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WHERE ARE THE WOMEN IN MATH AND SCIENCE?

Word Generation - Unit 1.02

Focus Words

context | indicate | variable | create | benefit



Weekly Passage

The former president of Harvard University upset many people when he explained why he thought there were fewer women than men in math and science jobs. He suggested that women may have less natural talent in these areas. He also argued that women spend more time with their families and fewer hours at their jobs than men do.

Why are women who enter careers in science and math more likely to leave than men? Many people argue that ability and family commitment have nothing to do with it. They think that the educational context in which students learn math and science plays an important role. For example, women in science, math, and engineering programs reported on a survey that their professors favored male students and preferred men's learning styles. Other studies show that in a typical science or math classroom, teachers call on male students more often.

Research indicates that men also respond to questions more confidently, quickly, and aggressively. Women say that, if called on at all, they are interrupted more often than men. Might social conditions like these create a context that drives women away from careers in the math and science fields? Some think that the most important variable affecting math performance is expectations. Both girls and boys benefit from teachers who believe in their math abilities and expect them to do well.

Why do you think there are more male scientists and engineers than female? Should something be done to promote gender equality in these fields? If so, what?

Unit 1.02**Where are the women in math and science?**
Focus Word Chart

Word	Meaning	Forms	Examples of Use	Notes
benefit	(v.) - to gain, to be helped			
context	(n.) - situation; environment			
create	(v.) - to make; to build			
indicate	(v.) - to show; to demonstrate			
variable	(n.) - factor, quality that changes or varies			

Where are the women in math and science?

Problem of the Week



Option 1: Different students learn better in different educational **contexts**. One **variable** that affects the educational context is a teacher's gender. Some studies say female students **benefit** from having female teachers. However, in middle schools and high schools, many math and science teachers are male. In colleges, many math and science departments are made up of mostly male professors. For example, only 2 of the 26 senior professors in the Harvard University math department are women.

Part 1: What fraction of Harvard's senior math professors are women? **Indicate** your answer below.

- A) $3/13$
- B) $2/13$
- C) $1/13$
- D) $3/26$

Part 2: There are many fractions equal to the fraction you chose in Option 1. **Create** a list of these fractions. Could a larger department with many more professors have an equal fraction of women?

Option 2: If math and science departments hire more female teachers, will these traditionally male **contexts** become more supportive of female students? Or are the **benefits** unclear? This is a complicated question about social relationships in education. Mathematically, we know that the percentage of women in any group depends partly on the number of women, and partly on the number of men. For example, a math department with two women and two men would be 50% female, while a math department with two women and eight men would be 20% female.

Create an algebraic equation that **indicates** the relationship between the number of women in a group, the number of men in the group, and the percentage of women in the group. Use the following three **variables**: Let w = the number of women in a group, m = the number of men in the group, and p = the percentage of women in the group.

Math Discussion Question: Lawrence Summers, the former president of Harvard University, suggested that math and science ability is partly determined by natural talent. A few studies have **indicated** that, while most men and women have equal math and science talent, men are more **variable** – they are more likely to be very bad or very good in these areas. Summers said he suspected that, based on natural talent, the top scientists and mathematicians would always be men. Later, he said his remarks were taken out of **context**. He said he supported the **creation** of special **benefits** to encourage women in math and science. He was just, he said, posing good scientific questions. What do you think about these remarks? Is it okay for a university president to suggest that most of the best scientists and mathematicians will always be men? Why or why not?

Where are the women in math and science?

Debating the Issue: Why are there fewer women than men in these fields?



GO!

1. Get ready...

Pick one of these positions (or create your own).

A The most important variable affecting whether someone goes into a career in math or science is interest, and boys are generally more interested in these subjects than girls.

B There are fewer women than men in math and science careers because girls do not have the benefit of high expectations and encouragement from teachers that boys have.

C The way girls are treated in math and science classes helps to create a context that discourages girls from pursuing scientific careers.

D There are fewer women than men in science and engineering careers because the way these subjects are taught does not highlight how using math can benefit people, which is something that girls often indicate is important to them.

E _____

2. Get set...

Be ready to provide evidence to back up your position during your class discussion or debate. Jot down a few quick notes:

Be a strong participant by using phrases like these.

I believe that...

I agree with you because. . .

You make a good point, but have you considered...

Can you show me evidence in the text that supports what you said?

Unit 1.02

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Science Activity



This activity is designed to help you practice thinking like a scientist and to use this week's focus words. Sometimes the data are based on real research, but they should never be considered true or factual.

Professor Kahn overhears the eighth grade English teacher in the hallway. “The boys in my class are such poor writers,” she sighs. “Males are just worse than females at communicating their ideas.”

“What?” Professor Kahn interrupts. “High expectations **benefit** students, but low expectations **create** a negative environment. No wonder your male students do poorly in that **context**!”

“But men are not as good at expressing themselves. It’s a fact!” says the English teacher. “I just read the book *The Female Brain*. It **indicates** that women use 20,000 words a day, while men use only 7,000.”

Professor Kahn wonders if this idea is right. The number of words that people use per day is a **variable** that she can measure by doing her own experiment.

Question:

Do women use more words per day than men?

Hypothesis:

Women and men use about the same number of words per day.

Materials:

- ▶ 100 females
- ▶ 100 males

Procedure:

1. For one week, ask all 200 subjects to record themselves and then count the number of words they use each day.
2. Calculate the average number of words that males and females used per day.

Data:

	Average Number of Words Per Day
Males	12,700
Females	12,650

Conclusion:

Is the hypothesis supported or not by the data?

What evidence supports your conclusion?

How would you make this a better experiment?

Writing Prompt:

Should there be more women in math and science?

Why are there fewer women

than men in these fields?

Support your position with clear reasons and specific examples. Try to use relevant words from the Word Generation list in your response.

Focus Words

context | indicate | variable | create | benefit

[illegible]

A tool to help you think about your own writing!

Remember you can use focus words from any of the WG Units.

Check off what you accomplished:

Good Start

- ☐ Stated my own position
- ☐ Included 1 focus word

Pretty Good

- ☐ Stated my own position clearly
- ☐ Included 1-2 arguments
- ☐ Included 1-2 focus words

Exemplary

- ☐ Stated my own position clearly
- ☐ Included 1-2 arguments
- ☐ Included 1 counterargument
- ☐ Used 2-5 focus words

[illegible]