

APPENDIX V - 38



Teaching MATH Using Graphic Forms of Texts

Doolen Summer Virtual Academy

Multicultural Curriculum Department
Tucson Unified School District
10:00 am – 11:30 am
June 10, 2020



During presentation ...



- + Mute yourself.
- + Comments on chats.
- + Tap “Raise Hand” icon.



Sudoku

Fill the grid with the numbers 1 to 4 in such that each number is only used once in each row and column.

3			2
		3	
4		2	
2			3



数独

3	4	1	2
1	2	3	4
4	3	2	1
2	1	4	3

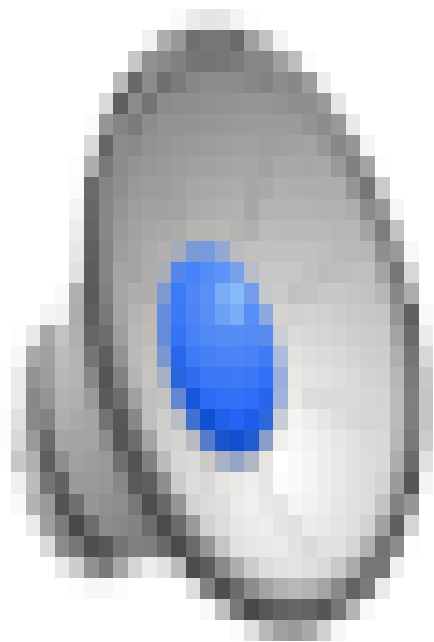




Why Comics belong in the Classroom

by Gene Yang





So here, we've factored out the *GCF* from each group and then applied the Distributive Property.

$$30x^2 + 10xy + 9x + 3y$$

Factor out GCF from each term

$$10x(3x) + 10x(y) + 3(3x) + 3(y)$$

Apply Distributive Property

$$10x(3x + y) + 3(3x + y)$$

Now take a look at the expression that we end up with:

$$30x^2 + 10xy + 9x + 3y$$
$$10x(3x) + 10x(y) + 3(3x) + 3(y)$$
$$10x(3x + y) + 3(3x + y)$$

Notice anything?!



Visible Thinking

Connect	Excited	Question
How is the information connected to your experience or what you already knew?	What Excited you?	What questions, wonderings, or puzzles do you have now?



Why Teaching Math with graphic forms of texts?

- + Good problem solvers construct visual representation of the problem to help them comprehend it.
- + Visual narratives with math concepts promote mathematical thinking and introduce foundation math concepts.
- + Enhance curiosity, enjoyment, and engagement.
- + Culturally responsive classroom.

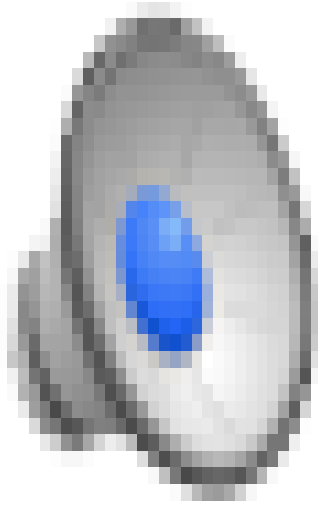
(Van Garderen & Montague, 2003; Roberts, 2019; Development and Research in Early Math Education, 2019)



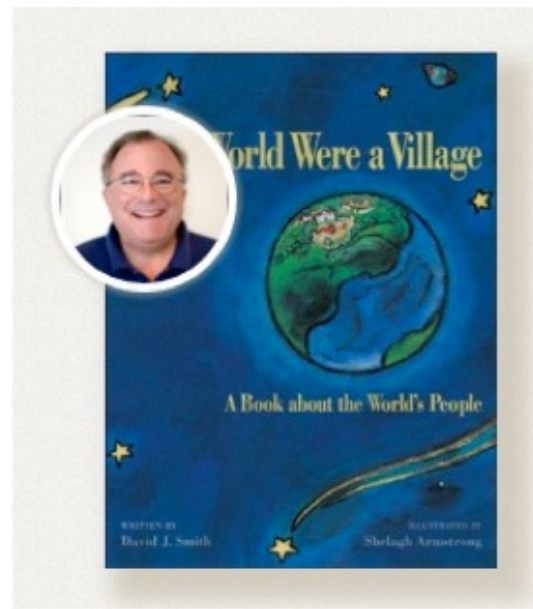
Resources Available in District

1. Math picture books: If the World Were a Village of 100 People: A Story about the World's People
2. A Story Box about Mathematics
3. A Story Box about Mathematicians





What can we teach with this picture book?



