

General, All Tests Using your textbook and Handouts

The lectures and notes are primarily facts or techniques which are **not** in the textbook. So don't count on going home to read the book afterward to get an explanation. The information in the notes is a required part of the course. Where there are blanks, they are meant to be filled in from the information in class. If you go home without filling in the blanks, you will have difficulty later.

I suggest you put the printed notes in a loose-leaf notebook. Bring paper for the notebook to class. As we go over material in class, either write directly on the handout, or place notebook paper between the printed pages and take MORE notes right there. Taking notes helps you pay attention. If something is unclear, take LOTS of notes and **ask questions immediately**. Without notes, we will be not be able to figure out what it is bothering you.

ASK QUESTIONS! as soon as possible. It helps everyone. It may seem that all the others think that class is totally trivial, but many students are just sitting being shy and not understanding. Often there is some other way to examine an issue, and you are the only one who has thought of it. You will be contributing to everyone's understanding.

After class, but before the next class, go over your notes and rewrite the information in your own words. Do the problems. Do the homework as soon as we cover the material. The USUAL thing is that material that made sense in class won't be clear. At the start of every class, I will ask if people have questions. That is the time to straighten out any problems.

The textbook material expands on and backs up what we do in the class during the first part of the course. It should supplement, not supplant, your notes. It also has material about the stars and planets that are not in the workbook.

This workbook, textbook and WebCT quizzes include questions to help you practice and assess your understanding. If you cannot do/answer these questions, it is entirely appropriate to ask in class, on the web or on the phone. Answers to most of the workbook questions are found further on in the same chapter. The answers to "Test Yourself" in the text are at the end of the book. The WebCT site has practice quizzes and tests. WebCT will tell you the answers after you take the practice test. Each WebCT quiz or test has several options for each question, so if you take it over again, you should not get all the same questions.

All of the questions in the workbook, WebCT quizzes or these test reviews are fair game for your tests or quizzes. In Pathways, the Key Terms, Questions for Review and Test Yourself questions are reasonable to know. Some of the Problems would be appropriate and the list is below.

Practice Questions

These may have more than one correct answer, and an in person quiz might, but a machine-scored test should not. WebCT has some questions with multiple answers and some matching questions. If there are numerical answers to choose among on an in-person test, they will be chosen to ensure that the correct method was used, but the value may not be the identical with yours, due to round off errors or imprecision in reading a map. I will try not to make them very close together, but I will include the results of common errors. Be prepared to choose the best one.

Scratch paper and conversion factors will be provided at the test.

Test 1

Test 1 will include chapters 1- 5 in Castle, homework 1-3 and units 1,2,3,5, 6, 7, 8, 9,11, 13.1, 13.2. From Pathways, ONLY the following end of unit problems are relevant, U 2 probs 2,3; U3 probs 6,7; U5 probs 1,2,3,4; U6 probs 1,2,3,4; U8 probs 1,2; U11 probs 1,2,3.

Homework 1

I will not ask you to memorize the exact size of anything. I may ask you which is the larger of two things or what the relation between two things is. I would expect you to know or be able to look up the relative sizes of the Astronomical Unit, the parsec, the Sun, the Solar System, a cluster of stars, the galaxy and the Universe (i.e. which is larger, which is smaller) on a chart like the one in the first homework. I would also expect you to know whether the Solar System is a part of the Universe or visa versa, whether a comet is part of the Solar System, or visa versa .

I would ask you to plot a value on the logarithmic scale, or I might ask you some information which you could read off the logarithmic plot. For example, what is the distance from the Sun to Pluto in kilometers? How many times as large as the Astronomical Unit is the distance to the nearest star? (count the number of powers of 10 from the chart)

You might be asked to convert a value. You would be provided with the information about what to convert and all the conversion factors which you need. It might be necessary to use more than one factor to get your answer. For example, "The distance between two spiral arms is 3 kpc, plot this distance on the logarithmic plot using meters". You might be given the fact that a parsec is 3.09×10^{13} km and that kpc means kiloparsecs, i.e. thousand parsecs and that 1 km =1000m. You would have to put it together and calculate the answer.

Constellations:

You should be prepared to find and identify those constellations we have covered and only those. You may be asked to find these constellations on either the polar (round) map or the all sky mercator projection maps (rectangular). **These will be the maps without lines as shown in ch 2 of Castle. I will provide little marks at the edges of the mercator projection to indicate where the declination and Right Ascension lines would be. They will not be labeled. I expect you to remember what direction the values go and what numbers go at each mark. On a test, you will have scratch paper, but you will be asked not to write on the map itself. On a quiz, you will be able to write on the map.**

Know the official name of the constellation (in Latin), what the constellation is supposed to represent, and the name(s) of any first magnitude stars in the constellation. This information is all in Chapter 2 of the notes.

