

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:

Textbook/Subject: Fundamental Accounting Principles

Chapter: 4

Page Number: 118

Heading: PREPARING A WORKSHEET

WHO? Who is supposed to prepare a worksheet?
Who reads/uses the work sheet once it's prepared?

WHAT? What is a worksheet?
What are the major sections of the work sheet?
What kind of information is put on the work sheet?

WHERE?

WHEN? When is it appropriate/necessary to prepare a work sheet?

WHY? Why is it necessary to prepare a worksheet?

HOW? How is a worksheet correctly prepared?

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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Table 11.1 US Planetary Probes to the Jovian Planets

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

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

From REALM OF THE UNIVERSE (3rd EDITION) by George O. Abell.
Philadelphia Saunders College Publishing, 1984.

