

Announcements

- The first exam is **Wednesday, Feb. 11.**
- If you need help to go an Astronomy tutorial or come to my office hours (Monday 2-3pm, Wednesday 10am-noon).
- Clear sky patrol now starts at 7 pm.
- PDF files of the homeworks are available on the web site.

Astronomy Tutorial 665 VAN

Room 665 VAN

Time	Monday	Tuesday	Wednesday	Thursday	Friday
9:00-9:30	Nielson		Nielson		
9:30-10:00					
10:00-10:30		Nielson			
10:30-11:00					
11:00-11:30					
11:30-12:00					
12:00-12:30					
12:30-1:00					
1:00-1:30		Roper		Roper	
1:30-2:00					
2:00-2:30					
2:30-3:00	Roper		Mercer		
3:00-3:30					
3:30-4:00					
4:00-4:30					
4:30-5:00		Doran			
5:00-5:30					
5:30-6:00					
6:00-6:30	Doran	Mercer			
6:30-7:00					
7:00-7:30					
7:30-8:00					

Thanks for questions to:

Eliot Bear

Mahmood Bilal

Virgil Bonifazi

Ben Brown

Samantha Levin

Stacy Schmidgall

Megan Vandenbos

Frequently asked questions

- Will the test questions be similar to the homework?
 - Yes
- Is all the information on the test covered in the lecture slides?
 - No. The slides don't even contain all the information that was in the lectures.

Frequently asked questions

- Do I need to memorize numbers or equations?
 - The radii of the Sun and planets and orbital radii for the planets will be provided.
 - Parallax formula will be provided:
 $d = 1/p$ for d in pc, p in arcseconds
 - Small angle formula will be provided:
 $S = \alpha d / 206265$ for S , d in meters, α in arcseconds
- Will we have to know the order of the planets?
 - Yes.

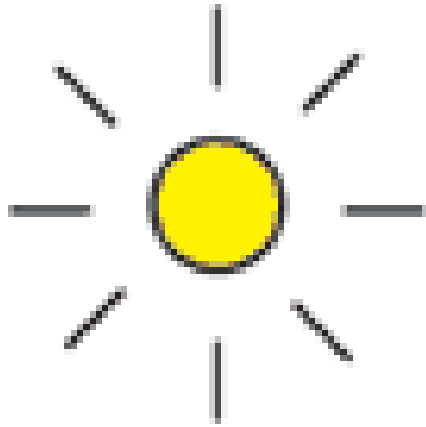
Frequently asked questions

- Do I need a calculator?
 - No. Calculators are not allowed. Any electronic device used during the test will be confiscated and the person using it will receive a zero. Be sure that you can do problems in scientific notation without a calculator.
- What math problems will be on the test?
 - There will be several math problems similar to those discussed in lecture and appearing on the homework.

How to answer phases of the Moon questions?