You will not be required to draw the shape of any constellation or to describe the myth. You should be able to find the constellation or any of the named stars on the map and to read off the approximate Right Ascension and Declination from the map. There is no need to memorize the numbers unless you prefer.

I might put a letter on a constellation and ask for the name, ask you to circle the constellation. I might ask you to label the star or name the labeled star, or to tell what the constellation is supposed to be. These questions are so pictorial and so straightforward that they do not appear in this test review in any detail. There are constellation questions on WebCT.

Study Suggestions for the Constellations – I suggest that you make lots of copies of the blank sides of the star maps. Each time we study constellations, review the constellations, and practice filling in the maps. Draw and label everything. When you can do no more, look on the filled in map and finish. Don't stop with filling in the map once, fill it in several times for each class day. Do it until you can fill in all the constellations we have studied. Then do it again the next class day.

Motions of the Sky:

Be able to relate the latitude of an observer, the range of declinations which the observer can see, the range of declinations which are circumpolar. Be able to find the observer's latitude when given any of the following:

- the altitude of the North Celestial Pole
- the fact that a certain star is circumpolar but none further from the pole is,
- the extreme south or north declination the observer can see

Given any two of the following, you should be able to find the third:

Sidereal time (what is on the meridian)

Solar time

Date

The problems will be written in a variety of forms.

There are also simpler problems, such as finding the sidereal time when given the constellation on the meridian.

Be able to find the Right Ascension (accurate to one hour) and declination (accurate to about 7 degrees) of the Sun given the date. If asked to find what constellation the Sun is in, you should be able to look on the map and find it (assuming that it is one of the ones we have studied).

Understand how the rise and set points of the Sun change as a function of the seasons.

Be able to explain the motions of the Moon. Given a picture of the earth, the Sun, and the Moon, you should be able to determine the phase of the Moon. Be able to describe why and when there are eclipses. Know the names of the phases of the Moon and at what solar times they can be seen. Understand how long it takes for the Moon to orbit the Earth. Be able to predict when the next occurrence of a given phase of the Moon will occur, given the date of a particular phase (for approximately one month forward or backward).

Understand what precession is, why the pole star and coordinates of stars change as a result of precession, and what causes precession.

Example Questions:

1) What is the range of circumpolar star positions found from Vancouver, B.C. at about $+50^\circ$?

- a) Cannot tell from the information given b) $+90^\circ$ to $+40^\circ$
c) $+90^\circ$ to -40° d) $+90^\circ$ to $+50^\circ$ e) $+90^\circ$ to -40°

2) What is the furthest north that the Large Magellanic Cloud, one of our companion galaxies, at declination -70° can be seen? a) 0° b) 70° c) -70° d) 20° e) -20°

3) If Deneb is on the meridian and it is 9 PM, what date is it?

- a) Mar 21 b) June 21 c) July 21 d) Aug 21 e) Sept 23

4) If you see the North Celestial Pole at altitude 14° , what is your latitude?

- a) $+14^\circ$ b) 66° c) cannot tell d) 76° e) 90°

5) If you can see Castor just barely come above the horizon at culmination (its highest point when it is on the meridian). The rest of the time, Castor is below the horizon at your latitude. Where are you? a) $+32^\circ$ b) $+58^\circ$ c) $+90^\circ$ d) $+32^\circ$ e) -58°

6) When Betelgeuse is at the zenith, what is your latitude?

- a) $+7^\circ$ b) $+27^\circ$ c) 0° d) $+83^\circ$ e) -25°

7) When you are at $+30$ latitude, the range of declinations which is circumpolar is

- a) From $+30^\circ$ through -30° b) From $+90^\circ$ through -30° c) From $+90^\circ$ through $+60^\circ$ d) From $+90^\circ$ through 30° e) From -90° through 30°

8) You can see Rigel as circumpolar, but everything further north is not circumpolar. What is your latitude? a) $+82^\circ$ b) -8° c) 0° d) 8° e) -82°

9) The distance to the nearest star is 1.3 parsecs, how many kilometers is that?

- a) 1.3 km b) 6×10^7 km c) 1.95×10^8 km d) $4. \times 10^{13}$ km e) 1×10^{24} km

10) What is the relationship between the Jupiter and the Earth?

