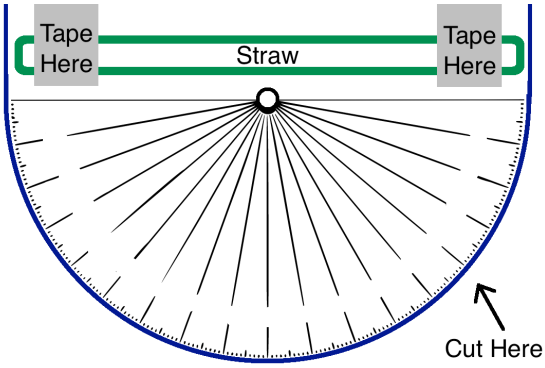
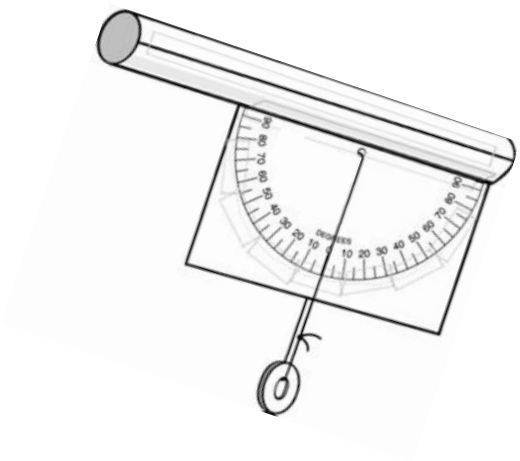
Name: _____ Date: _____

Make an Inclinometer!

How to Make an Inclinometer:

Materials: Protractor, Straw, Coin, Piece of String, Four Pieces of Tape, Scissors, and ~~a Hole Puncher~~





[Step 1] Cut out the protractor.
[Step 2] Tape the coin to one end of the string.
[Step 3] Slide the other end of the string through the hole at the base of the protractor. Tape this end of the string to the coin.
[Step 4] On the back, tape the straw to the base of the protractor. Use one piece near each end of the straw.

How to Measure the ***Altitude*** Angle to a Star in the Night Sky:

[S1] Looking through the straw, point the inclinometer towards a star.
[S2] The string's position will tell you the angle between the horizon and the star.

Tip: Have a friend read the angle while you are looking through the straw.
Important: Do NOT look at the Sun!!

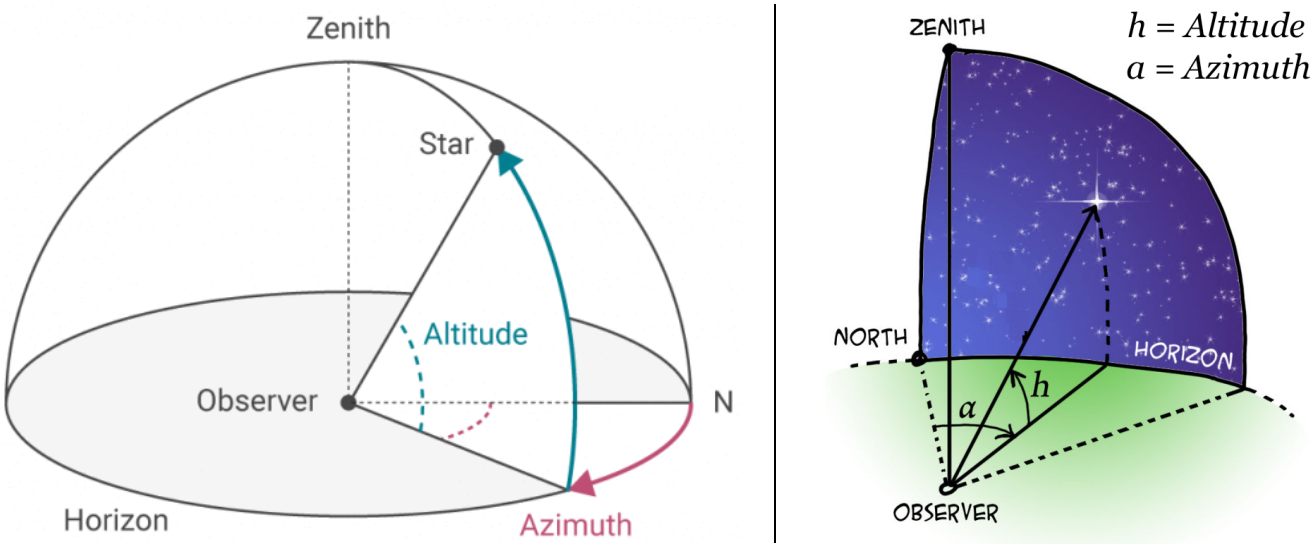
How to Find a Star in the Night Sky:

[S1] Use the star's ***azimuth*** coordinate to determine which direction to face.
(The diagram on the back of the page shows you the coordinate's direction.)
[S2] Tilt the inclinometer until the angle matches the star's ***altitude*** coordinate.
[S3] Once you have the correct tilt, look through the straw. It should be pointing right at the star!

Tip 1: If it doesn't work, make sure the inclinometer is still tilted at the right angle.
Tip 2: Use a compass to help you figure out which direction to face.

Name: _____ Date: _____

The Altitude-Azimuth Coordinate System



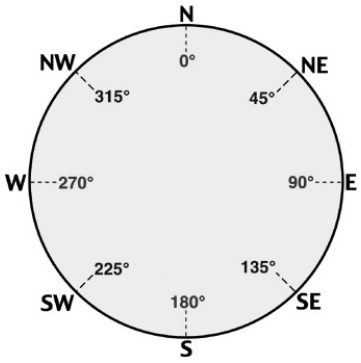
Two diagrams of the altitude and azimuth angles. You are the observer!

Altitude – how high in the sky a star is located (*latitude* in the sky)
Azimuth – the direction you are facing when looking at a star, such as N, S, E, W, or somewhere in-between (*longitude* in the sky)

Directions (as azimuth angles)

Reference Azimuth Angles: (see diagram on the right →)

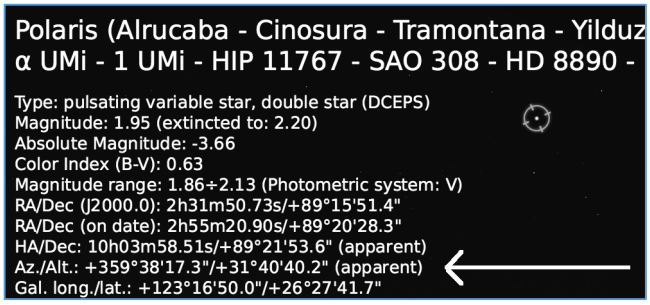
North: 0 degrees
East: 90 degrees
South: 180 degrees
West: 270 degrees.



Find the positions of stars, planets, and other objects in the night sky with Stellarium.

The row with the arrow lists the **azimuth** (Az.) and **altitude** (Alt.) angles of Polaris.

http://stellarium.org/



Stellarium details about Polaris (the North Star).