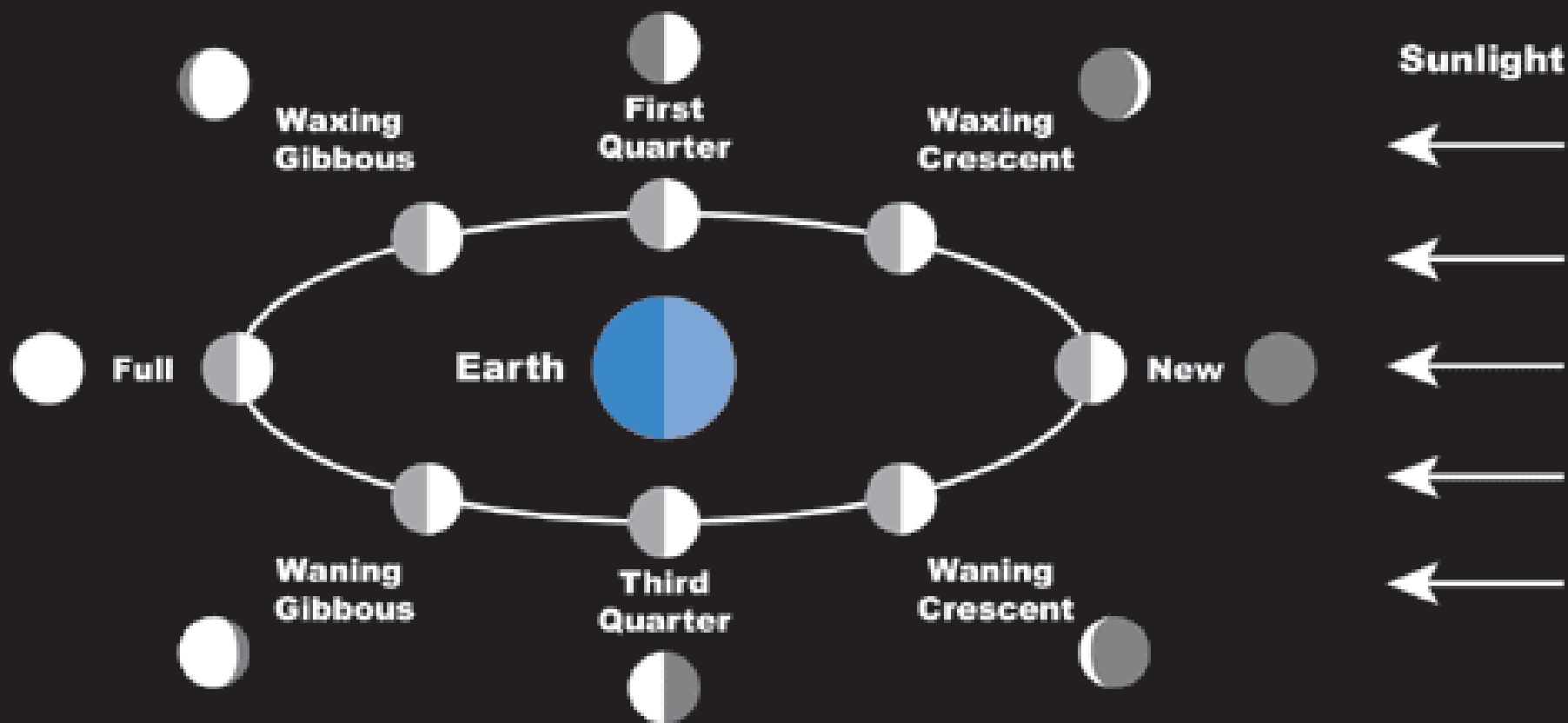
- The important things are: Earth, Moon, Sun
- Figure out where the Moon has to be to appear as the given phase (relative to Earth and Sun).
- Figure out how far the Moon is from the Sun in the sky.
- Determine when the Moon rises relative to the Sun (close in the sky then close in time).
- Note Moon orbits in same direction that Earth spins.
- May have to do this backwards...

Phases of the Moon



Lamp





How to answer eclipse questions?

- The important things are: Earth, Moon, Sun
- Figure out where the Moon has to be for the given type of eclipse.
 - Solar: Sun-Moon-Earth.
 - Lunar: Sun-Earth-Moon
- Figure out what phase corresponds to that position of the Moon.
- May have to do this backwards...

An object with an angular size of 1 degree moves three times closer. What is its new angular size?

- Angular size is how big an object appears to you.
- This depends on how big the object is and how far away the object is.
- Big, close objects have large angular size
- Small, far objects have small angular size
- If we move an object closer, does its angular size get bigger or smaller?
- By how much?

An object with an angular size of 1 degree moves three times closer. What is its new angular size?