- a) Jupiter orbits the Earth b) The Earth orbits Jupiter c) Jupiter is part of the Earth

d) Jupiter is part of the Solar System and the Earth is part of the galaxy e) They both orbit the Sun

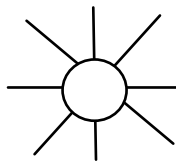
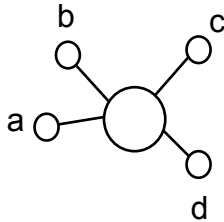
11) On December 21, you would like to observe Regulus. What time will it be on the meridian?
 a) 6 AM b) 4 AM c) 2 AM d) Midnight e) 10PM

12) If you are at latitude 20° what is the range of declinations which you can see?
 a) From $+20^\circ$ through -20° b) From $+90^\circ$ through -20° c) From $+90^\circ$ through -70° d) From $+90^\circ$ through 20°
 e) From -90° through -70°

13) What is the Sidereal Time on May 6 at 1 PM?
 a) 4 hr b) 9hr c) 15 hr d) 1 hr e) None of the above

14) What is the sidereal time at 8AM on Nov 6?
 a) 9 hr b) 11hr c) 4 hr d) 8 hr e) None of the above

15) Which configuration below shows an observer at 10 PM?



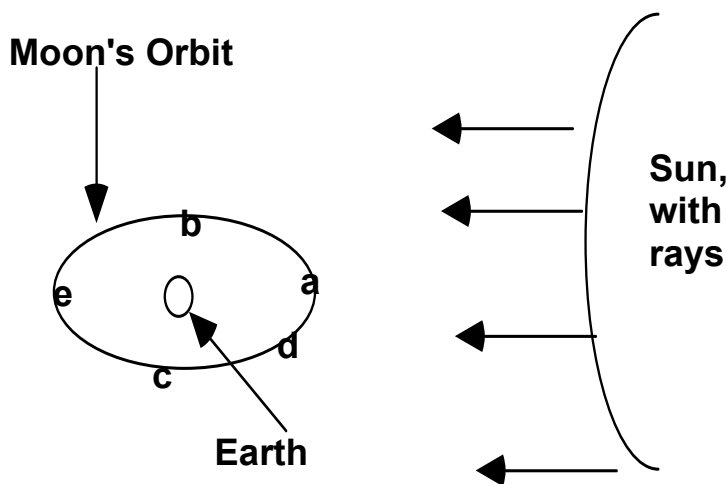
e) Cannot tell from the information

16) What is the sidereal time on May 31 at 3AM?
 a) 13 hr b) 4 hr c) 8 hr d) 20 hr e) Cannot tell from the information

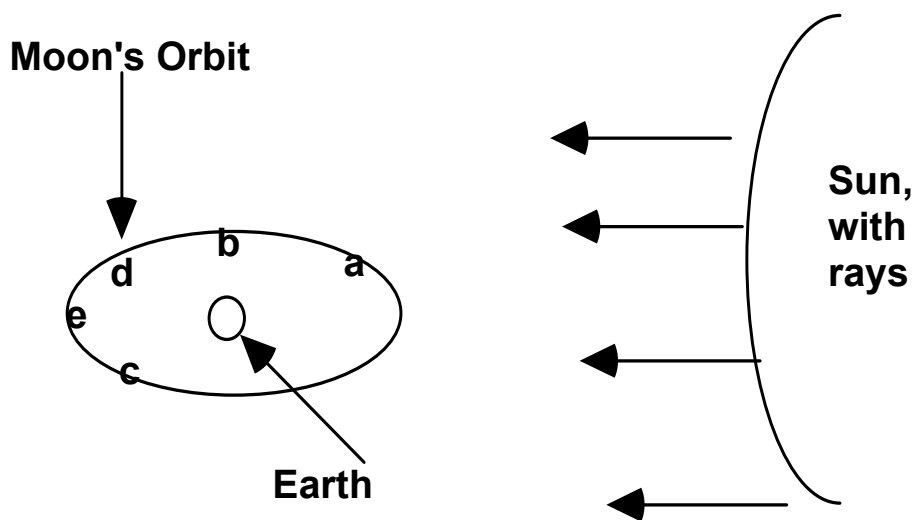
17) What is the declination of the Sun on May 6?
 a) Cannot tell b) 0 deg c) 23.5 deg d) 17 deg e) -17 deg

18) What is the declination of the Sun on Feb 6?
 a) Cannot tell b) 0 deg c) 23.5 deg d) 10 deg e) -16 deg

19) Which position of the Moon (as shown in the following figure), is first quarter?



20) Which position of the Moon (as shown in the following figure) is waning gibbous?



