Welcome to Intro. Astronomy

SPS 1010-01

Spring 2013

Astronomy and the Universe 1

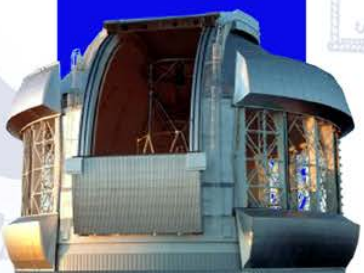
Oingo Boingo: "Weird Science"

Dr. Terry Oswalt

Room 146, M,T,R,F 11am-12noon

Phys. Sci. Bldg. (in PSS office)

toswalt@fit.edu



What this Course is About

Roots: Astrology
Scientific Method
Applied Physics/Math
Scale of Things
Stellar Evolution
Structure of the Galaxy
Structure of the Universe
Life in the Universe

General Comments on this Course

Zoom through Chaps 1-8
Skip Chaps. 9-15 this semester
Focus on Chaps. 16-28
Homework policy (late: -10%/day)
Term project option (see syllabus)
Colloquia, SAS, SPS, SEDS, AIAA
"Check-book math"

Assignments

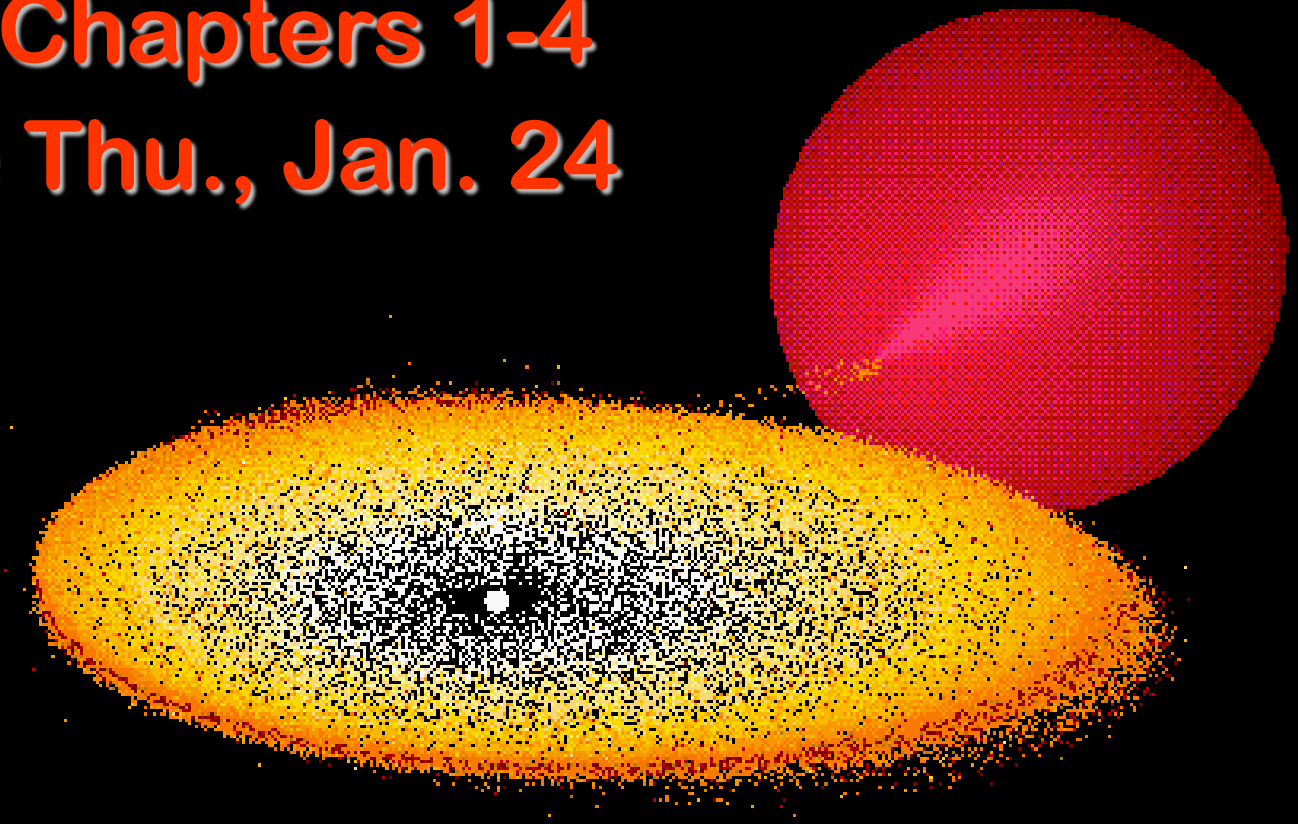
SIGN THE ROSTER!

