

Math Pathways and Middle School

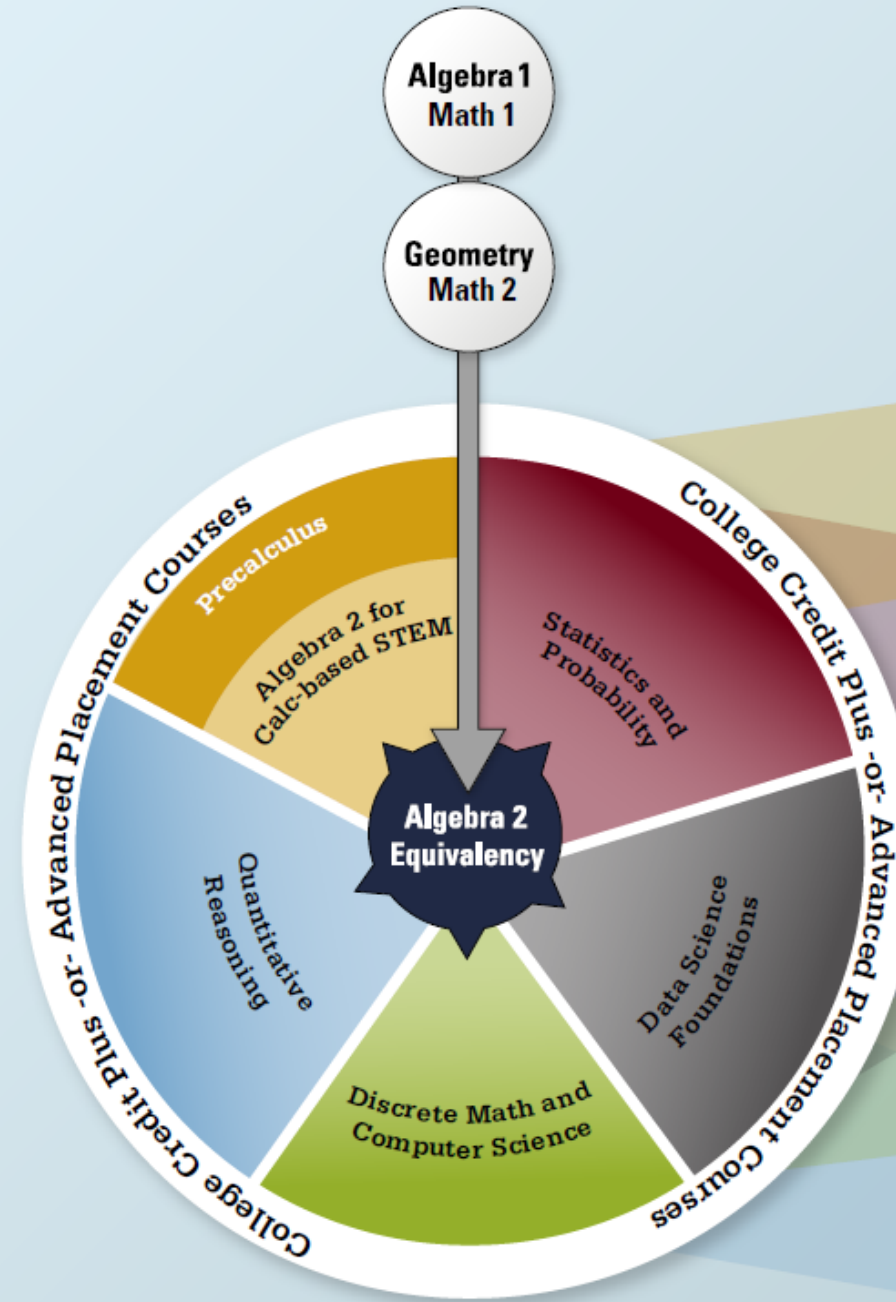


November 10, 2021

Ohio's High School Math Pathways

Math Pathways

ALL
Pathways are
college
preparatory



Potential Careers	
Algebra 2	
Doctor/Veterinarian Engineer Farm Manager	Financial Manager Scientist
Statistics and Probability	
Human Resource Manager Medical Technician Nurse	Political Scientist Social Worker Firefighter
Data Science and Foundations	
Software Quality Assurance Journalist Marketing Research Analyst	Public Relations Specialist Sales Representative
Discrete Math / Computer Science	
Computer Systems Analyst Computer Support Specialist Cybersecurity Analyst	Software Developer Web Developer