Grades 6-8

Math Scope & Sequence

- + Ratios (G6, Q1)
- + Fractions (G6, Q1)
- + Statistics (G6, Q4; G7, Q3)
- + Comparing Populations (G7, Q4; G8, Q4)

Key Words:
percent, fraction,
statistics, census,
population, million,
billion, graph, bulletin
board, map, society,
world, multicultural



Lesson Ideas

A) The number of villagers are expressed as a percentage.

- + 32 of the 100 villagers = 32 % of the villagers
- + 32 % of the world's population

B) The number of villagers are expressed as fractions.

- + 25 of the villagers = $25/100$ of the village = $1/4$

C) Graphing

- + Create a circle or bar graph of a topic from the book
- + Language statistics (page 10)

D) Bulletin Board

- + Create a bulletin board with the headline "If the World Were a Village." Post graphs.



Key Questions

- + What does this data show? What does this tell us?
- + How is this different from ... ?
- + If you were in the village, where would you be?
- + How many more/less ...? Approximately how many is this?
- + How will you represent this information?
- + How does it look like if we compare the data with that of your school community?
- + I notice ... I wonder... (Beginning to problem solve)



Extended Activities and Additional Resources

+ **David Smith's Website**

<https://www.djsmapping.com/village.shtml>

+ **David Smith telling the story behind the book**

https://www.teachingbooks.net/book_reading.cgi?id=4690&a=1

+ **Statistics and comparison across countries and continents**

If It Were My Home <http://www.ifitweremyhome.com/>

DataUSA <https://datausa.io/>

+ **Canva Infographi Creator (Free)**

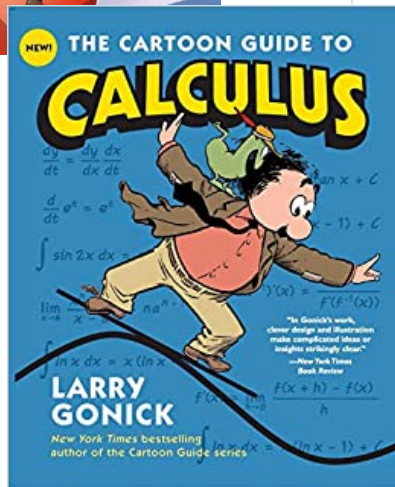
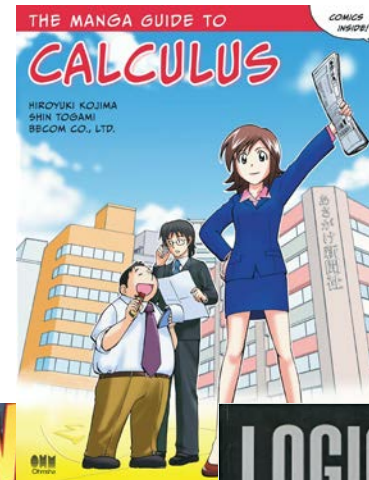
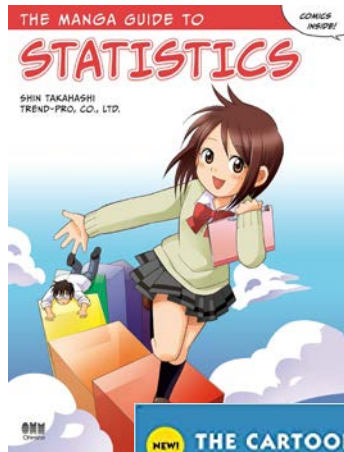
<https://www.canva.com/create/infographics/>