- A) 20 arcminutes
- B) 3 degrees
- C) 3 minutes of arc
- D) 33 seconds of arc

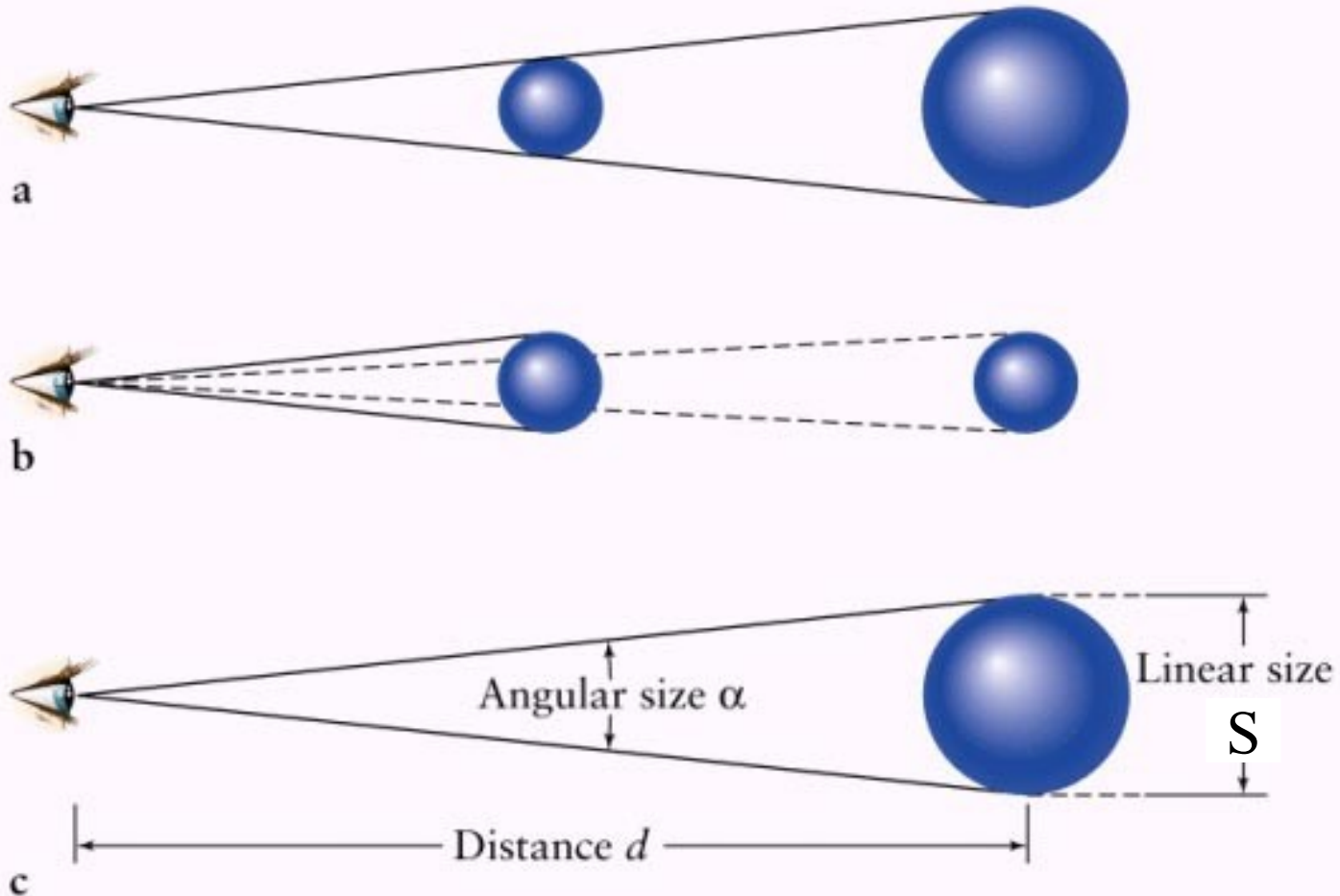
The Small-Angle Formula

$$S = \frac{\alpha \cdot d}{206265}$$

S = linear size of object

α = angular size of object
(in arcseconds)