Quantitative Reasoning	
Elementary School Teacher Graphic Designer Lighting/Set Designer	Musical Composer Technical Writer/Editor Construction Tradesperson

Districts may offer 1 or more courses listed in addition to Algebra 2.

Purpose









What can we do already in Middle School to prepare and support our students so they can make “educated” choices for their future?

Counselors and Teachers are Important



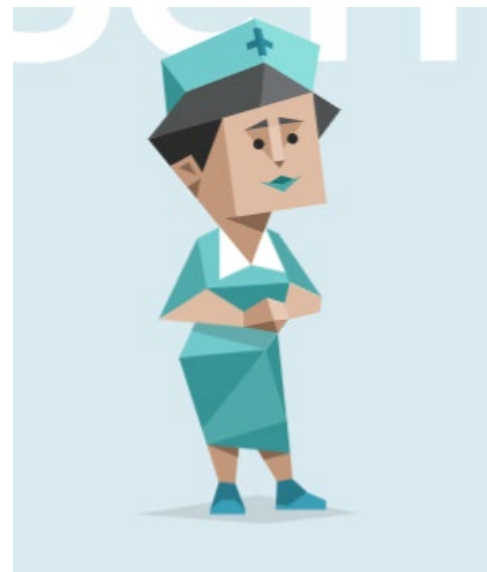
Interest Assessment and Career Explorations

Find a career I like 	Finish high school 	Get work experience 
Write a resume 	Get a job 	Get training 
Work for myself	Apply to college	Find job search help


