



# Mathematics at Fox Chapel Area School District

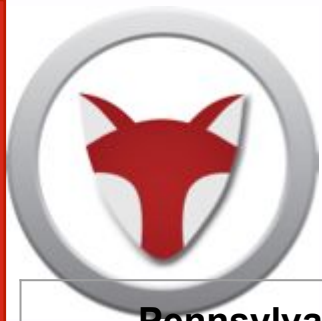
Fox Chapel Area School District  
District Forum  
November 14, 2017



# Presentation Goals

- PA Legacy vs. PA Core Standards
- Professional Development
- Program Reviews
- Eureka Math
  - Overview
  - Research and Literature
  - Data
- Tiers of Intervention
- A Practitioner's Perspective



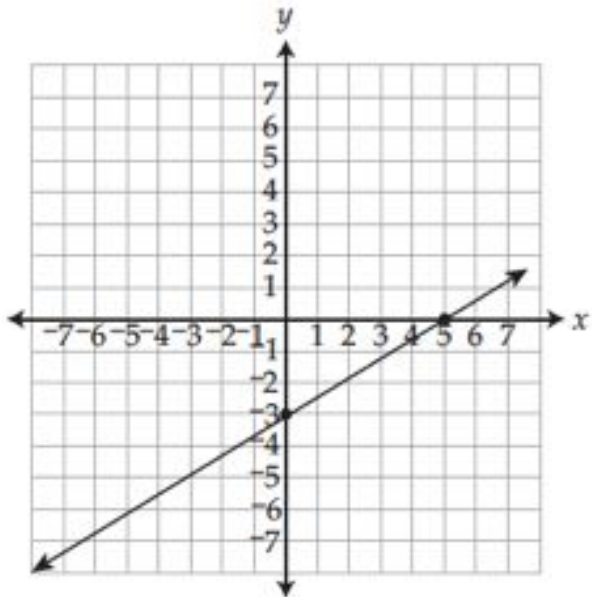


# Elementary Legacy vs. Core

Pennsylvania Legacy Standards	Pennsylvania Core Standards
<p>Standard: Apply place-value concepts and numeration to counting, ordering, grouping and equivalency.</p>	<p>Standard: Apply place-value strategies to solve problems.</p>
<p>What is the place value of 5 in the number 2,995?</p> <ul style="list-style-type: none"><li>A. ones</li><li>B. tens</li><li>C. hundreds</li><li>D. thousands</li></ul>	<p>Three students were comparing how many times they each jumped on a trampoline.</p> <p>Jorge jumped 345 times. Keisha jumped 356 times. LeVar jumped more times than Jorge and fewer times than Keisha.</p> <p>When each student's total was rounded to the nearest hundred, Jorge's total and LeVar's total were the same.</p> <p>Which value could be the number of times LeVar jumped on the trampoline?</p> <ul style="list-style-type: none"><li>A. 305</li><li>B. 347</li><li>C. 350</li><li>D. 362</li></ul>



# Middle School Legacy vs. Core

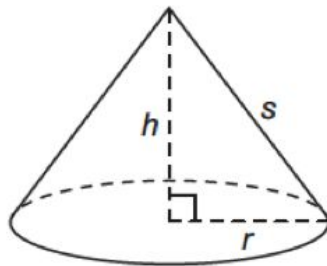
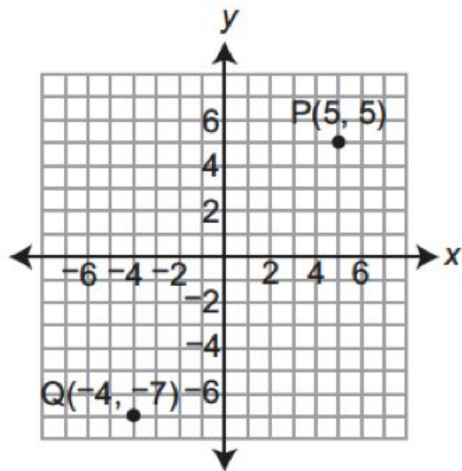


At what point does the line intersect the y-axis in the graph?

- A. (3, 0)
- B. (0, -3)
- C. (0, 5)
- D. (5, 0)



# Middle School Legacy vs. Core



Points P and Q are graphed on the coordinate plane shown below. A cone with radius  $r$ , slant height  $s$ , and height  $h$  is also shown below.

For which radius ( $r$ ) and slant height ( $s$ ) is the height ( $h$ ) of the cone the same as the distance between points P and Q?

