Study Skill Workshop #6: How to Predict Test Questions

Active Textbook Studying: Asking Questions of Chapter Headings, etc.

Two of the best study habits you can develop are to actively read your textbooks and to learn to test yourself before your teacher tests you. One very easy and effective method you can use in order to achieve both goals is to learn how to ask questions of the chapter headings, words in bold print and italics, etc.

The simplest way to do this is to approach your textbook chapters in a “survey” manner. So before starting to actually do the “heavy” reading in the chapter, try this: take a few blank pieces of paper or several 5x8 index cards and set them up so they look like the example below:

______________________________________________________________________________
Textbook/Subject:

Chapter:

Page Number:

Heading:

WHO?

WHAT?

WHERE?

WHEN?

WHY?

HOW?

Then begin surveying the assigned chapter. Start with the first heading (headline) and record information on the page or index card you have prepared, asking yourself the six questions listed. Please see the example at the top of the next page.

EXAMPLE:
As you can see, eight potentially useful questions have been asked about this one concept (heading). Sometimes you’ll be able to think of two or more questions for one of the six question words, and sometimes you won’t think of any. But just get in the habit of asking a lot of questions. Then when you go back to actually read the material, you’ll be looking for answers (and maybe even more questions to write down!), and that will help you concentrate more effectively and, as result, get more from your reading. You should fill in the answers to the questions while you read by stopping each time you find an answer and recording it on the back of your notebook paper or index card. By doing this, you’ll be able to use these sheets of cards to study from as the test approaches (like flash cards!).

If you have time to complete a form for each heading or word/phrase in bold print or italics, that would be great. But even if you can only do this for half of them, you’re going to be better off than you are now because you’ll be reading and studying very actively. As a result, you’ll be getting a better grasp of the subject on which you’ll be tested. Try It!!!!
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The JOVIAN PLANETS AND PLUTO

Table 11.1 US Planetary Probes to the Jovian Planets

<table>
<thead>
<tr>
<th>Planet</th>
<th>Spacecraft</th>
<th>Arrival Date</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jupiter</td>
<td>Pioneer 10</td>
<td>Dec 1973</td>
<td>Flyby; Photos</td>
</tr>
<tr>
<td></td>
<td>Pioneer 11</td>
<td>Dec 1974</td>
<td>Flyby; Photos</td>
</tr>
<tr>
<td></td>
<td>Voyager 1</td>
<td>Mar 1979</td>
<td>Flyby; Photos of Jupiter and satellites</td>
</tr>
<tr>
<td></td>
<td>Voyager 2</td>
<td>July 1979</td>
<td>Flyby; Photos of Jupiter and satellites</td>
</tr>
<tr>
<td></td>
<td>Galileo</td>
<td>1988 (?)</td>
<td>Jupiter orbiter and probe</td>
</tr>
<tr>
<td>Saturn</td>
<td>Pioneer 11</td>
<td>Sept 1979</td>
<td>Flyby; Photos</td>
</tr>
<tr>
<td></td>
<td>Voyager 1</td>
<td>Nov 1980</td>
<td>Flyby; Photos of Saturn and satellites</td>
</tr>
<tr>
<td></td>
<td>Voyager 2</td>
<td>Aug 1981</td>
<td>Flyby; Photos of Saturn and satellites</td>
</tr>
<tr>
<td>Uranus</td>
<td>Voyager 2</td>
<td>Jan 1986</td>
<td>Flyby; deflected to Uranus by gravitational effect of Saturn</td>
</tr>
<tr>
<td>Neptune</td>
<td>Voyager 2</td>
<td>Aug 1989</td>
<td>Flyby; deflected to Neptune by Uranus. If the systems and communications with probe remain operative</td>
</tr>
</tbody>
</table>

Jupiter’s Outer Layers

The first close-up look at Jupiter was provided by Pioneers 10 and 11 in December 1973 and December 1974, respectively. But the really good look came in 1979 when Voyagers 1 and 2 reached Jupiter and transmitted more than 33,000 pictures of the planet and its satellites back to earth. All four of these probes were flybys, but Pioneer 11 and both Voyagers were placed on trajectories such that Jupiter’s gravitational deflection on them sent them on toward Saturn. Pioneer 11 passed Saturn in 1979 and the Voyagers in 1980 and 1981.

The surface of Jupiter is crossed with alternate light and dark, brightly colored bands parallel to its equator. The bands abound in detail and as seen telescopically from earth exhibit gradual changes. Time-lapse photographs from the Voyagers, however, show them to be enormously active and complex features. Jupiter is the most rapidly rotating planet, turning once in just under 10 hours. But its atmosphere does not rotate as a solid unit: different latitudes have slightly different velocities. As a result, the cloud bands, especially at their boundaries, show almost every conceivable kind of current and flow.

Even more striking is the Great Red Spot. The spot was first seen telescopically from earth in 1664. It has changed in size and shape since then, as well as in intensity of color, but on the whole it has persisted. It has been as large as 50,000 km across and been far bigger than the earth. The Pioneer data suggested that it was some kind of long-lived storm system in the planet’s atmosphere. The Voyagers showed it to be a massive eddy with a rotation period of about 6 days and enormously complex, and changing, small eddies in gas streams flowing around it.

As previously mentioned, the chemical composition of Jupiter is very similar to that of the sun-about 98 percent hydrogen and helium. The Voyager confirmed not only that these gases are the principal constituents of Jupiter’s atmosphere but also that their relative abundance is the same as in the sun (about three parts hydrogen to one part helium, by mass). In addition, there are many other trace constituents. Among them are methane and ammonia, which were detected spectrographically from earth many years ago.

When Voyager 1 flew past Jupiter and turned back to photograph its night side, it sent us a surprise: Jupiter has a thin faint ring in its equatorial plane. The ring has an outer diameter of nearly 260,000 km; the width of its brighter region is about 6000 km, but it extends faintly all the way in to the planet’s surface. The ring is very thin, no more than 30 km thick, and is composed of very tiny particles. The famous rings on Saturn not only are far more substantial, but also contain sizable chunks. Analysis of the scattering of light from the

CREATING YOUR OWN STUDY QUIZZES
*Questions based on “Jupiter’s Outer Layers” handout.

FILL-IN STATEMENTS

1. Jupiter rotates once in just under ________ hours.
2. The Great Red Spot was first seen telescopically from earth in the year ________.
3. The Spot has always been far bigger than the _________________.
4. The Spot is a massive eddy with a rotation period of about ________ days.
5. Jupiter has a thin, faint ring in its _______________ plane.
6. The bands around Jupiter abound in ___________ and exhibit gradual changes.
7. The chemical composition of Jupiter is very similar to that of the ____________.
8. Pioneer 11 was the first space probe to fly by the planet ________________.
9. The Great Red Spot has been as large as ___________ kilometers across.
10. The chemical composition of Jupiter is about 98% hydrogen and ____________.

TRUE-FALSE STATEMENTS
(Circle the correct answer)

1. Jupiter is the most rapidly rotating planet.   TRUE    FALSE

2. Jupiter’s outer ring is described as being very thick.   TRUE       FALSE

3. Jupiter’s atmosphere rotates as a solid unit.   TRUE     FALSE

MULTIPLE-CHOICE QUESTIONS

1. Which space probe was the only one to fly by both Uranus and Neptune?
   a. Pioneer 10       c. Voyager 1
   b. Galileo        d. Voyager 2

2. Trace constituents detected in Jupiter’s atmosphere include
   a. methane and ammonia   c. oxygen and carbon
   b. oxygen and neon       d. methane and carbon