d = distance to the object

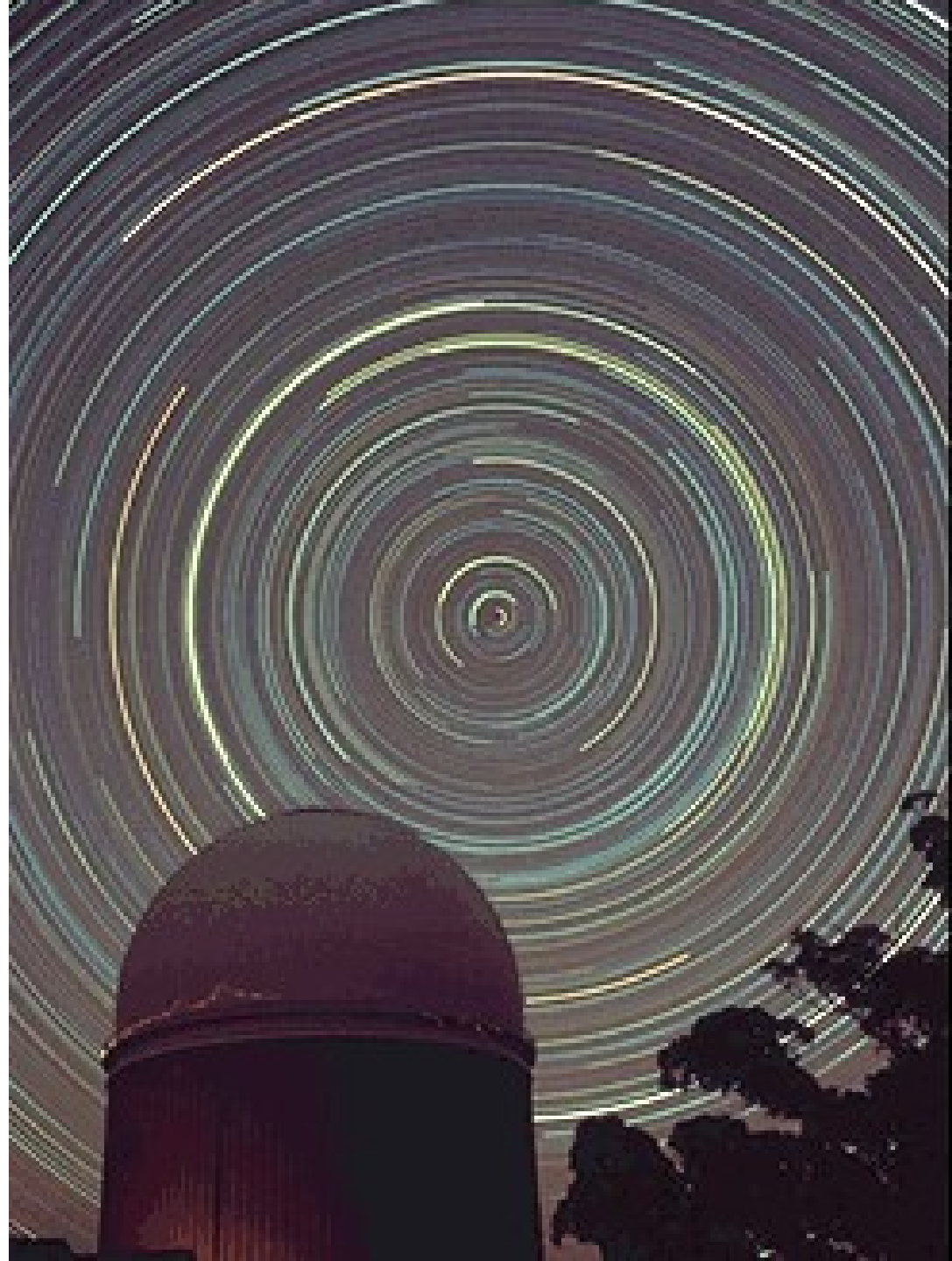


What fraction of a circle does a star make in 24 hours?

Find the fraction of a whole circle shown in the photo and multiply by 24 hours.

Quarter circle \rightarrow 6 hours

Half circle \rightarrow 12 hours



Which is longer 10^{-15} AU or 10^{10} cm?

Sun-Earth distance = 1.5×10^{11} m = 1 AU

So 10^{-15} AU = $10^{-15} \times 1.5 \times 10^{11}$ m

$$= 1.5 \times 10^{11-15} \text{ m}$$

$$= 1.5 \times 10^{-4} \text{ m}$$

1 cm = 10^{-2} m

So 10^{10} cm = $10^{10} \times 10^{-2}$ m = 10^8 m

Which is longer 10^{-4} m or 10^8 m?