



the **Change** Agent

An Adult Education Magazine
for Social Justice



Issue 47 changeagent.nelrc.org **September 2018**

THE CHANGE AGENT

Adult Education for
Social Justice: News,
Issues, and Ideas

OUR MATH STORIES

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Adult learners from all over the U.S. share how they use math to save money, shop wisely, solve problems at work, get places faster, analyze sports stats, and plan for college. How they have struggled to overcome math anxiety and step up to help their kids with math homework, and how math can lead to beauty, geometry, and, yes, even fun! These are their math stories.

ENGAGING, EMPOWERING, AND READY-TO-USE.
Student-generated, relevant content in print & audio at various levels of complexity—designed to teach basic skills & transfer to & inspire adult learners.

A MAGAZINE & WEBSITE: CHANGEAGENT.NELRC.ORG

Using the “Our Math Stories” Issue in the Classroom



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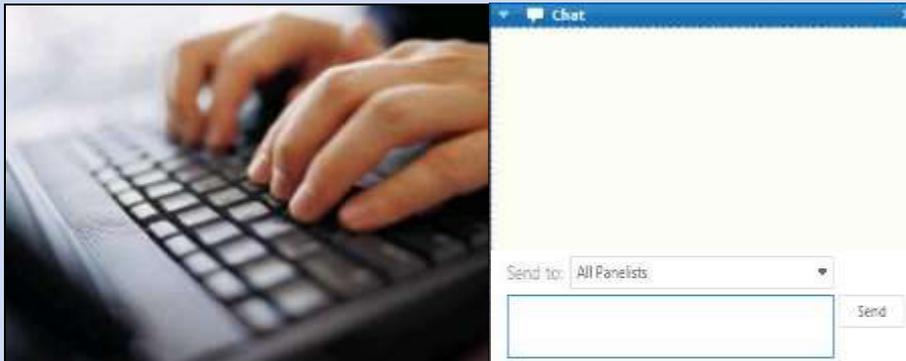
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In this webinar, you will:

1. Get a broad sweep of the contents
2. Consider Interdisciplinary nature of the ELA and the math standards.
3. Focus in on a few key pieces and the learning activities that go with them.
4. Learn about our Call for Articles. Next topic: Indigenous Peoples. How can you support your students to write for *The Change Agent*?

The Editorial Board:



Editorial board (from left): Connie Rivera (SABES), Betsy Alvelo (student at Hartford's HOME program), Delvin Beasley (community activist), Sarah Lonberg-Lew (SABES), Andy Nash (NELRC), Ebony Vandross (World Education), Cynthia Peters (Change Agent Editor), inset (from top): Cynthia Bell (Literacy Assistance Center, NYC), Donna Curry (SABES), Sadeka Harris (teacher at the Bronx Adult Learning Center, NYC), Heidi Schuler-Jones (SABES).

Main themes covered:



1. Changing our relationship to math
2. Helping our children with math (and advocating for them to get help!)
3. Good and bad memories about school math
4. Math in everyday life (saving money, planning for college, managing diabetes, making origami)
5. Math at work (saw mill worker, tailor, sheetrock installer, hotel housekeeper, etc.)
6. Math as a civil right; bringing in marginalized voices, using statistics

CCR Standards include Practices & Domains

8 Math Practices	Relevant TCA pages	8 Domains (various levels)	Relevant TCA pages
Make sense of problems and persevere in solving them. (MP.1)	4, 28-29, 32-33, 38-39, 40-41, 42, 43, 44-45, 54, 55	Number and Operations: Base Ten and The Number System	4, 11, 27, 29, 32-33, 34, 38-39, 40-41, 44-45, 52-53, 54
Reason abstractly and quantitatively. (MP.2)	10, 18, 21, 26, 28-29, 32-33, 34, 38-39, 43, 48-49, 54	Number and Operations: Fractions and Number Systems	15, 18, 26, 32-33, 38-39, 42, 48-49, 55
Construct viable arguments and critique the reasoning of others. (MP.3)	15, 28-29, 38-39, 40-41, 43, 44-45, 48-49, 54	Ratios and Proportional Relationships	4, 26, 32-33, 40-41, 43, 48-49
Model with mathematics. (MP.4)	26, 30-31, 34, 43, 44-45, 48-49, 52-53, 54	Operations and Algebraic Thinking	4, 11, 15, 18, 29, 32-33, 38-39, 40-41, 54
Use appropriate tools strategically. (MP.5)	11, 15, 18, 28-29, 34, 35, 40-41, 42, 43, 47, 54, 55	Expressions and Equations	11, 15, 18, 27, 32-33, 38-39
Attend to precision. (MP.6)	18, 28-29, 37, 38-39, 40-41, 42, 44-45, 54, 55	Geometry	28-29, 30-31, 34, 38-39, 46-47, 55
Look for and make use of structure. (MP.7)	11, 39, 47, 48-49, 52-53, 54	Measurement	32-33, 35, 42
Look for regularity in repeated reasoning.			

