

## Calculating Circumference of a Planet

- You will always need:
- 1) The altitude of the sun at **TWO** locations.
  - 2) The distance between those locations.

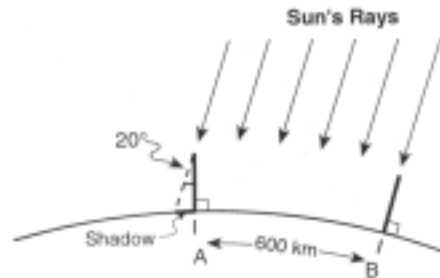


Diagram 1

- 1) Note: The Earth is 360 degrees around.
- 2) Notice: The sun forms an angle of 20 degrees with a vertical stick at location 'A' while, at the same time, it is directly overhead at location 'B'.
- 3) Divide 360 by 20 = 18.
- 4) Multiply the distance between A and B by 18:  $18 \times 600 = 10,800$  km (the circumference)

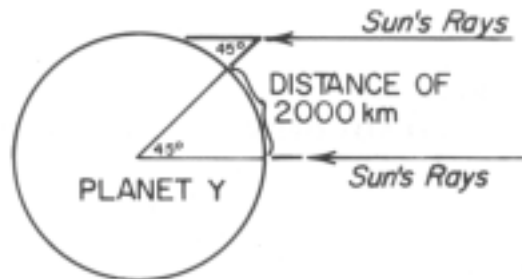


Diagram 2

- 1) Note that the sun is directly overhead at one location while it forms an angle of 45 degrees at a second location.
- 2) As always, the Earth is 360 degrees around.
- 3) Notice the 2 angles marked 45 degrees - *Often you will be given only the upper angle. You must understand which angles are equal.*
- 4) The 45 degree angle in the Earth intersects an arc (portion of the Earth's surface) that is 2000 km in length.
- 5) Find out how many angles just like this one the Earth can be divided into.  
 $360$  degrees divided by  $45$  degrees =  $8$  (8 "slices" of pie).
- 6) Since each slice will intersect an arc of 2000 km, the total distance around the pie (Earth) is  $8 \times 2000 = 16,000$  km.