- A.  $r = 5$ ;  $s = 13$
- B.  $r = 6$ ;  $s = 10$
- C.  $r = 8$ ;  $s = 17$
- D.  $r = 9$ ;  $s = 12$



# Professional Development and Process

- **Committee** established of 50 teachers from across the district and math department
- Partnered with **experts in the field** for professional development
  - Dr. Diane Briars, Past President of NCTM and NCSM
  - Dr. Peg Smith, University of Pittsburgh
  - Math Science Collaborative
  - ASSET Professional Development Group
- Comprehensive **review of curricular resources**
- **Ongoing professional development** in best practices in mathematics instruction
- **FCASD national presentation** on process



# The Fox Chapel Philosophy

- Establish unit and lesson plans aligned to **PA Core State Standards**
- Build **procedural fluency and conceptual understanding**
- Implement math **tasks** that promote reasoning and problem solving
- Use and connect mathematical **representations**
- Facilitate meaningful math **discourse**
- Support productive **struggle**
- Elicit and use evidence of **student thinking**



# Program Reviews

- Go Math
- Everyday Math
- Envision Math
- Eureka Math
- Math Expressions
- Math in Focus
- My Math
- Bridges
- Investigations
- Connected Math
- Pearson Common Core







# EdReports.org

CURRENTLY COMPARING K-8 MATH REVIEWS FOR RIGOR & MATHEMATICAL PRACTICES

Click buttons below to compare K-8 math reviews for our gateways: 1) Focus & Coherence, 2) Rigor & Mathematical Practices, and 3) Usability.

FOCUS & COHERENCE

**RIGOR & MATHEMATICAL PRACTICES**

USABILITY

[Create Custom Comparisons](#)

Title (33)	Kindergarten	1st Grade	2nd Grade	3rd Grade	4th Grade	5th Grade	6th Grade	7th Grade	8th Grade
<b>Envision 2.0</b> Pearson <a href="#">Show Reports</a>	6/18	5/18	5/18	10/18	NR	NR			
<b>Eureka Math</b> Great Minds <a href="#">Show Reports</a>	16/18	16/18	16/18	16/18	16/18	16/18	16/18	16/18	16/18
<b>Everyday Math 4</b> McGraw-Hill Education <a href="#">Show Reports</a>	NR	12/18	9/18	9/18	9/18	9/18	8/18		
<b>Glencoe Math</b> McGraw-Hill Education <a href="#">Show Reports</a>							7/18	7/18	8/18
<b>Go Math</b> Houghton Mifflin Harcourt <a href="#">Show Reports</a>	12/18	15/18	15/18	15/18	15/18	15/18	13/18	15/18	14/18



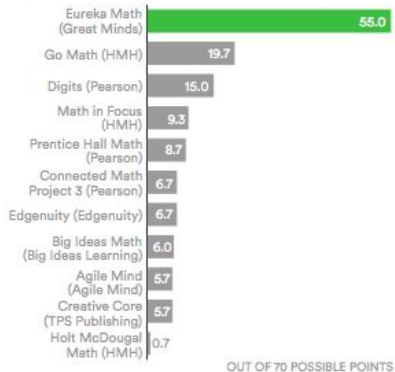
# Research - EdReports.org

## INITIAL REVIEW (March 2015)

### Elementary School (average score by grade)



### Middle School (average score by grade)

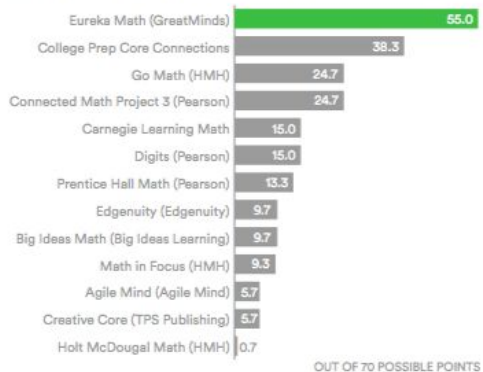


## RE-REVIEWS

### Elementary School (average score by grade)



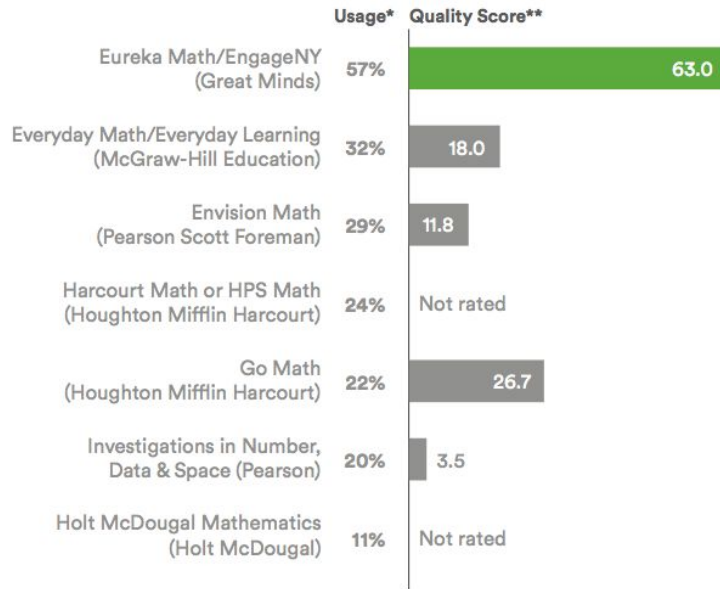
### Middle School (average score by grade)