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Interdisciplinary Nature of Standards

Math Practices

Make sense of problems and persevere in solving them.

Construct viable arguments and critique the reasoning of others.

ELA Practices

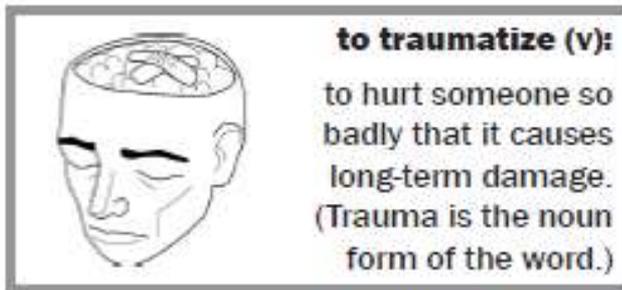
Be able to grapple with increasingly complex texts.

Point to evidence in texts and use evidence in your own writing.

Rulers Are Not for Hitting

Yoonjung Kim

BEFORE YOU READ: What types of punishment did you receive in school? Look at the definition of the word “to traumatize” (in the box below). What types of punishments might traumatize students?



When I was seven years old, I was a confident student. I could read books and write letters, and I memorized the multiplication chart from one to nine before I went to first grade. I was a confident student because my ability was two years ahead of other classmates.

However, in high school, math got harder and math teachers were scary. When I made a

5				1			4
2	7	4				6	
	8		9	4			
8	1		4	6		3	2
		2		3		1	
7		6		9	1		5 8

mistake, I got hit on the palm of my hand with a wooden ruler. This punishment hurt my hands; and even more, it hurt my feelings. This humiliation traumatized me, and I lost interest in math.



Thirty-five years later, I attend “Math for Life,” a math class for adults. Times have changed. We have rulers in class, but there is no chance the teacher will hit anyone with them! This class has three white boards (instead of one blackboard) and a big computer screen. Amazingly, every student is given a laptop computer to use at school.

We do math lessons online at our own pace. The teacher is there to help and give encouragement. I am not afraid to ask questions. The teacher also gives us fun games such as “Sudoku” and “Krypto.” I can play math with classmates, something I never imagined before. Now I have learned fractions, ratios, and percents. This is important for me because I will be a professional chef in the future. Do you want to know my average online score? It is 97% so far. How great I am in math!

AFTER YOU READ: How did Yoonjung’s relationship to math change over time. Use language to show the passage of time, such as: first, then, later.

AFTER YOU READ:

How did Yoonjung's relationship to math change over time. Use language to show the passage of time, such as: first, then, later, now, etc.

Tell the story of your relationship to math. The story is still unfolding. What direction do you want it to go?

Help me, Mom!

Abir Yousef

BEFORE YOU READ: What English words are helpful when you are doing math “in English”?

When I was a small girl, I said, “Mom, please help me with my math homework.” I didn’t have any-

Now I learn English to help me in math.

one to help me. She cried because she didn’t go to school when she was a girl. This was so hard for

me. I practiced by myself for a long time. I feel I am strong in life. Math is important. I did well in math. I remember my teacher in school told me, “In the future, you must study to be an engineer.”

My children like math and they do well too. Sometimes they tell me, “Mom, please help us.” But I feel sad because it is hard to help them. I need more English. When my children were small, I could teach them math. As they’ve gotten older,

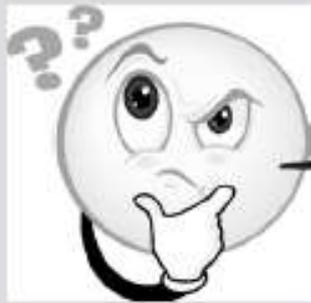
some of the problems are too hard. Sometimes, it takes me one hour to find the right answer. Now I learn English to help me in math also. I use math all the time in my life. I like math. I want to find a job very fast and math will help.