Personality Type Test



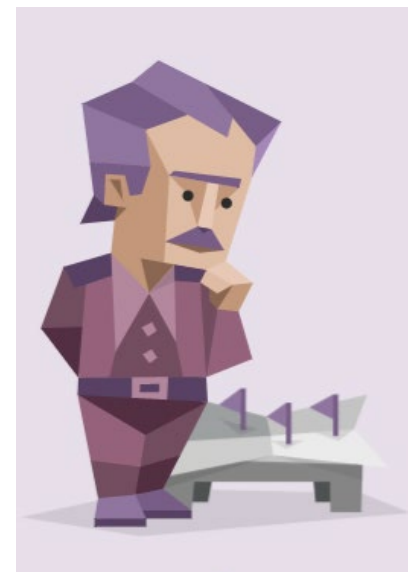
16 Personalities



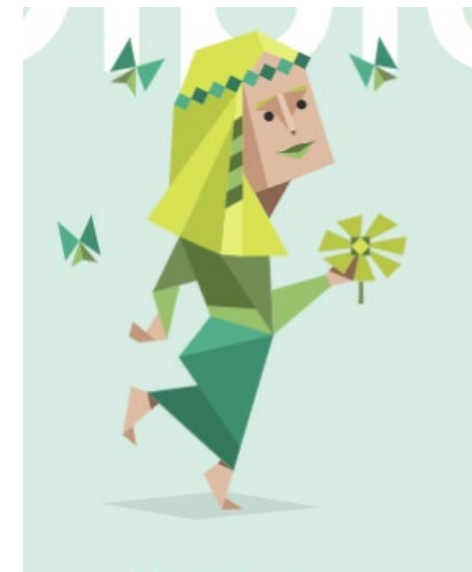
Defender
ISFJ-A / ISFJ-T



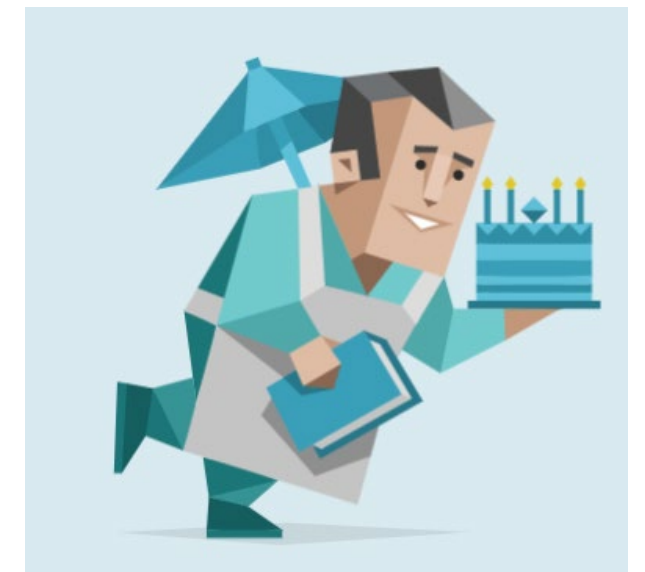
Adventurer
ISFP-A / ISFP-T



Architect
INTJ-A / INTJ-T

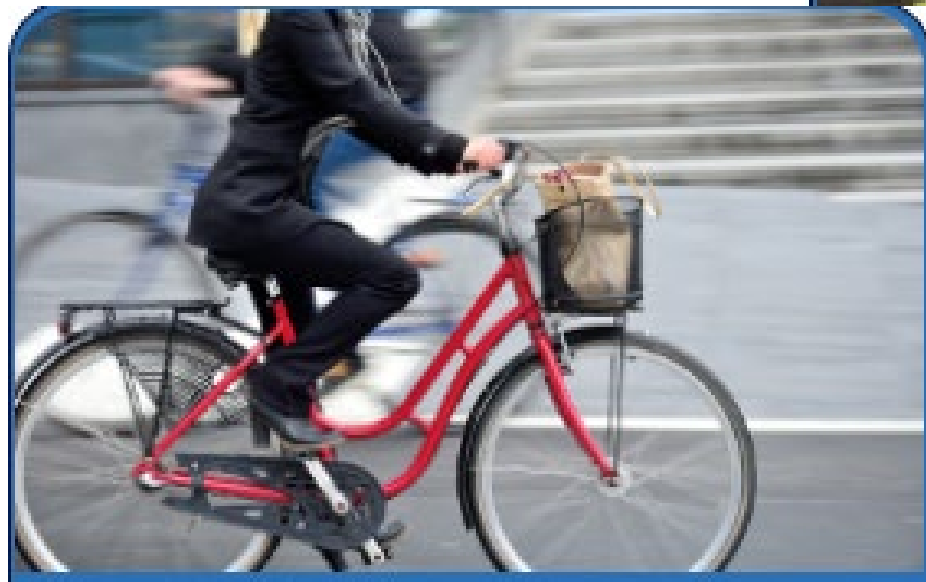


Mediator
INFP-A / INFP-T



Consul
ESFJ-A / ESFJ-T

Lifestyle Calculator



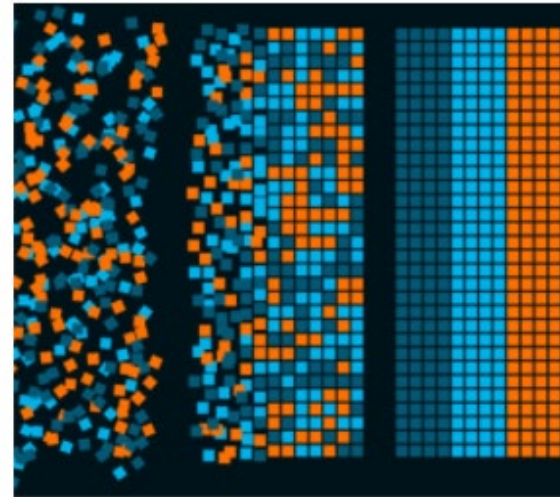
Exposure to Data Science



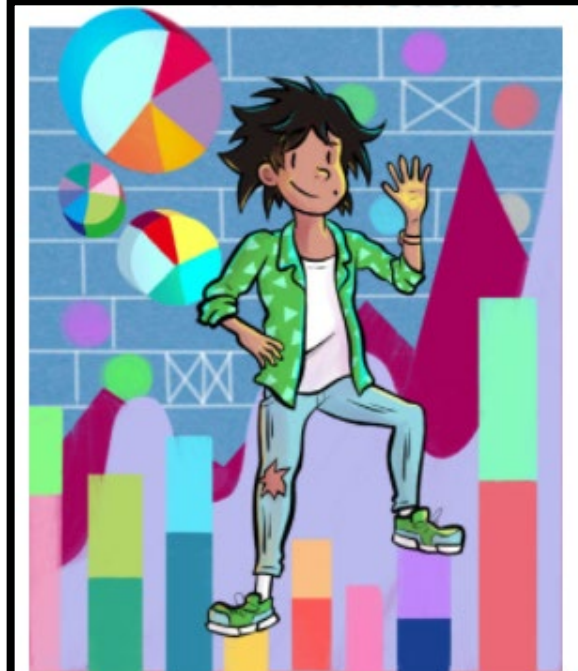
Data Talks



21st Century Teaching
and Learning: Data
Science



Data Science Online
Course Lessons



A Picture Book
Introduction to Data
Science

Exposure to Computer Science



All grades
Pre-reader
Grades 2-5
Grades 6-8
Grades 9+
Beginner
Comfortable

Search

Sort by
 Recommended

Created by
 All

Classroom technology

- Computers
- Android
- iPad/iPhone
- Screen reader
- Poor or no internet
- No computers or devices

Topics

- Science
- Math
- Social Studies
- Language Arts
- Art, Media, Music

Arcade

Play, Design & Code Retro Arcade Ga...
Grades 2+ | Blocks

CS First unplugged

CS First Unplugged
Grades 2-8 | Blocks, Unplugged, Scratch

Silent Teacher

```
def hello (a, b)
  return a + b

hello(3, 1)
4

def hello (a, b)
  return a * b

hello(2, 3)
6
```