- 21) In the figure from # 20, which of the lunar positions is on the meridian at midnight?
- 22) In the figure from #20, which of the lunar positions is on the Eastern horizon at 4PM?
- 23) If I see the crescent Moon at 3AM and I am near the Earth's equator, is it?
 a) waxing b) waning c) could be either
- 24) If it is new Moon on Tuesday, September 4, when is third quarter?
 a) October 4 b) September 11 c) September 19 d) September 25 e) Cannot tell
- 25) If it is full Moon on Tuesday, September 11, when is new Moon?
 a) October 2 b) September 4 c) September 19 d) September 25 e) Cannot tell
- 26) If it is first quarter Moon on Tuesday, September 11, when is next opportunity for a solar eclipse?
 a) October 2 b) Sept 4 c) Sept 19 d) Sept 25 e) Cannot tell
- 27) If it is first quarter Moon on Tuesday, September 11, when is next opportunity for a lunar eclipse?
 a) Oct 2 b) Sept 4 c) Sept 19 d) Sept 25 e) Cannot tell
- 28) If it is October 7 and Orion is on the meridian, what time is it?
 a) Midnight b) 9PM c) 9AM d) 4AM e) 3PM
- 29) What constellation is at 15 degrees Declination 11 hours Right Ascension? (hint use the map)
 a) Orion b) Draco c) Ursa Minor d) Virgo e) Leo
- 30) Which letter identifies Deneb on mercator map? (example question, map not supplied. You would have the map to look at, but you will need to find Deneb)
- 31) What constellation is Regulus in?
 a) Draco b) Orion c) Canis Major d) Bootes e) Leo
- 32) If there is a solar eclipse on April 1, which of the following is a possible date for another solar eclipse?
 a) April 10 b) May 10 c) Sept 19 d) July 10 e) Dec 8
- 33) If there is a total solar eclipse, the following is true
 a) Everyone on the Earth will see it b) Only one person will see it
 c) Only people within 135 miles of the center of the shadow will see a total eclipse
 d) The eclipse will last all day e) It will occur at full Moon
- 34) What is the summer solstice?
 a) Religious festival b) The highest point that a star reaches as it goes across the sky
 c) The date when the Sun is furthest North d) The time when

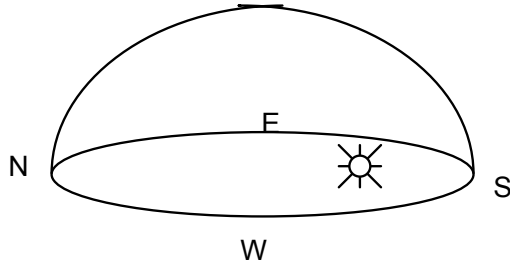
there is most probability of an eclipse e) Mar 21

35) What is the major cause of the seasons on the Earth? a) Changes in the distance from the Sun b) The tilt of the axis changes in space over the year c) Changes in the thickness of the atmosphere d) The tilt of the axis stays the same in space, but changes compared to the Sun e) The pole star changes

36) What is one effect of precession? a) Weather changes b) Pole star changes c) Distance to Sun changes d) Nothing e) The Earth will fall over

37) If it October 7 and the Moon is Waning Gibbous, what is the Right Ascension of the Moon? a) 1 hour b) 4hr c) 6 hr d) 23 hr e) 6 hr

38) What is the time in the following picture? The Sun is on the front surface of the picture a) 9AM b) 5PM c) 7AM d) Noon e) Midnight



39) What is Auriga supposed to be? a) The Little Caesar's man b) A king, Auriga is his name c) A charioteer d) A herdsman e) A dog

40) The best choice for the coordinates of Aquila would be a) 19hr 40° b) 19hr 0° c) 6hr 0° d) 21 hr 40° e) 12hr 10°

41) What is the difference between Right Ascension and sidereal time?

- a) There is none, they are synonyms
- b) The Right Ascension is on the Earth, sidereal time is on the sky
- c) The Right Ascension measures north-south position, sidereal time measures which way the guy's head is pointing
- d) The Right Ascension tells the position of a body on the celestial sphere, the sidereal time tells which direction the meridian is pointing
- e) The sidereal time tells the position of a body on the celestial sphere, the Right Ascension tells which direction the meridian is pointing

42) In what constellation would you find Aldebaran?

- a) Orion b) Scorpius c) Aquila d) Taurus e) Lyra

Answers 1b, 2 d, 3 e, 4 a, 5e, assuming that Castor is at +32 degrees, the latitude will be 90° different, 6 a, 7 c, 8 e, 9 d, 10e, 11b, 12 c, 13a, 14b,15b, 16d, 17d, 18e, 19b, 20c, 21e, 22d, 23b, 24d, 25d, 26a, 27c, 28d, 29 e, 31e, 32 slightly less than 6 months later c, 33c, 34c, 35d, 36b, 37b, 38 b Remember that the Earth spins causing celestial bodies to appear to rise in the East, cross the meridian at culmination, and set in the west. In the case of the Sun, the meridian crossing is noon. The time before meridian crossing, when the Sun is in the East is AM, and after meridian crossing the Sun is in the West and it is PM. At best one can estimate the time from how close to the meridian or the horizon the Sun appears. Be sure to note whether the Sun is in the front or back of the figure. The instructions will specify. 39c, 40b (you can tell from the map, it is not necessary to memorize the numbers), 41d, 42 d