Abir Yousef is a student at the IRIS Mother & Child ESOL Program in New Haven, CT. She is from Syria, where she studied psychology at Damascus University. When she went to Jordan, she worked for the International Rescue Committee helping refugees. Now she wants to study to be an ultrasound technician in the USA and work part-time because she has seven children.

AFTER YOU READ: Think of more ways of expressing the math problems in the box below (left). Try using phrases like “more than” and “less than.”

LEVEL 4



Math Strategy:
Learn these math words!

Addition (+) example: $65 + 35 = 100$
65 plus 35 equals 100.
The sum of 65 and 35 is 100.

Subtraction (-) example: $100 - 65 = 35$
100 minus 65 equals 35.
The difference between 100 and 65 is 35.

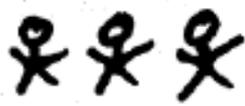
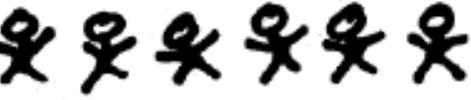
Multiplication (x) example: $7 \times 8 = 56$
7 times 8 equals 56.
The product of 7 and 8 is 56.

Division (\div or $/$) example: $56 \div 8 = 7$
56 divided by 8 equals 7.
8 into 56 is 7.

Many Ways to Say It!

*Sylvia has 3 siblings. Dana has 6 siblings.
Mario has 1 sibling.*

Write two statements comparing the number of siblings that Sylvia, Dana, and Mario have. Use phrases like: more than, less than, twice as many, half as many, etc. Check with your classmates. How many different ways can you express the relationship between the number of siblings that they each have? Draw a picture to help you see the relationships.

Sylvia - 
Dana - 
Mario - 

Using Math to Start a Poultry Farm

Mustafa

BEFORE YOU READ:

1. What is poultry? Read the definition below and use it in several sentences. Learn the words cost, revenue, and profit.
2. What math do you think a person might need to be able to start a poultry farm?

When I first came to the United States, I spent a lot of time with my uncle, who has a good mind for business. We discussed different ideas, and I kept a small notepad with me where I gathered information.

I bought 100 bags of chicken feed at \$35 per bag.

He was glad that I was thinking about opening my own business. He started asking me questions about my plans. I told him that I wanted to

start a small organic poultry farm of 500 chickens.

The chickens would need space to roam freely and receive sunshine, so it was important for me to think about how many square yards I would need



to help me replace a fence. It took 59 hours to finish the work. When we were done, I paid him \$1,062 for his hard work, which is \$18 per-hour.

It was a great feeling to make the property ready. My next job was to buy the chickens and everything they would need. I bought 100 bags of chicken feed at \$35 per bag. I bought PVC pipes to use as chicken feeders which cost \$400. I installed a \$900 solar panel and many other things. And finally, I bought the 500 chickens, which cost about