Discover Python with Silent Teacher
Grades 6+ | Python

MAKE YOUR OWN GAMES WITH CODESPARK ACADEMY

codeSpark Academy with The Fooks: ...
Pre-reader - Grade 5 | Blocks

CODE

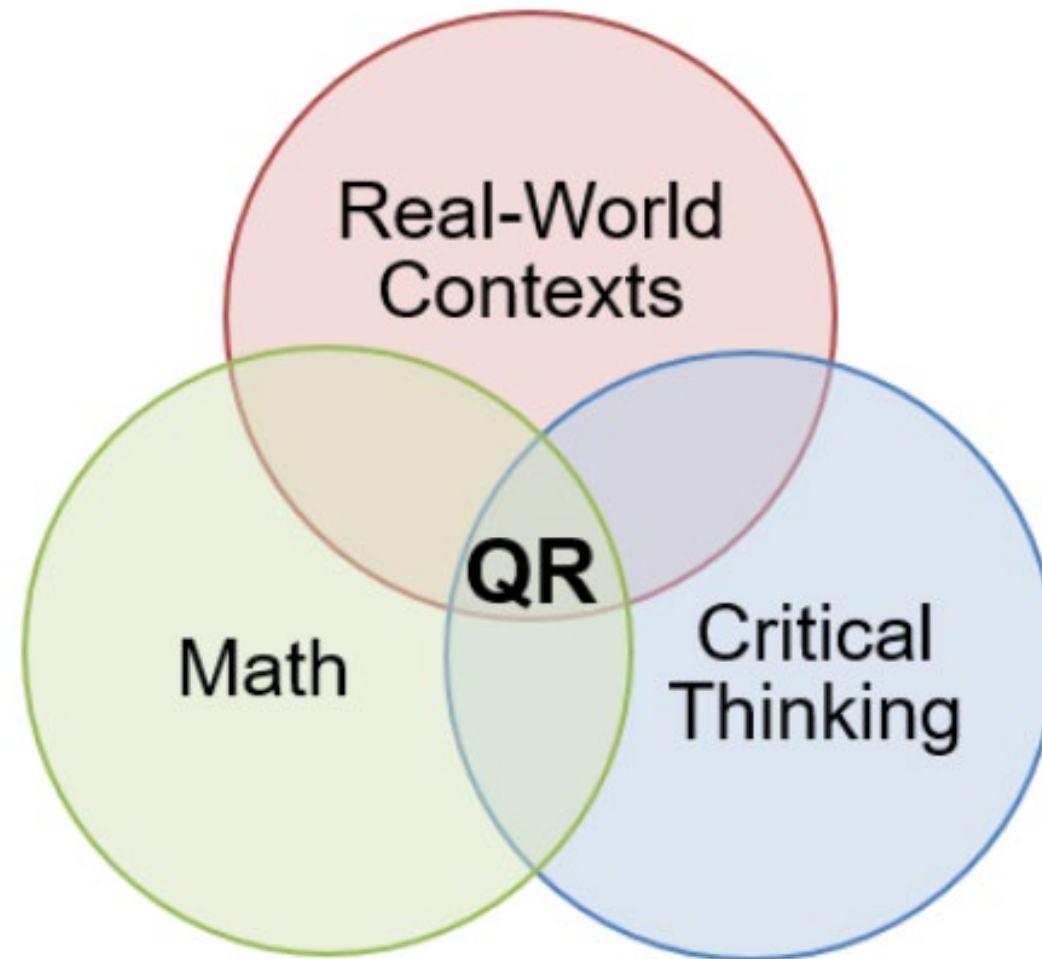
Dance Party
Grades 2+ | Blocks

OZARIA

Ozaria: Your Journey Begins
Grades 6+ | JavaScript, Python

Quantitative Reasoning

Provide rich tasks where problem solving is required.



Standards for Mathematical Practice

1. Make sense of problems and persevere in solving them
2. Reason abstractly and quantitatively
3. Construct viable arguments and critique the reasoning of others
4. Model with mathematics
5. Use appropriate tools strategically
6. Attend to precision
7. Look for and make use of structure
8. Look for and express regularity in repeated reasoning

What is a Goal of the Mathematics Classroom



A goal is to build **engaged students** that are willing to **think about** any task, individually or in collaboration with others.

A goal is to design our lessons such that students have **the opportunity to learn how to think.**

**Thinking is a
necessary precursor
to learning,...**

**...and if students are
not thinking ...**

...they are not learning!