Follow moon's motion this month

Get out at dusk and look for Jupiter!

Read FGK, Chapters 1-4

HW #1: due Thu., Jan. 24



Freedman • Geller • Kaufmann

Universe

9th Edition

CHAPTER 1

Astronomy and the Universe

Dimensions

(Click here for Scale of Universe site)

Big Bang

10^{-28}

10^{-20}

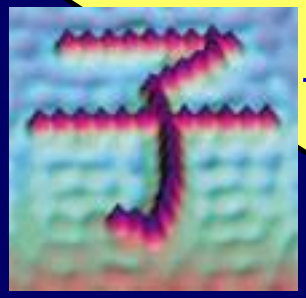
Proton

Atom

10^{-12}

Virus

10^{-4}



10^{4}

Radius of Earth

Earth to Sun

10^{12}

Galaxy Radius

10^{20}

Universe

10^{28}

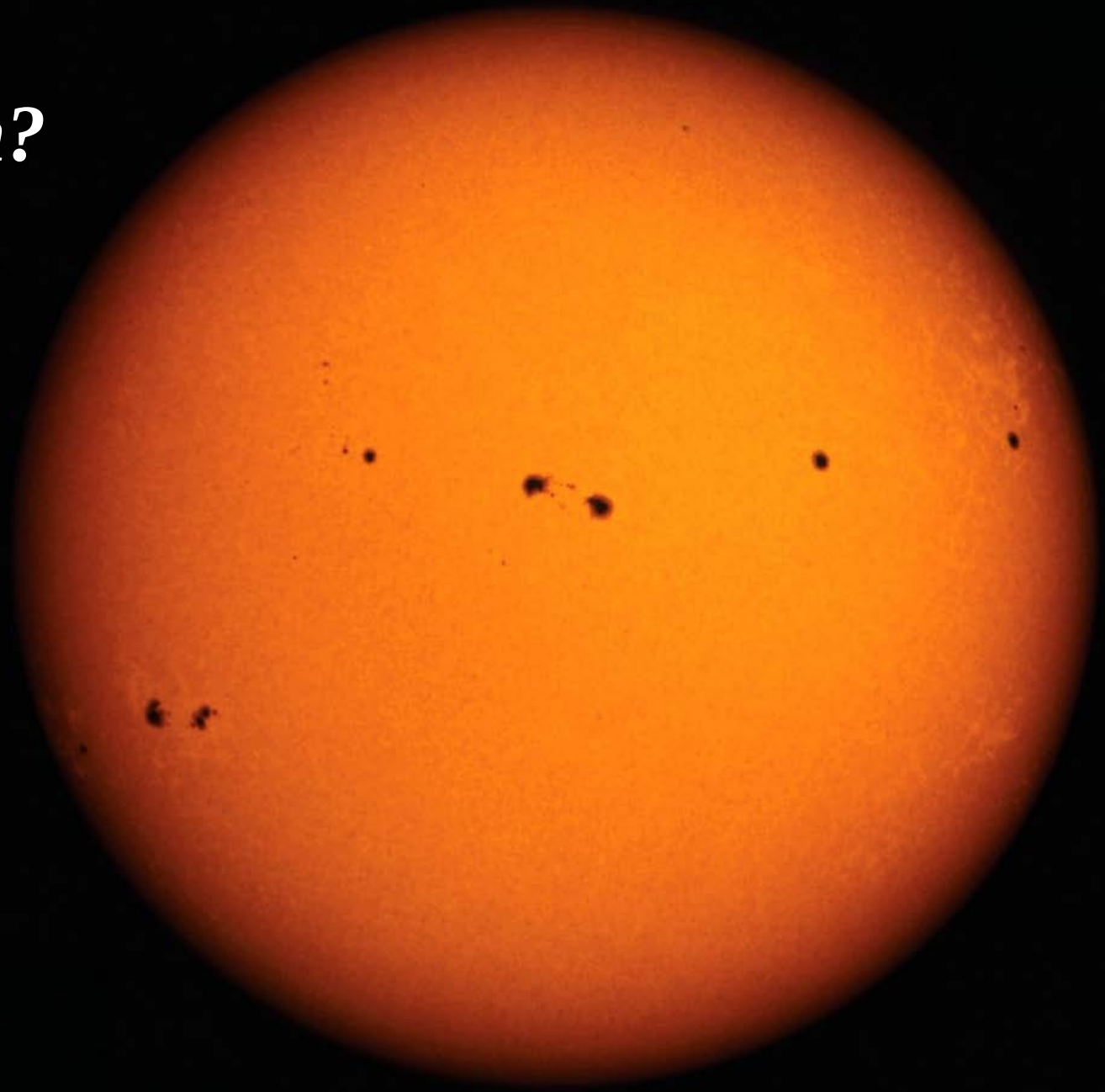
Scientific Notation
Powers of Ten

How big is the Sun, compared to:

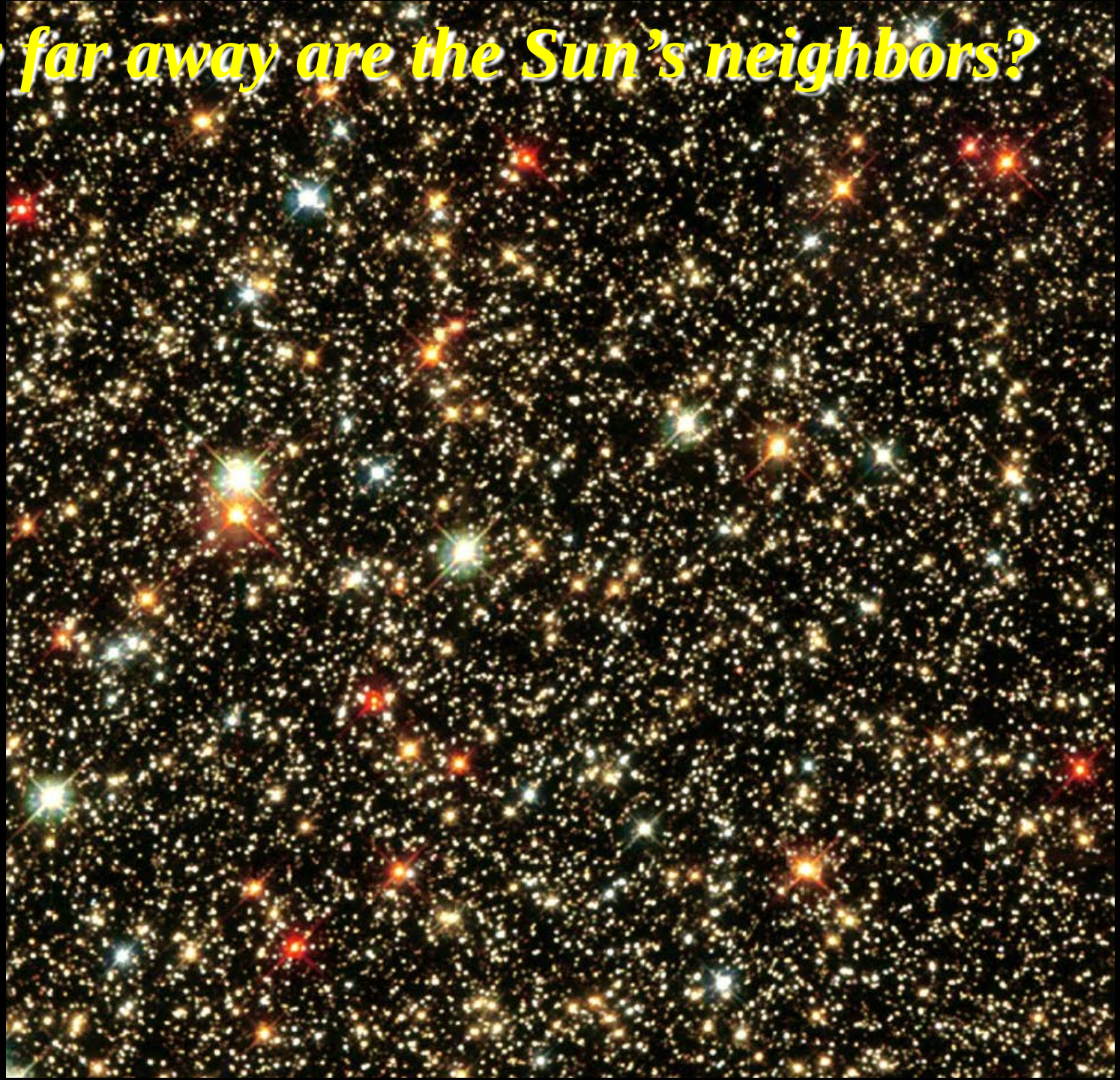
Earth?

Solar System?

Other Stars?