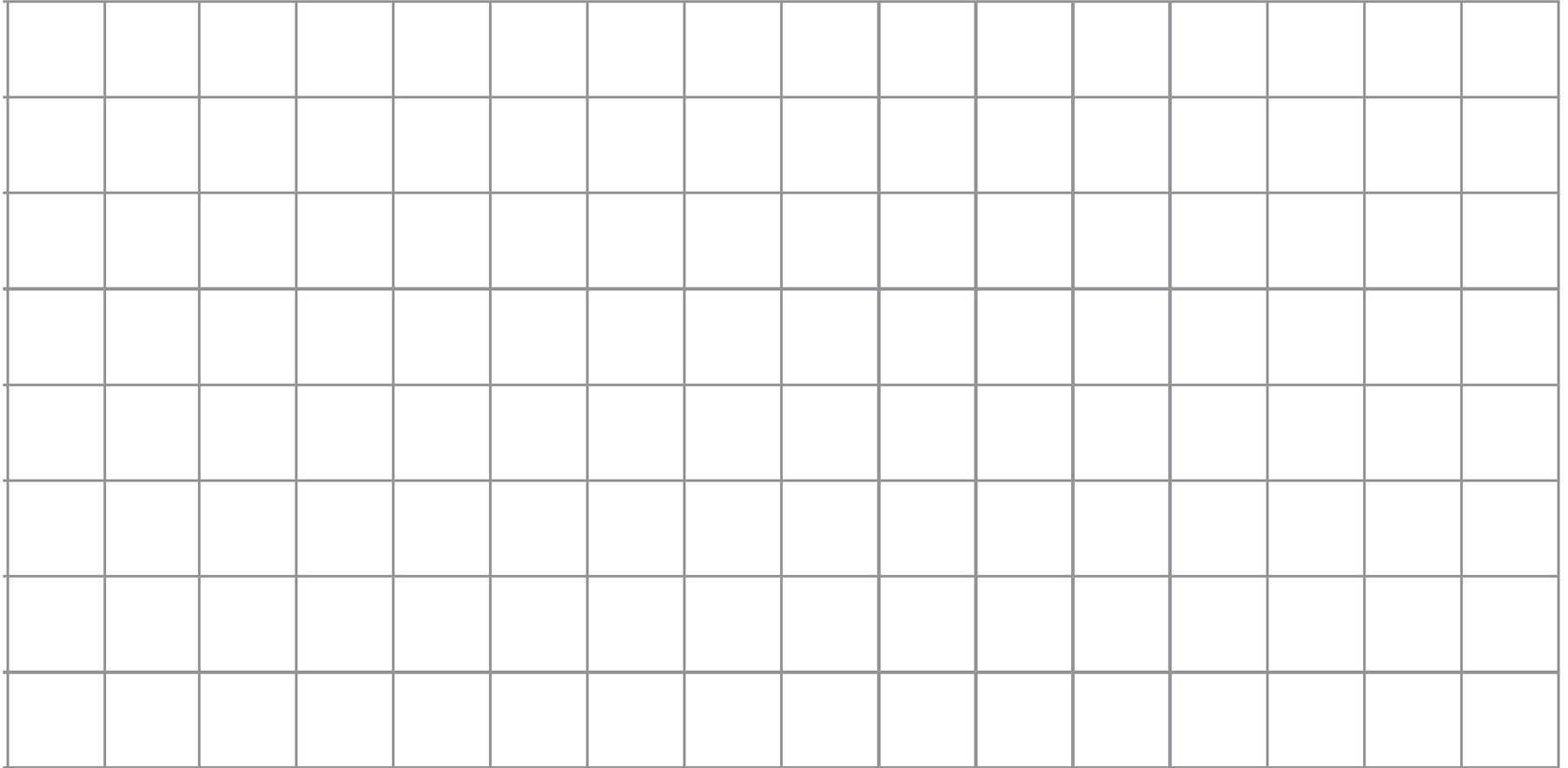
LEVEL 6

After you read...

- 1 . How did Mustafa arrive at the total of \$14,000 to start the poultry farm? Which of the expenses were one-time expenses and which are repeating?
2. How much money does he earn from the farm in five months? How much does it cost him to run the farm for five months? ... Make a spreadsheet to show your work.
3. What reasonable changes could he make to bring in more revenue in less time? Show the changes in your spreadsheet.
4. How much could he reasonably pay back to his uncle each month? Assuming his uncle is not charging interest, how long would it take him to pay off the \$14,000 loan?
5. Find the total square yards that Mustafa has for 500 chickens? Diagram the indoor & outdoor spaces in the box below. (Diagrams may vary.) On average, how many chickens fit in each square yard?

SEE ISSUE EXTRAS on our website for a solution sheet and more teaching tools.