**If We Want Our Students to
Think. . .**

**. . . We Need to Give Them
Something to Think About!**



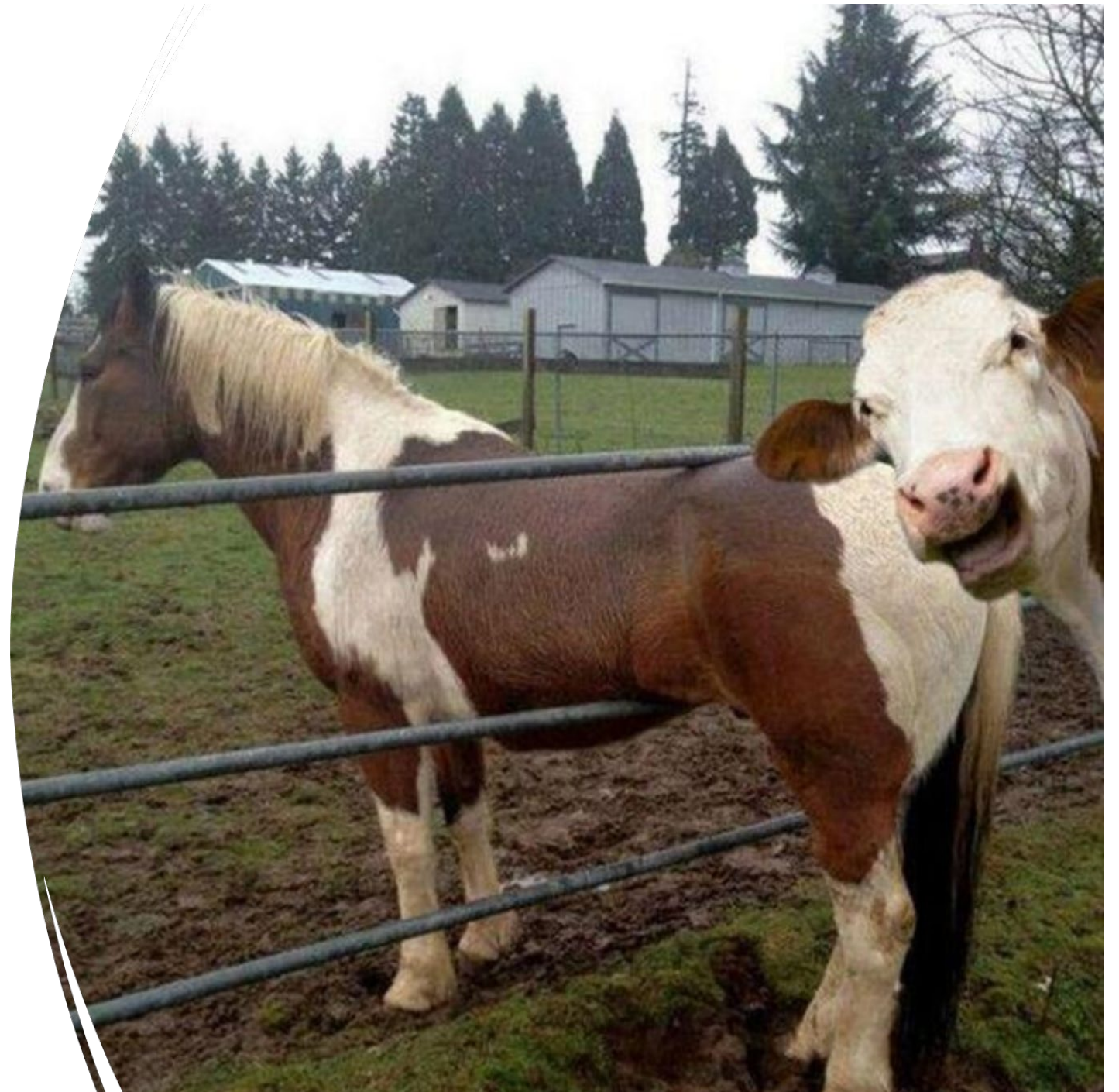
What Types of Tasks We Use is Important

Problem Solving

- . . . is what we do when we do **not** know what to do,
- . . . is NOT precise application of a known procedure,
- . . . is NOT the implementation of a taught algorithm, and
- . . . is NOT the smooth execution of a formula.

Problem Solving is a Messy, Non-Linear and Idiosyncratic Process

“Good problem-solving tasks require students to **get stuck** and then to **think**, to **experiment**, to **try** and to **fail**, and to **apply their knowledge** in novel ways in order to get **unstuck**.”



F.A.I.L.