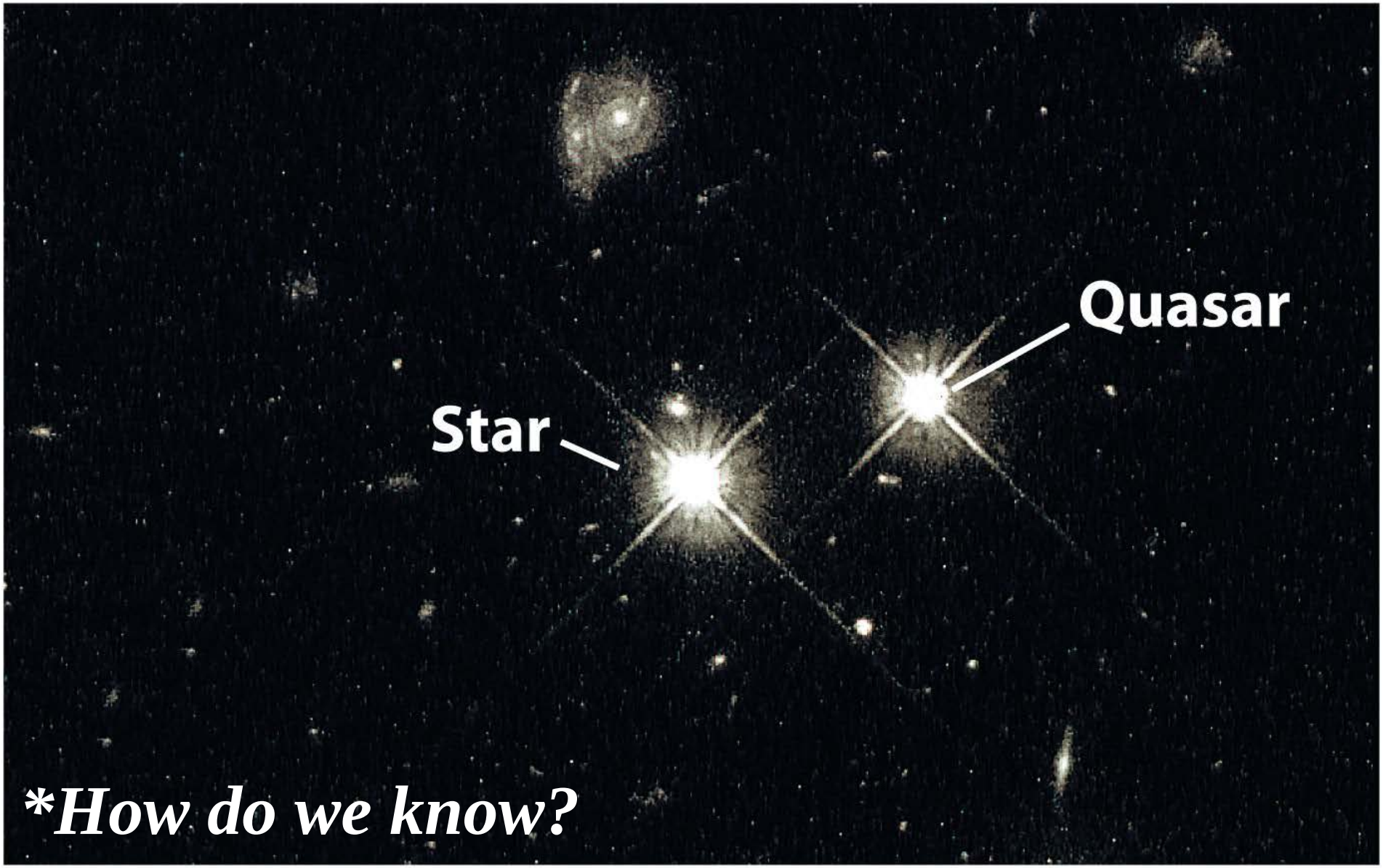
How far away are the Sun's neighbors?