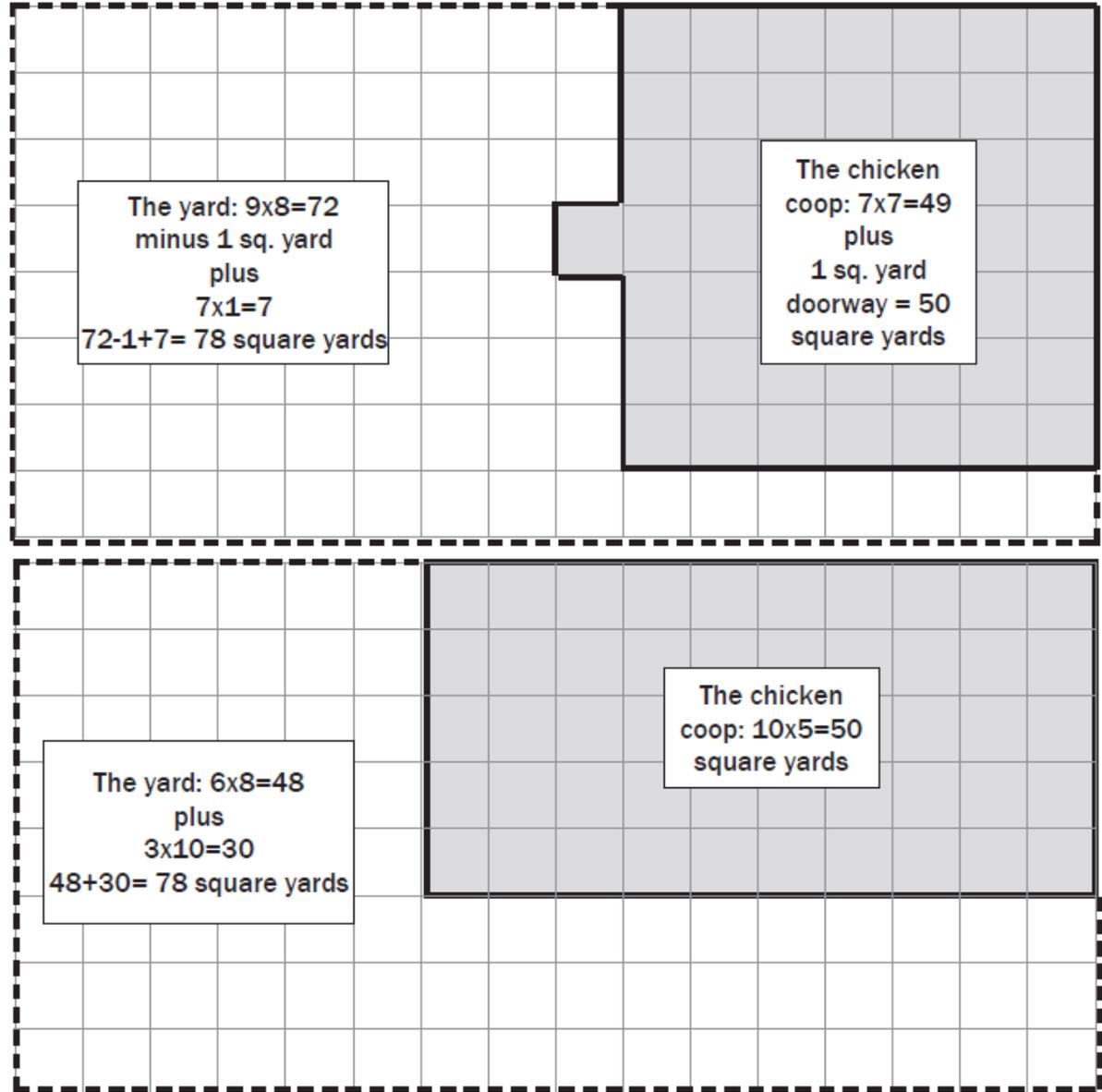
Plot Out the Poultry Farm



In the grid above, each square is equal to one square yard. What is the total square yardage? How did you figure it out? How could you design the space given the dimensions of Mustafa's indoor chicken coop and outdoor yard?

Plot Out the Poultry Farm: Two Possible Answers

This and other solutions available on our website.



Representation Matters!

Black Women and Girls in Math

Ebony Vandross

BEFORE YOU READ: “Figures” has more than one meaning. It can mean “numbers,” and it can refer to people. As you read the article, think about how the movie “Hidden Figures” got its name.

QUESTION: What recent movie inspired the star of the movie, the First Lady of the United States, and regular people all over the country to buy out whole theaters so that children could attend?