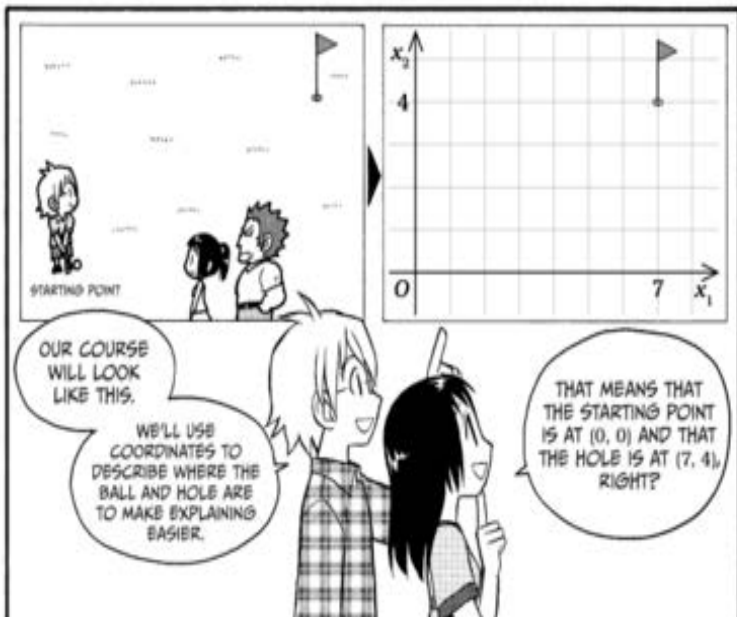
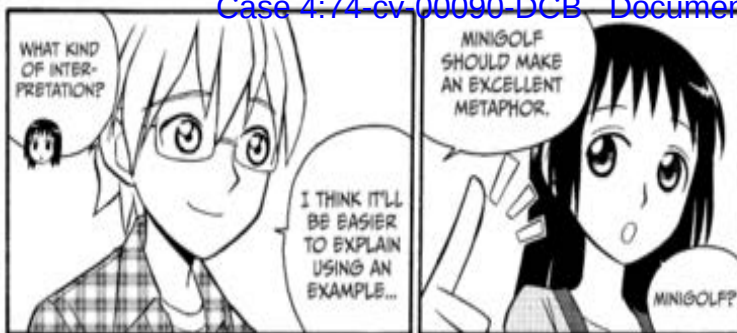
+ **Narrow down world population statistic as a whole instead of by continent.**

https://www.100people.org/statistics_100stats.php?section=statistics



A Multicultural Story Box: Mathematics (Secondary)





PLAYER 1 REIJI YURINO

I WENT FIRST. I PLAYED CONSERVATIVELY AND PUT THE BALL IN WITH THREE STROKES.

REPLAY

FIRST STROKE

SECOND STROKE

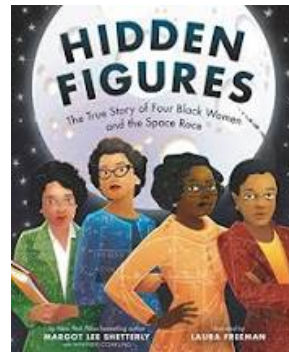
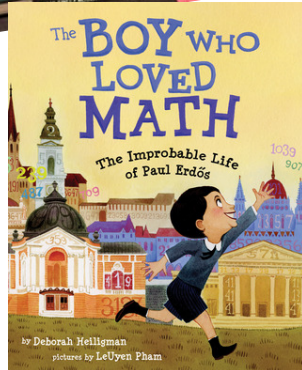
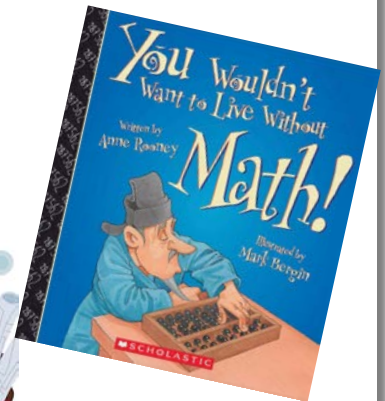
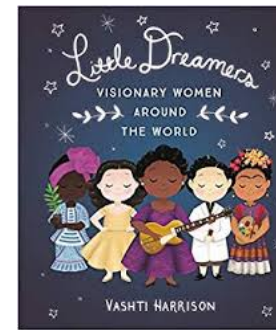
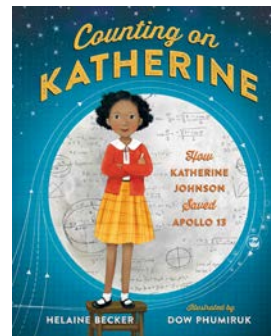
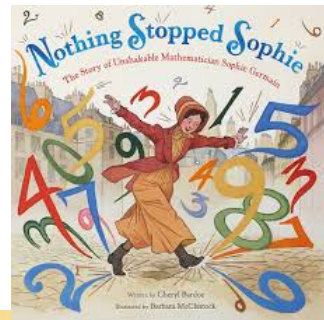
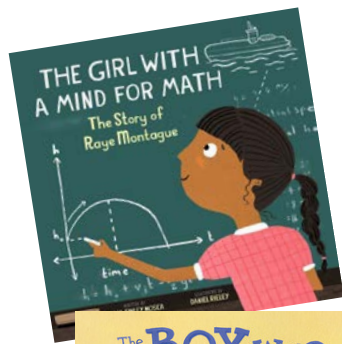
THIRD STROKE

