP Precalculus
    - Calculus AB/BC

What outcome(s) are we hoping to achieve?

- **Higher number** of students enrolled in higher level math and STEM courses
- G**reater confidence** in STEM courses
- **More participation** in STEM courses allows students to achieve success in regular HS STEM courses
- **More STEM careers**

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Ridgewood High School

How are we using the badges?

2023 - 2024

- **Transitional Math Courses** (TMTM and TMSTEM)
- Provide students the opportunity to more **flexibly earn credit** while working in the same classroom and through outside experiences

2024 - 2025

- **Integrated Math 1, 2, & 3**
- **Differentiation** in badges earned during the final portion of Integrated Math 3 depending on their career pathway and senior level course.

Why are we using badges?

- Allow for **more flexibility** in the process of earning math credit
- Provide students with opportunities to earn badges that are **applicable and relevant** to their career pathway.
- Make the **assessment process more equitable** for all students.

What outcome(s) are we hoping to achieve?

- Increase student **independence and ownership** of their learning.
- Develop students' **competencies and confidence** in their abilities in mathematics through a variety of learning and assessment opportunities.
- Create a sustainable system of learning **mathematics for this new generation**.

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Round Lake High School D116

How we are using badges

- An alternate way for students to **move between** prep (double period), single, and honors classes
- An alternate way to take some courses without all necessary **prerequisite** courses
- Alternative **summative** assessment
- Optional alternative **retest opportunity**
- **Certification** of varied learning experiences and engagement with the learning principles
- Means to **increase ownership** through understanding of content & practice expectations through whole class processing and individual reflection

Problems we are addressing

- Place **greater ownership** of learning on students
- **Empower students** to understand the learning goals
- Develop **growth mindsets** in students and teachers
- Make classwork, homework, and **real life math experiences** "count" in a meaningful way
- Additional data for **placement decisions**
- To bring in alternative ways to **demonstrate learning** and show mastery

Outcomes we are hoping to achieve

- **Enrich** our students' learning
- Show the **relevance**/ importance
- Bring some more **joy** into math class.
- **Expand** our competency based educational opportunities

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Illinois Mathematics and Science Academy (IMSA)

Who: PROMISE Pipeline (Providing Opportunities for Math and Science Enrichment)

- **LS2S** - *Leading Students to Succeed* - 7th and 8th grade students; 16 Saturdays during the school year
- **SEAMS** - Summer Enrichment & Achievement in Math and Science - Rising 9th graders; 10 day residential camp
- **EIP** - Early Involvement Program - 9th graders; 10 Saturdays

Major work

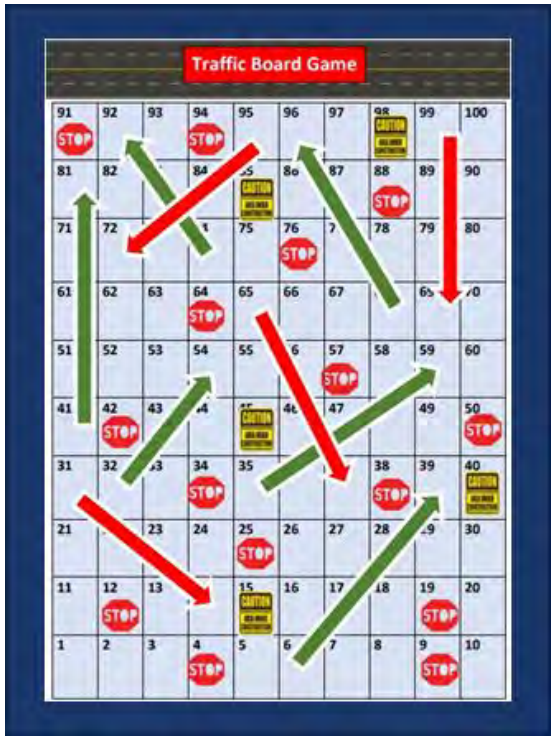
- Alignment of pre-assessments and placement tests to math badges to determine greatest areas of need
- Create curriculum of 20-30 intense content hours per badge of hands on integrated STEM projects

Still exploring

- Summer Robotics Camp for any Illinois HS student
- Summer Engineering Internships and Research
- J-term course for a specific badge previewing core concept for next sequenced class
- Asynchronous remote enrichment for students “on the bubble” of the next math course form placement exam

Illinois Mathematics and Science Academy (IMSA)

Sample lesson development *(draft)*



MOTOR VEHICLE PURCHASE CONTRACT

BUYER'S AND CO-BUYER'S NAME AND ADDRESS:	SELLER'S NAME AND ADDRESS:

DESCRIPTION OF PROPERTY

New/Used	Year	Make	Model	Style	Vehicle Identification #	ODO Mileage

PURCHASE PRICE

Total Vehicle Price

A. Retail price of motor vehicle, options, accessories and fees. $_____(A)

B. Down Payment (subtract from A.) $_____(B)
C. Percentage Rate (Interest Rate) $_____(C)
D. Number of monthly payments _____(D)

Monthly Payment (A through D) $_____

Paid to Government Agencies (onetime fee)

A. Vehicle's State Taxes Fee $ 100 (E)
B. Registration/Transfer/Titling Fees $ 310 (F)
C. Other Fees _____ $_____(G)

Total Government Fees (E through G) $_____(H)