ANSWER: *Hidden Figures!*

A Box Office Hit Goes Against Stereotypes

Hidden Figures is a major motion picture based on the life and career of African-American mathema-

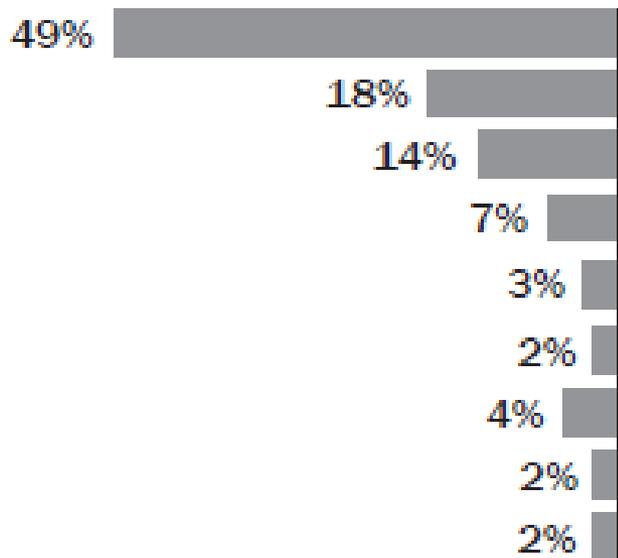


At a press conference before the release of Hidden Figures: Octavia Spencer, who portrays Dorothy Vaughan; Taraji P. Henson, who portrays Katherine Johnson; and Janelle Monáe, who portrays Mary Jackson. Photo credit: NASA/Kim Shiflett.

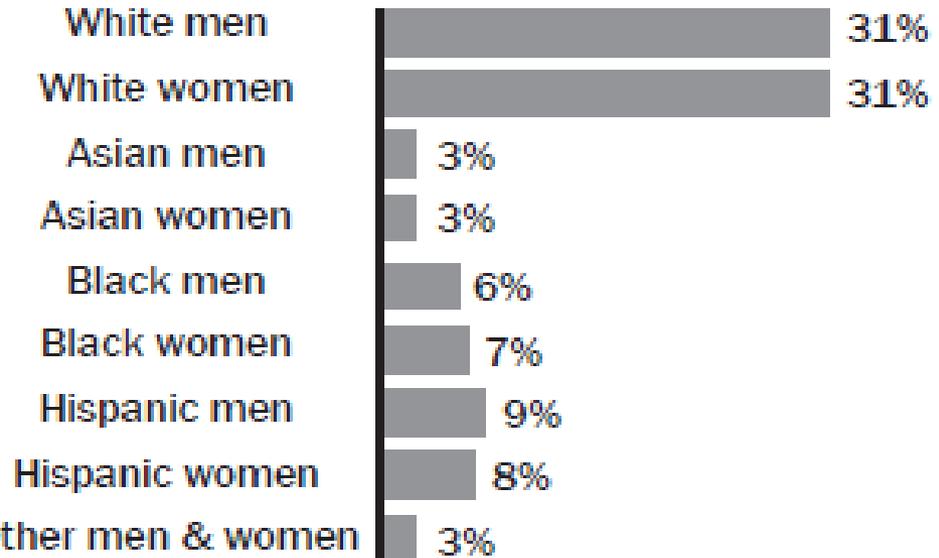
LEVEL 10

Workers in Science & Engineering (S&E) Occupations, 2015

Percent in S&E Occupations



Percent of U.S. population



1. Look at the chart. Write several true statements.
2. What do you wonder about the information in this chart?
3. What does the author mean by “representation matters”?
4. What is your experience with STEM?
5. Consider hosting a screening of *Hidden Figures* at your school.

Write for *The Change Agent*

- Check out our “Call for Articles” The theme of our next issue is **Indigenous Peoples**
- Students can write for a national magazine.
- Their story will be read by peers.
- They will experience “the editorial process,” including revisions, etc.
- Next writing deadline is **November 2, 2018**.
- Students whose pieces are accepted receive \$50.

Download “Call for Articles” at:

<http://changeagent.nelrc.org/write-for-us/>

Submitting Articles to *The Change Agent*



Each submission includes ***all relevant contact information*** for the student and the teacher.



Please email submissions as attachments.

Subscribing to *The Change Agent*



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Finally...

A recording of this webinar will be available at changeagent.nelrc.org

Questions or comments? Contact Cynthia Peters cpeters@worlded.org

Thank you for participating!

