

Lesson Plan

Dec 26, 2022

Teacher Name: Mr. Bari

Grade Level: High School

Topic: Making a Paper Protractor

Subject: Geometry



Flipped Classroom : Students would receive the link of the website at least 24 hours prior to the class meeting. Link, www.muslimwomenmathematicians.org

Objective: Students will be able to discover how to find a height of an object by knowing adjacent angle using protractor

Big Idea: Students will be able to use astrolabe as a protractor to find the height of an unknown object.

Challenge:

1. Students will be given A4 paper, scissors, tape, string, paper clip, and a pencil to construct an astrolabe.
2. Students will be asked to find the height of their school building without going to the rooftop and using the ruler. They will be using only the astrolabe they made.

Learning objectives:

1. Students will be able to make connections between different branches of geometry.
2. SWBAT learn about the inventor of the world's first commercial astrolabes.
3. SWBAT use the website to learn about Al-Ijliya'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 Al-Ijliya'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.
5. SWBAT learn the contributions of Al Ijliyyah in math and science to know that the pursuit

of knowledge is encouraged in Islam

Materials: A4 paper, scissors, tape, string, paper clip, and a pencil

Differentiations (*stretching it*)

I will apply pedagogical technique—*stretching it* because the sequence of learning does not end with the right answer.

Question 1: How can we find the height of a building without going to the rooftop?

Answer 1: By astrolabe

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 challenge.

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 three components: (1) DN (2) BI and (3) ES
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	Teacher distributes the booklet for students to work with groups

(5 mins)	<p>Explain the “Do now” Listening the instructions Teacher is Circulating while students completing “Do Now” Solving the Do Now Going over the “Do Now” Students will check their answer to make sure they have full understanding.</p>	
Activity # 2 (20 mins)	Group activity	<p>(1) Students will make a paper astrolabes as a group using A4 paper, scissors, tape, string, paper clip, and a pencil</p> <p>(2) Students will use the best astrolabe to find the height of their school building as a group.</p>
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