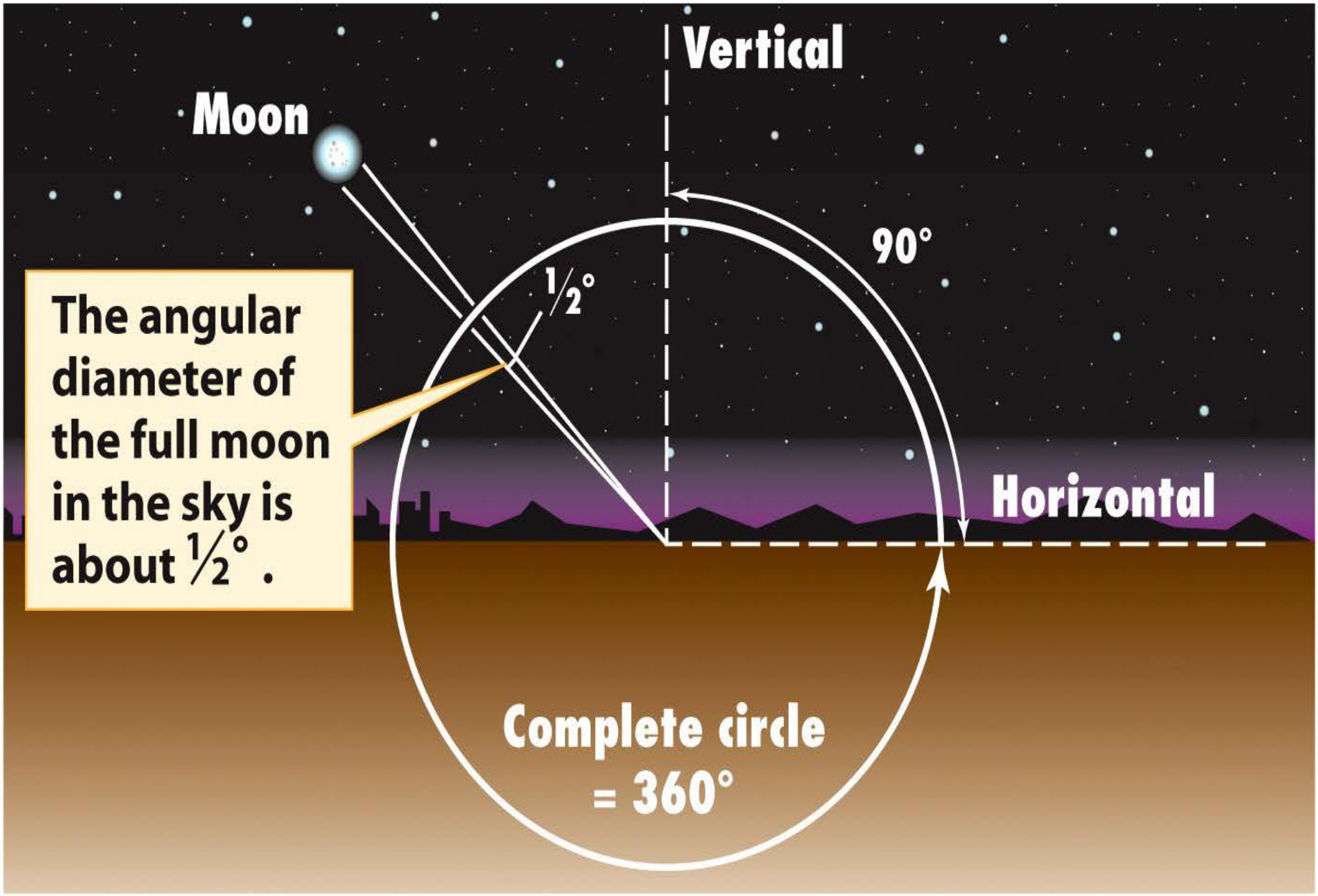
How big is the Milky Way galaxy?


Our place in the Galaxy (tour)

