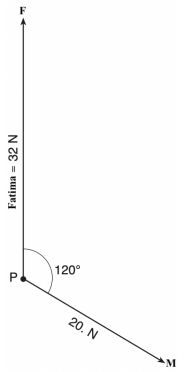
Lesson Plan 42 minutes
Teacher Name: Mr. Bari Dec 25, 202

Grade Level: High School
Topic: Elementary Vector algebra
Subject: Linear algebra
Flipped Classroom : Students would receive the link of the website at least 24 hours prior to the class meeting. Link, www.muslimwomenmathematicians.org
Standard: A vector is a quantity or phenomenon that has two independent properties: magnitude and direction.
Big Idea: Mathematical or geometrical representation of such a quantity. **Main Problem:** Fatima and Maryam are pulling an object P. Fatima pulls straight north at 32 N and Maraym pulls 120 degrees SE of Fatima, as shown in the diagram above. Find the resultant in seven different ways. 
Learning objectives: 1. Students will be able to make connections between different branches of algebra. 2. SWBAT learn about the founder of the world's first university. 3. SWBAT use the website to learn about Fatima al-Fihri's contributions to education in order to counter misconceptions and address stereotypes that students might harbor about the abilities of Muslim women in education 4. SWBAT discover the contributions of a community that has historically been unrecognized as a pioneer of education, from Fatima al-Fihri's narrative. Minority students will be motivated upon finding someone who looks like them in the STEM field, while other students will benefit from a more inclusive mindset of who can be a mathematics educator.
Materials: Whiteboard and markers, Booklet (worksheet)
Differentiations (*stretching it)* I will apply pedagogical technique—s*tretching it* because the sequence of learning does not end with the right answer. Question: How can we find different answers when you add 3+3? Is it always 6? Answer: Because it's not a scalar addition. It's a vector addition.

Question: (10 minutes later) I thought about it for 10 minutes. I realized that you did not give us enough visuals to make it convincing that 3+3 can be less than 6.
Answer: I did. Doble check the angles between the two vectors. As angle increases between two vectors, the magnitude decreases.

Teacher Activity

The booklet that students receive is organized with enough space for students to take notes and appropriately show their thinking by solving the problem.

Lesson component	
Activity # 1 (0- 4 minutes)	**Students will complete the Do Now in 5 minutes (See Page # 1 on the booklet)** **Booklet is divided in two components: (1) Student activity (2) Teacher activity**
Activity # 2 (20 minutes)	Main Task: Students will form in a group and will solve the problem. There are 4 students in a group and each one has a job assignment (Group Leader, Engineer, Scientist, Mathematician)
Activity # 3 (10 minutes)	Teacher will go over the Main Task on the whiteboard.
Activity # 4 (5 mins)	**Student will complete the exit slip in 5 minutes**
Activity # 5	**Briefly overview discussed throughout the period**

Every second matters!

Time	Teaching activities / Student activities
Activity # 1 (5 mins)	Teacher distributes the booklet for students to work with groups Explain the "Do now" Listening the instructions Teacher is Circulating while students completing "Do Now" Solving the Do Now Going over the "Do Now" Student will check their answer to make sure

Activity # 2 (20 mins)	**Group activity**	6.Fatima Al Fihri was physically present during the entire construction of the building which is now known as Al Qarawiyyin University (857 - 859 AD). Her sister Maryam would occasionally visit the construction site. They would often discuss mathematics while they observed the construction of the buildings. One day, Fatima and Maryam attached a rope to a brick and pulled it by changing the angle between them to observe the direction of displacement of the brick. The units reflect modern conventions in vector algebra. 7.Fatima and Maryam are pulling an object P. Fatima pulls straight north at 32 N and Maraym pulls 120 degrees SE of Fatima, as shown in the diagram above. Find the resultant in seven different ways.
Activity # 3 (10 mins)	**Teacher in action**	Teacher will go over main task
Activity # 4 (5 mins)	**Assessment**	Students complete Exit Slip in 5 Minutes
Activity # 5 (2 mins)	**Recap** **I briefly overview what we discussed throughout the period in 5 minutes.**	Ask student to summarize what they have learned