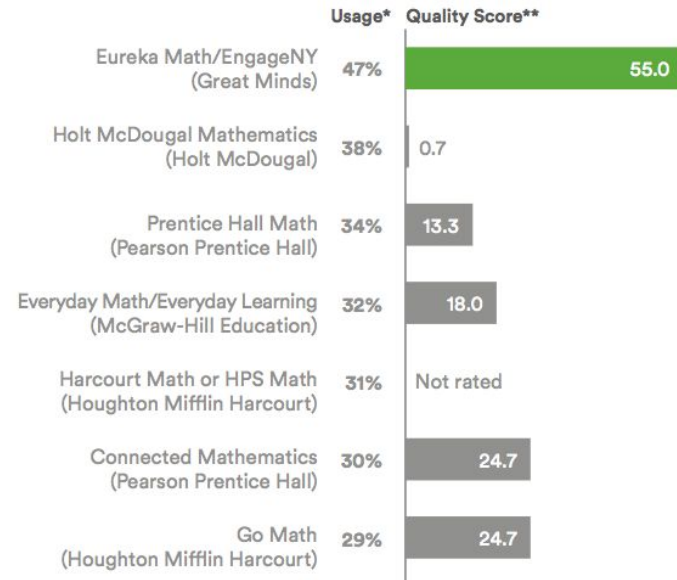


# Rand and EdReports.org - Usage and Score

## ELEMENTARY SCHOOL CURRICULA



## SECONDARY SCHOOL CURRICULA





# Eureka Overview

- *Eureka Math* is a **complete PreK through 12 curriculum** that carefully sequences the mathematical progressions into expertly crafted modules.
- Fully **standards-aligned** (\*PA added addressed through curriculum work.)
- **Coherent approach** that allows teachers to know what incoming students already have learned and ensures that students are prepared for what comes next.
- *Eureka Math* reduces gaps in student learning, instills **persistence in problem solving**, and prepares students to understand advanced math.



# Eureka Lesson Progression

## Elementary

- Fluency Practice
- Application Problem
- Concept Development
- Problem Set
- Student Debrief
- Exit Ticket
- Home Learning

## Middle School

- Fluency Practice
- Lesson Objectives
- Classwork
- Examples
- Closing
- Exit Ticket



# Tiers of Intervention

## Elementary

- Eureka Look-Back Lessons
- Dreambox
- Think Through Math
- Number Worlds

## Secondary

- Intervention and Enrichment
- Math Extension
- Math 180 Universal





## Student Achievement Gains Since Eureka Implementation on the Pennsylvania System of School Assessment (PSSA)

	All Students		Gains
	2014-2015	2016-2017	
3rd Grade	80.6%	88.1%	+7.5%
4th Grade	70.0%	80.0%	+10.0%
5th Grade	70.9%	77.5%	+6.6%
6th Grade	58.7%	56.6%	-2.1%
7th Grade	52.7%	66.7%	+14.0%
8th Grade	57.4%	65.5%	+8.1%
Grades 3-8	65.1%	72.1%	+7.0%



## Student Achievement Gains Since Eureka Implementation on the Pennsylvania System of School Assessment (PSSA)

	Education/Learning Support		Gains
	2014-2015	2016-2017	
<b>3rd Grade</b>	<b>29.2%</b>	<b>57.9%</b>	<b>+28.7%</b>
<b>4th Grade</b>	<b>25.0%</b>	<b>43.6%</b>	<b>+18.6%</b>
<b>5th Grade</b>	<b>21.4%</b>	<b>23.1%</b>	<b>+1.7%</b>
<b>6th Grade</b>	<b>17.6%</b>	<b>17.1%</b>	<b>-0.5%</b>
<b>7th Grade</b>	<b>13.9%</b>	<b>22.6%</b>	<b>+8.7%</b>
<b>8th Grade</b>	<b>14.6%</b>	<b>18.4%</b>	<b>+3.8%</b>
<b>All Students</b>	<b>20.30%</b>	<b>30.60%</b>	<b>+10.3%</b>





# Local Comparison-Elementary Schools

<b>District</b>	<b>Building</b>	<b>Advanced/Proficient</b>	<b>3 Year Achievement Gain</b>
Fox Chapel	Hartwood	87%	13.6%
Fox Chapel	Kerr	69.3%	10.7%
Upper St. Clair	Streams	85%	10.4%
Fox Chapel	Fairview	95.8%	7.5%
Upper St. Clair	Eisenhower	79%	6.7%
North Allegheny	Franklin	90.8%	4.6%
Quaker Valley	Osborne	69%	4.3%
Fox Chapel	O'Hara	82.2%	3.4%



# Local Comparison-Middle Schools

District	Advanced/Proficient	3 Year Achievement Gain
Upper St. Clair	74%	10.7%
Fox Chapel	63%	6.0%
Quaker Valley	54%	-.1%
North Allegheny	59%	-2.4%
Hampton	66.6%	-.8%



## A Practitioner's Perspective

- Reflections as committee member and work
- Depth of understanding
- Student response to Eureka (all levels)
- Access to math beyond 5th grade



5  $\times$  200,000

124,486 + 507,012 + 368,502

25,000  $\times$  40

1,486,928 - 486,928

28,000,000 / 28

$10^6$

= Thanks a Million!