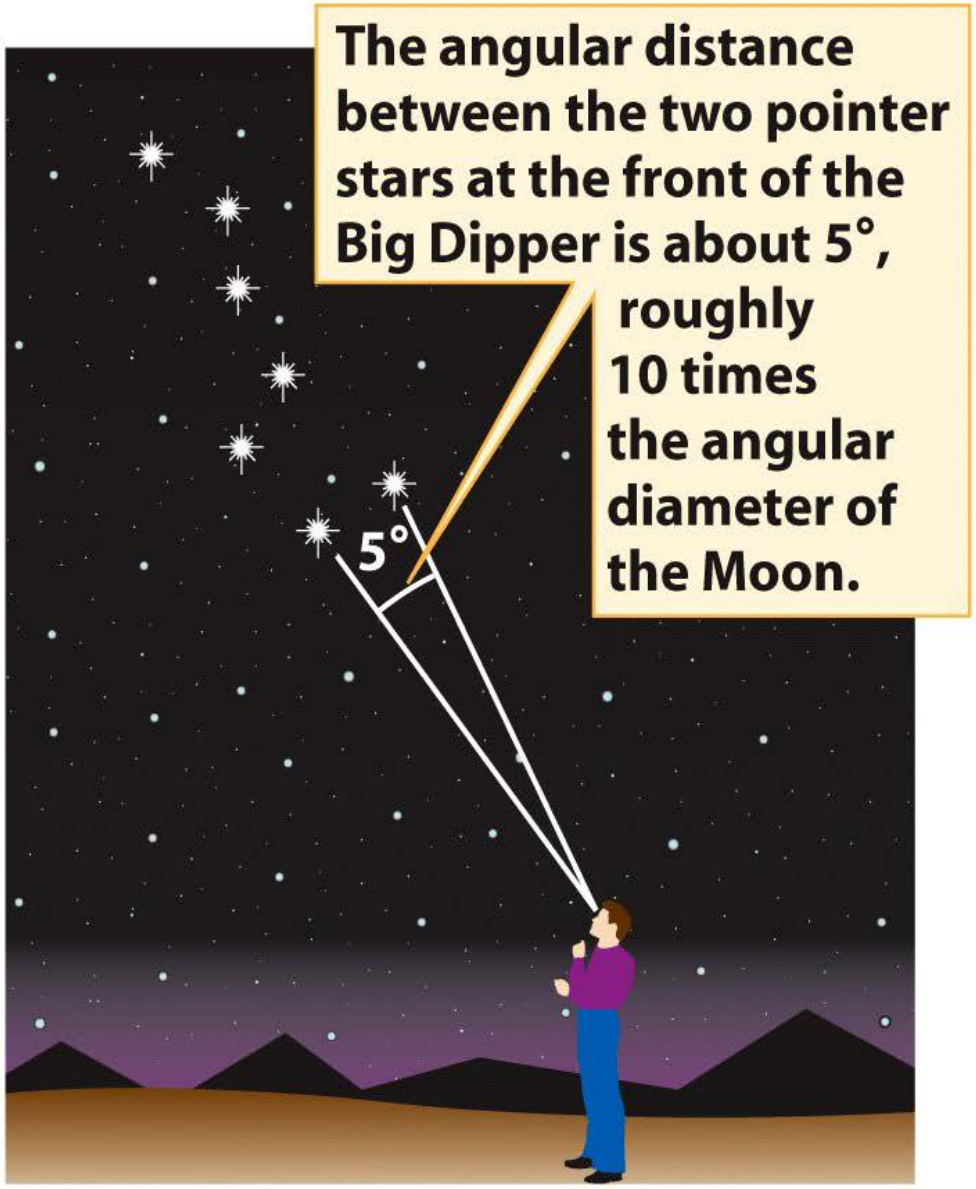
*Similar looking, vastly different distances!**



