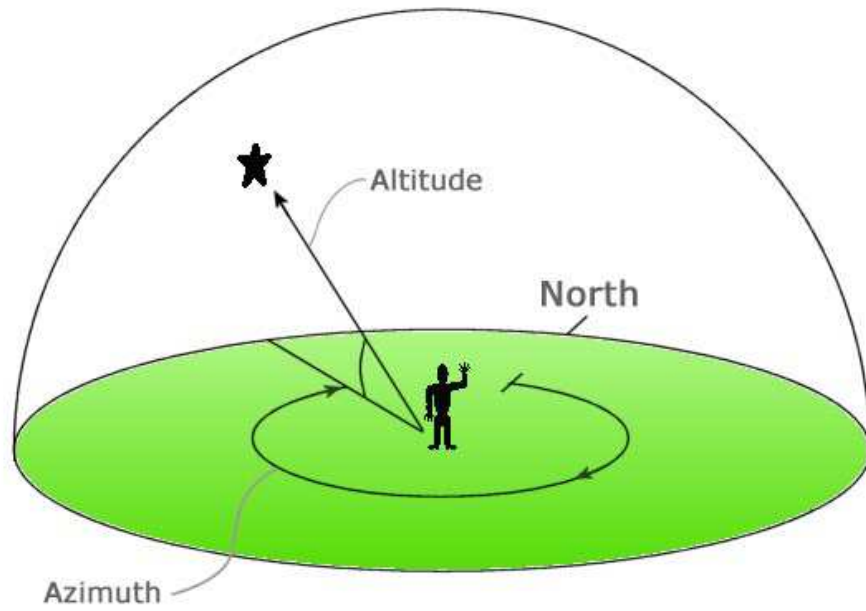


# Azimuth and Altitude



There are a couple of popular ways of specifying the location of a celestial object.

The first is what you would probably use to point out a star to your friend: the altitude-azimuth system.

The **altitude** of a star is how many degrees above the horizon it is (anywhere from 0 to 90 degrees).

The **azimuth** of a star is how many degrees along the horizon it is and corresponds to the compass direction.

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## AZIMUTH AND ALTITUDE ACTIVITY

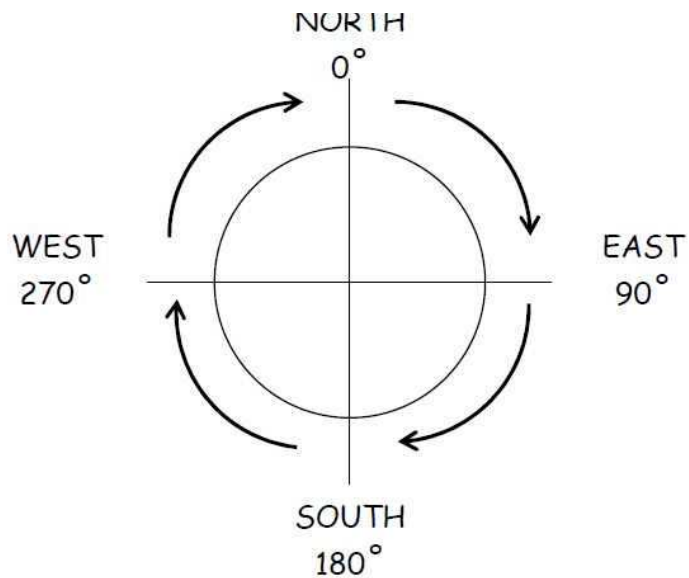
### PART A: AZIMUTH

"Create your own Treasure Map"

#### Background Information:

A compass is a handy instrument to have with you if you get lost on Earth. It can also be used, however, to help locate and describe the position of stars, planets, the sun, and other space objects in the sky **relative to a certain point on Earth**.

Azimuth is a fancy name for compass direction. It is measured relative to true north. When measuring azimuth, North is  $0^\circ$  and measurement goes clockwise.



**To use your compass:**

- 1 - Point yourself and your compass toward the object you are finding the azimuth of.
- 2 - Turn the dial on the outside of the compass until the N lines up with where the (red) arrow is pointing North.
- 3 - Whatever number points at your object (lines up with "READ BEARING HERE") is the azimuth of that object.

Now lets try the treasure map in the booklet and then you and a partner must make a treasure map of your own.





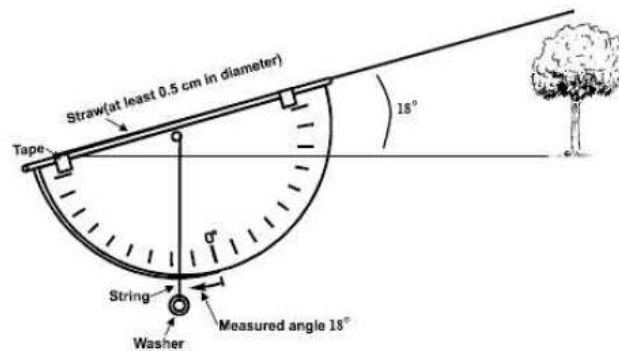
## PART B: ALTITUDE "Create an Astrolabe"



Obviously, when stating the position of an object in the sky we cannot just give a compass direction. We need some measure of how high up to look. This is called the **altitude** of an object. We can measure altitude using a specialized object called an astrolabe. Measurement starts at the horizon ( $0^\circ$ ) and goes up to a  $90^\circ$  angle, called the **zenith**.

### INSTRUCTIONS TO CREATE YOUR ASTROLABE

- 1 - Carefully cut out one of the astrolabe templates. \_\_\_\_\_
- 2 - Carefully pierce a hole at the 'o' at the center of the template. \_\_\_\_\_
- 3 - Put a piece of string (approximately 30 cm or 1 foot long) through the hole and tie a knot then tape it in place on the back of the template. The string should now hang freely in the front.
- 4 - Tie the weight to the end of the string so it hangs at least 10 cm below the edge of the astrolabe. \_\_\_\_\_
- 5 - Tape or glue the straw securely along the flat side of the astrolabe, and test to make sure you can see through the straw. \_\_\_\_\_



To measure altitude using your astrolabe, hold it 1 meter above the ground letting the string dangle straight down. Look up at the object you are measuring, until you can see the top through the straw. Pinch the string against the astrolabe. That is the measure of the altitude.