First
Attempt
In
Learning



Resources

[Model Curriculum](#)

[Progressions](#)

[Coherence Map](#)

Resources

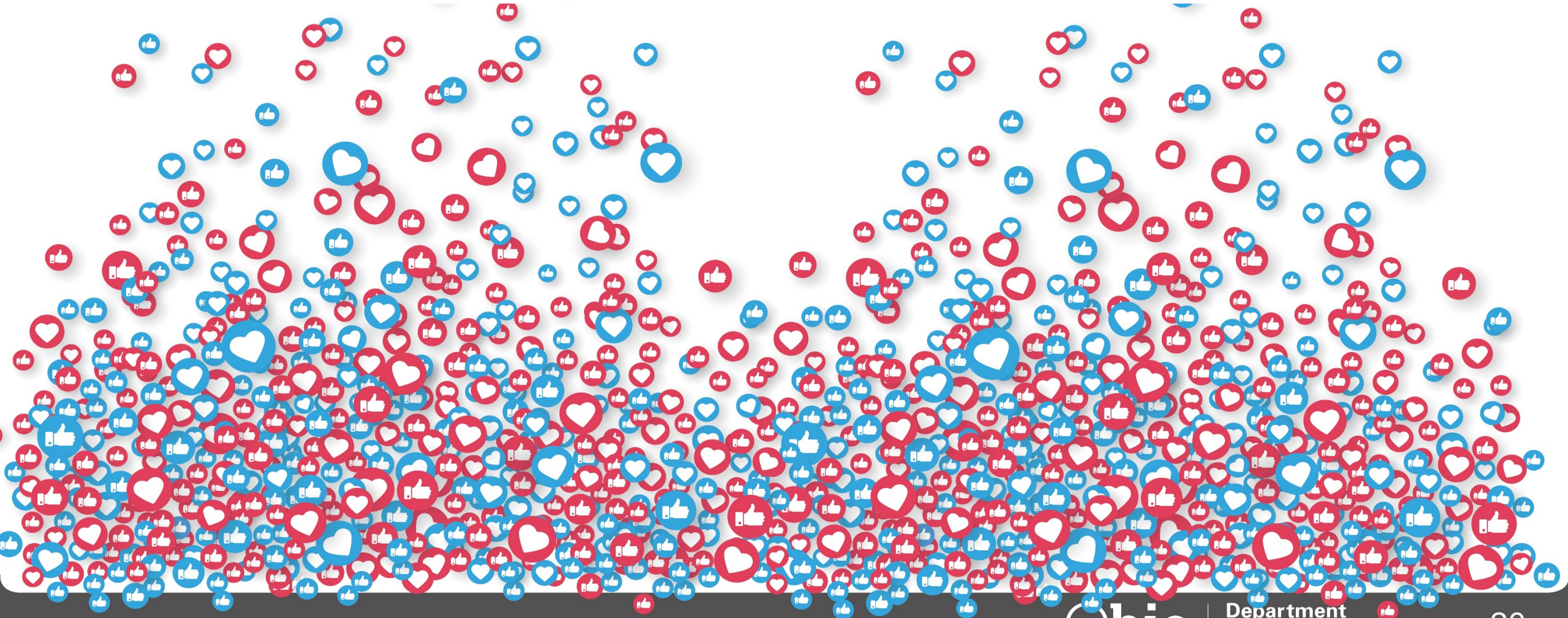
[Math Assessment Project](#)

[YouCubed](#)

[Peter Liljedahl](#)

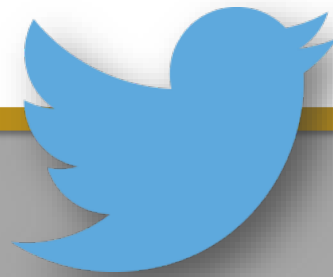


@OHEducation



**Share your learning
community with us!**

#MyOhioClassroom



Celebrate educators!

#OhioLovesTeachers