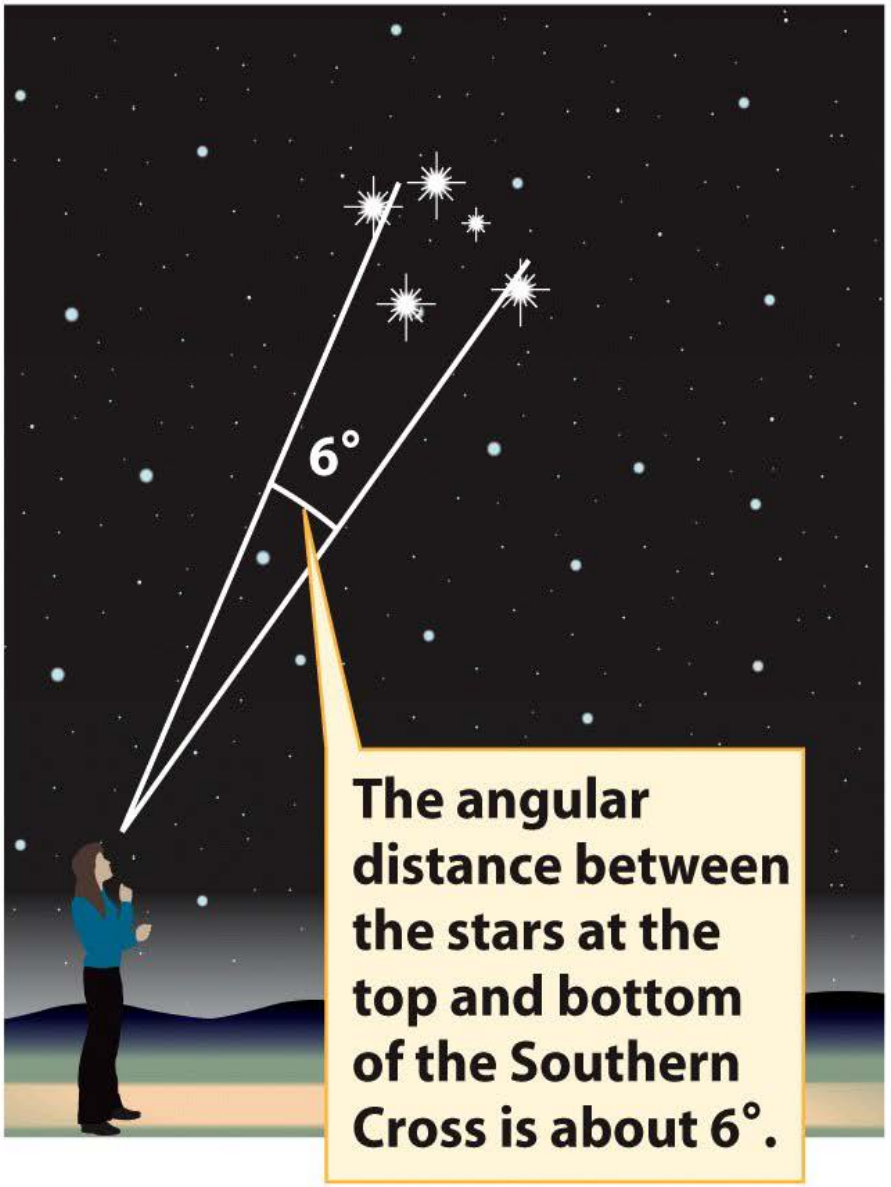
***How do we know?**



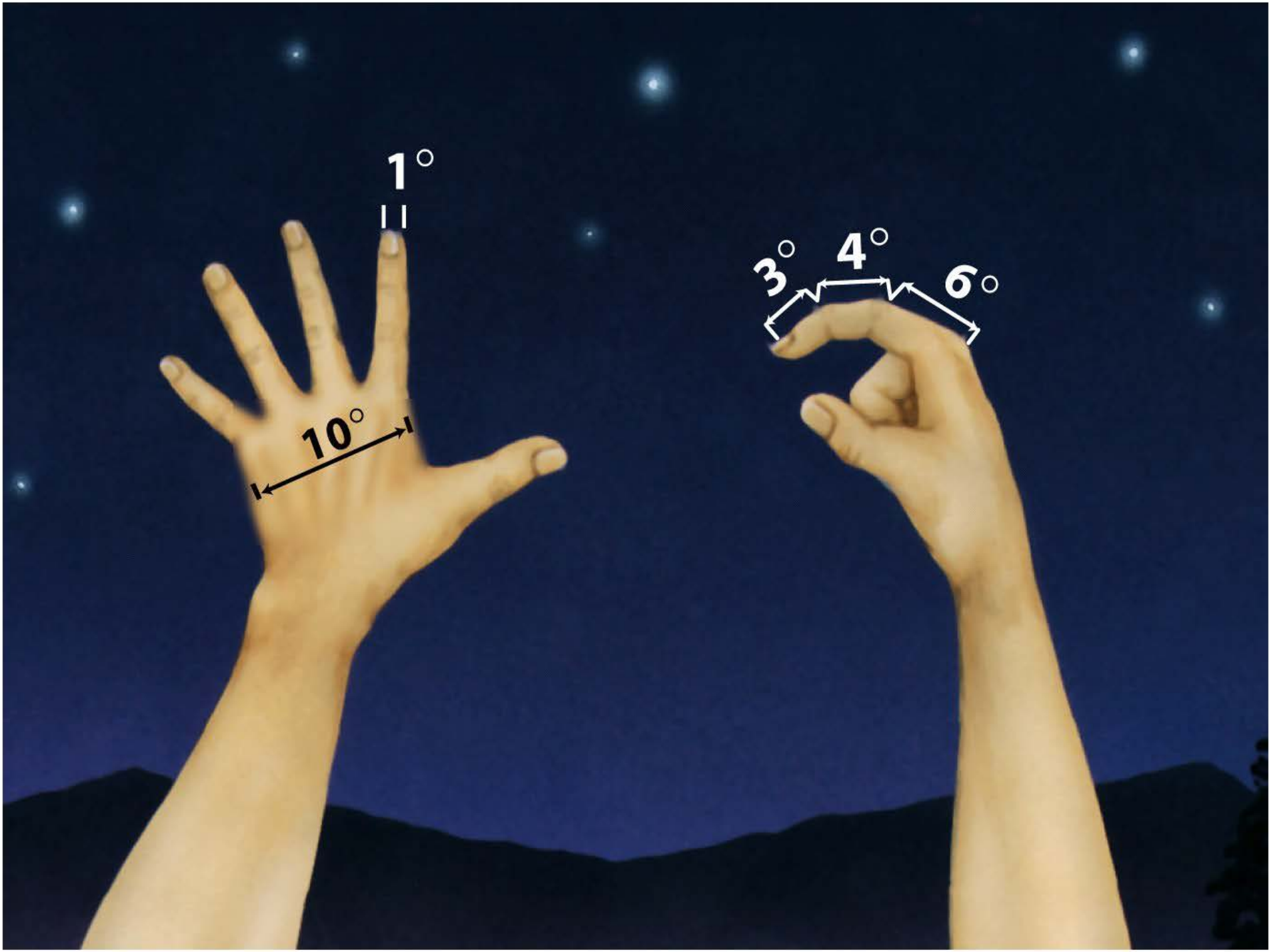
Measuring angles in the sky

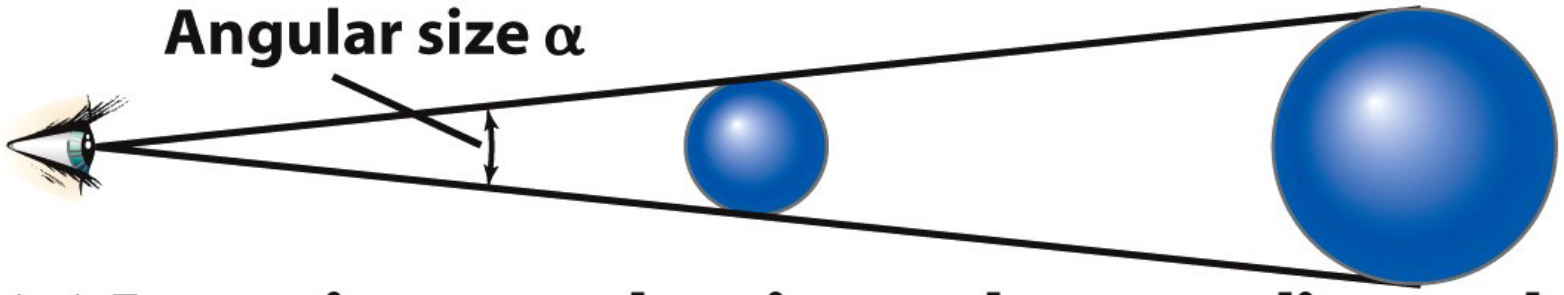


(b) Angular distances in the northern hemisphere

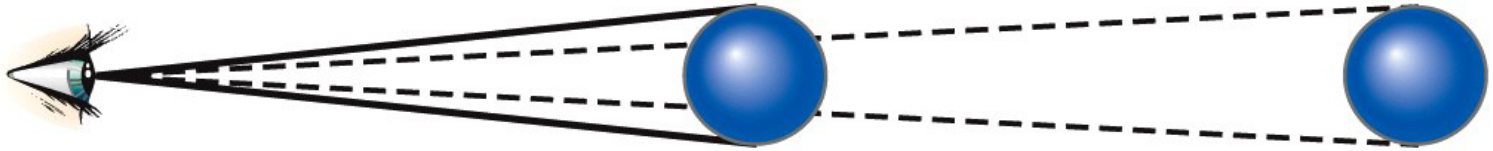


(c) Angular distances in the southern hemisphere