STROKE INFORMATION

	First stroke	Second stroke	Third stroke
Ball position	Point (3, 1)	Point (4, 3)	Point (7, 4)
Ball position relative to its last position	3 to the right and 1 up relative to (0, 0)	1 to the right and 2 up relative to (3, 1)	3 to the right and 1 up relative to (4, 3)
Ball movement expressed in the form (to the right, up)	(3, 1)	(3, 1) + (1, 2) = (4, 3)	(3, 1) + (1, 2) + (3, 1) = (7, 4)

A Global Story Box: Mathematicians

- + Celebrate multicultural mathematicians .
- + Learn about mathematic inquiry process.



Group Work



1. As a group, select a picture book or a website.
2. Listen to the YouTube read aloud story or explore the website.
3. As a whole, share our what you want to teach with the picture book or the website in your teaching.

YouTube Read Aloud Stories

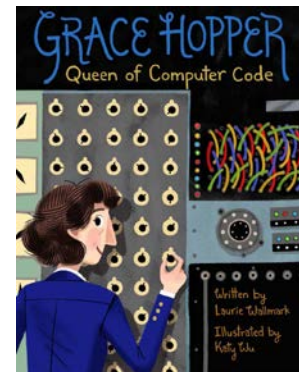
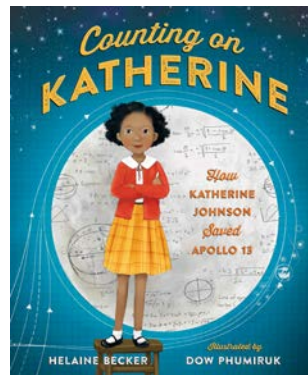
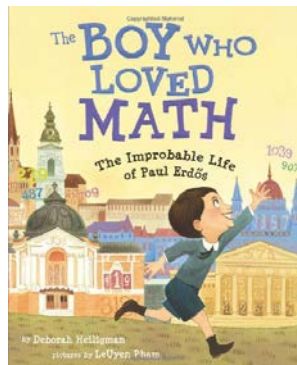
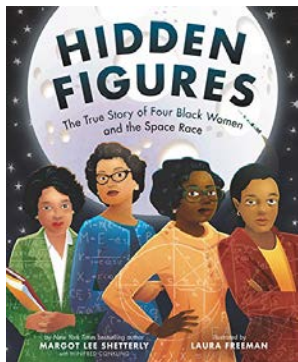
Hidden Figures <https://www.youtube.com/watch?v=WatrMsbMal>

The Boy Who Loved Math <https://www.youtube.com/watch?v=ikcswbrOMVQ>

Counting on Katherine <https://www.youtube.com/watch?v=iGUNklkJt2s>

Grace Hopper <https://www.youtube.com/watch?v=j2hv1Dm4toA>

The World is not a Rectangle <https://www.youtube.com/watch?v=arb1XwCnHXw&t=113s>



Websites of “If the World were a Village of 100 people”

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Thank you!!

Junko.sakoi@tusd1.org
Multicultural Department

