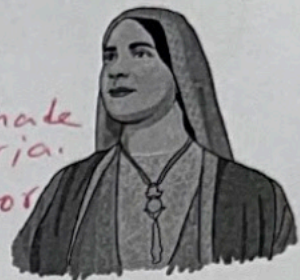A 2 | Al-Ijliya : First Muslim Woman mathematician and scientist

**Pre-Lab Questions:**

1. Who was Al-Ijliya? *she was first Muslim women who made astrolabes in 10th century in Syria.*

*Graduated* 2. How is an astrolabe like a protractor? *tone at top half of astrolabe are same as protractor*

3. How does astrolabe work? *sos measuring angles*

4. What were the challenges she had to overcome to become a scientist?
*Islam's Patriarchal Values were strong in 10th centur*

5. What was her contribution in science and technology?
*she made the most advanced astrolabes —*

6. How can Al-Ijliya's story be used in the fight of stereotypes against Muslim Women
*Al Ijliya defied gender stereotype during the early 10th century*
Mathematicians and scientists? *by using Math & engineering skill.*

7. Describe the connection between these three: Al-'Ijliyyah, Astrolabes and protractor
*An Astrolabe is more than a protractor — Its a hand held model of*
**Materials needed:** *universe. The astrolabe Al-Ijliya made was*

A lab partner, a printer (to print your astrolabe kit), ruler, glue, paper, scissors, tape, string, paper
clip, straw and markers. *commercially successful.*

**Procedure:**

1. Make a paper astrolabe by using A4 paper and straightedge. Use half of the paper to make a semicircle and remaining half to make a paper straw. Watch tutorial, here

2. Construct a semicircle by pencil

3. Use scissors to make a paper semicircle. Glue it on a hard paper. Create a hole in the middle and write angles from 0 to 180 degree along the edge of the semicircle.

4. You need to suspend a weight (penny) through the hole of your astrolabe by using a rope.

8. Glue the paper straw to the straight side of your astrolabe

9. Find the height of your classroom using astrolabe.

**Measurement:**

1. Find the angle from your eye between the adjunct side and hypotenuse of the right angle triangle.
Draw the diagram.

*My eye   24*
*115cm   705 cm   Ground*
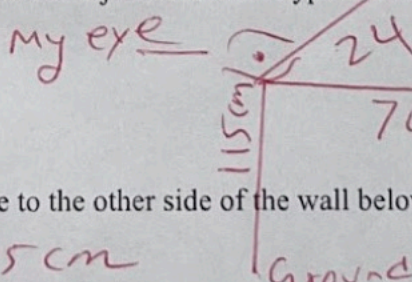
2. Find the adjacent side, from your eye to the other side of the wall below the ceiling.
$$23.5 \text{ bricks} \times \frac{30 \text{ cm}}{1 \text{ bricks}} = 705 \text{ cm}$$

3. Find the distance between ground to your eye.
*115 cm*

4. Find the h of your classroom (show all work):
*SOH CHA TOA*
$$\tan 24 = \frac{O}{A}$$
$$\tan 24 = \frac{x}{705}$$
$$x = 705 \tan 24$$

*h = Ground to Mr. Bari's eye + eye to ceiling*
$$h = 115 + x$$
$$h = 115 + 705 \tan 24$$
$$h = 428 \text{ cm} = 4.28 \text{ meters}$$