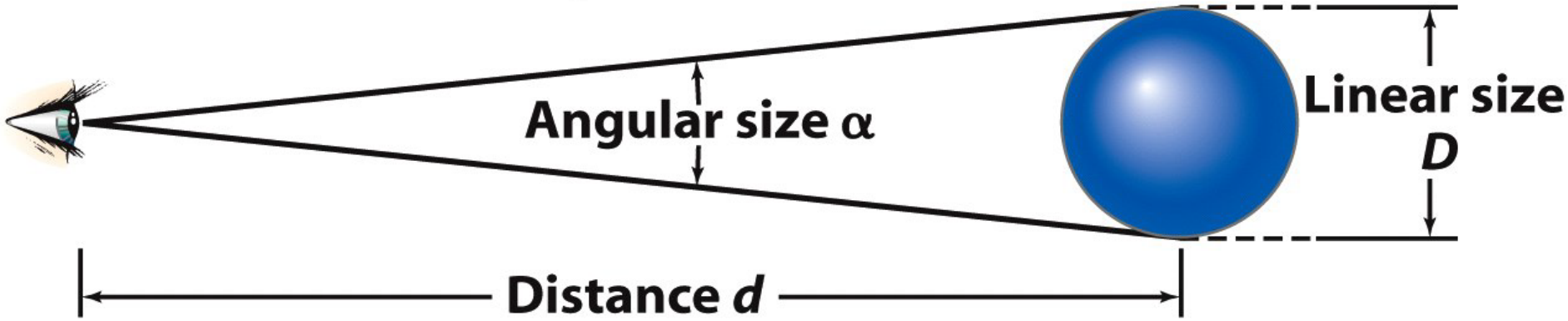

1°
10°
3°
4°
6°



(a) For a given angular size α, the more distant the object, the greater its actual (linear) size



(b) For a given linear size, the more distant the object, the smaller its angular size



(c) Relating an object's linear size *D*, angular size α, and distance *d*


Let’s begin…