Due Today

A. Down Payment $(_____) (I)
B. Registration/Transfer/Titling Fees (H) $(_____) (J)
B. Upgrades _____ $(_____) (K)

Total Due Today (I through K) $_____

ROLL THE DICE

Down Payment	
1	$0
2	$500
3	$750
4	$1000
5	$1500
6	$2000

Interest Rate	
1	17.9%
2	13.7%
3	8.3%
4	6.2%
5	5.3%
6	4.6%

# of Payments	
1	48 months
2	
3	60 months
4	
5	72 months
6	

Other Fees	
1	Title correction $50
2	
3	
4	No fee
5	
6	

Upgrades	
1	No upgrades
2	Sport Package $750
3	Winter Under Coating $500
4	Winter Tires $1000
5	Tinted Windows $250
6	Remote Starter $450

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Illinois Mathematics and Science Academy (IMSA)

Sample lesson development *(draft)*

Set of location coordinates (one row = to one location)

$4^2 - 3(5-1) - 8 - (-4)$	$5 + 3(50 + 10) - 50$ E
$(2 + 6 \times 2 + 2 - 4) \times 2 - (-6)$ N	$10^2 + 2(10 + 2^3) - 1$ E
$3[8 \times \frac{15}{5} - (5 + 9)]$ S	$\sqrt{1600} + (6^2 + 2^2) + 5^2$ E
$\{4 + [(8-7) \times 6 - 55 \div 11]\} \times 3$ N	$(-2)(-10) + \lvert 60 \rvert + \frac{70}{7}$ E
$\frac{84}{\{12+[(6-3\times3)-7]+4} + 1$ N	$2[26 - (-4)^2] + 40$ E
$(-3)^2 \div 3 \times (5 - 10 - 8) + 69$ S	$\lvert -20 \rvert + 4^2 + 3^2$ E

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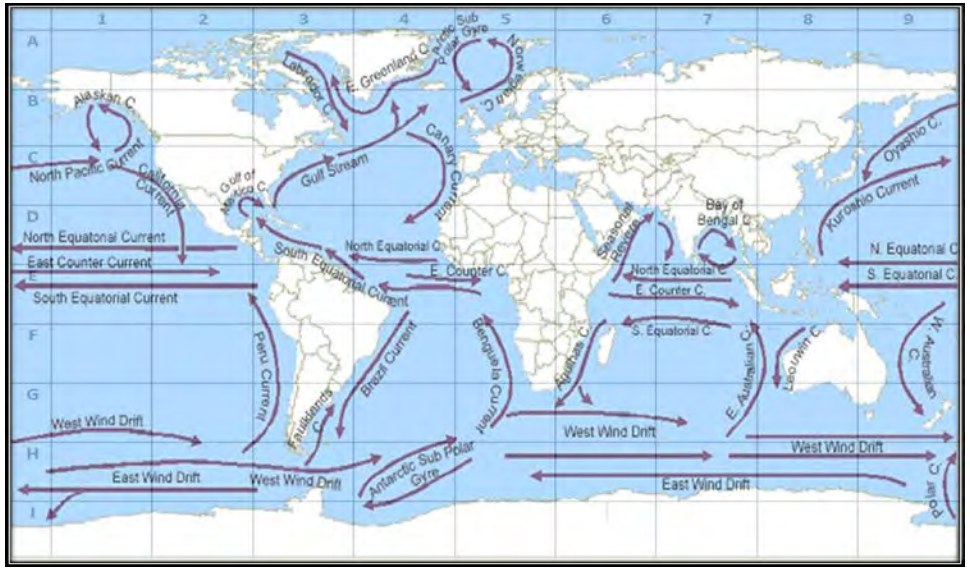
Sample lesson development *(draft)*



Event	Spill Location	Washed Ashore Location(s)
Nike Shoes - 1992	48°N, 161°W	Washington state Vancouver Island
Nike Shoes - 2002	Northern California	Pacific Northwest
Doritos	Off shore of Wilmington, Delaware	Frisco, North Carolina
Hockey Gloves Shin Guards Chest Protectors	Pusan, South Korea Mid-Pacific Near Int'l Dateline	Oregon to Alaska
Hershey Kisses Tootsie Rolls, Reisen Chocolate Werther's Butterscotch	11 miles off of Cape Cod National Shoreline	Nantucket Island
Legos	50°N, 5.7°W	Cornwall, United Kingdom
Bathtub Toys – Plastic Yellow Ducks, Red Beavers, Blue Turtles, Green Frogs	45°N, 178°E	Hawaii Alaska Pacific Northwest Shores (U.S.) Britain Ireland

Where did it go?

IMSA
imsa.edu

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Virtual QL/Stats Transitional Math Course

Offered through Illinois Virtual Schools & Academy (IVSA)

Will be asynchronous via Canvas with synchronous group projects through an experiential learning platform (Practera) at the end of each unit

To receive statewide portability for this course through the community college approving you must enroll using the course package as is and the IVSA teacher of record

You can participate in adjusted models with approval through your local community college

To learn more:

Info session recording and presentation

To enroll:

Please submit this interest form

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For more information:

https://edsystemsniu.org/illinois-math-badges-initiative/

If you're interested in learning more about becoming a pilot site:

Email: greynolds4@niu.edu

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