Unit 1 Astronomy

Part I Pre-listening

A Talk about the Topic

1. What's your sign? Tell your partner what your astrological sign is.

2. Below are descriptions of the twelve zodiac signs (十二星座). Read your sign and tell your partner whether the description suits you.

ARIES (白羊座)—The Daredevil

Energetic, adventurous, spontaneous, confident, enthusiastic, lively, passionate, outgoing, courageous, assertive and sharp-witted.

Extremely impatient. Selfish sometimes. Short fuse (irritable).

Love challenges. Tend to be physical and athletic. Lose interest quickly—easily bored.

TAURUS (金牛座)—The Enduring One

Charming, loving, kind and very generous. Warm-hearted, patient, reliable and determined. Hard workers with unusual endurance. Stable and secure solid beings of strong will.

Indulgent, aggressive. Prone to be ferocious. Likely to throw tantrums.

Dislike shortcuts. Take pride in their beauty. Make great friends and give good advice.

GEMINI (双子座)—The Chatterbox

Smart, witty, outgoing, very chatty. Lively, energetic and versatile. Adaptable, argumentative and outspoken.

Busy, sometimes nervous and tense. May seem superficial or inconsistent.

Gossips. Need to express themselves. Like changes.

CANCER (巨蟹座)—The Protector

Very loving and caring. Pretty, handsome. Inventive, imaginative, cautious and protective.

Touchy-feely and shy. Moody, emotional and cautious. Easily hurt, but sympathetic.

Excellent partners for life. Need love from others.

LEO (狮子座)—The Boss

Social, outgoing and extroverted. Generous, warm-hearted. Very organized, creative, energetic.

Bossy. Sensitive and proud.

Need order in their lives. Like being in control. Tend to take over everything. Like to help others. Doing the right thing is important to Leos.

VIRGO (处女座)—The Perfectionist

Very smart, eager, argumentative, hardworking, practical, loyal, beautiful and often shy.

Conservative, pessimistic, harsh and very fussy. Easy to talk to.

Dominant in relationships. Likely to get worried. Hard to please. Always want the last word. Dislike noises and chaos.

LIBRA (天秤座)—The Harmonizer

Nice, charming and elegant. Creative, energetic and very social. Peaceful, generous, beautiful and very loving.

Procrastinators. Indecisive, gullible.

Hate being alone. Give in too easily.

SCORPIO (天蝎座)—The Intense One

Very energetic, intelligent, hardworking, determined, talkative, passionate, attractive and romantic.

Emotional, jealous, possessive. Obsessive and secretive and self-centered.

Hold grudges. Love being in long relationships.

SAGITTARIUS (射手座)—The Happy-Go-Lucky One
Good-natured, optimist. Social, funny and outgoing. Beautiful inside and out.
Childish, boastful and impatient. Defiant against rules.
Merrymakers. Have lots of friends. Like luxuries and gambling. Dislike responsibilities. Hate being confined—tight spaces or even tight clothes.
CAPRICORN (摩羯座)—The Go-Getter
Patient and wise. Practical and rigid. Ambitious, humorous and funny. Good-looking.
Shy and reserved. Often pessimistic. Unfriendly at times.
Like competition. Get what they want. Tend to act before they think. Hold grudges.
AQUARIUS (水瓶座)—The Sweetheart
Optimistic, inventive, intelligent, honest, friendly, loyal, original and very independent. Sweet, attractive inside and out.
Unemotional, rebellious. Very stubborn. Deviationists.
PISCES (双鱼座)—The Dreamer
Generous, kind, thoughtful, creative and imaginative. Sympathetic, loving, unselfish and beautiful.
Sensitive, dreamy and unrealistic. Shy and secretive. Hate details.

B Useful Words and Expressions

astronomer /əˈstrɒnəmə(r)/ *n.* 天文学家 someone who studies the stars and planets using scientific equipment including telescopes

astronaut /ˈæstrənɔːt/ *n.* 宇航员 a person trained to travel in a spacecraft

astrology /əˈstrɒlədʒɪ/ *n.* 占星术 the study of the movement of the stars and planets and how they influence people's characters and lives

observatory /əbˈzɜːvətərɪ/ *n.* 天文台 a building designed and equipped to observe astronomical phenomena

solar system /ˈsəʊlə ˈsɪstəm/ *n.* 太阳系 the sun with the celestial bodies that revolve around it in its gravitational field

cosmic rays /ˈkɒzmɪk/ *n.* 宇宙射线 also called cosmic radiation, radiation consisting of particles, especially protons, of very high energy that reach the Earth from outer space

cosmos /ˈkɒzmɒs/ *n.* 宇宙 the world or universe considered as an ordered system

interstellar /ˌɪntəˈstelə/ *adj.* 星际的 conducted, or existing between two or more stars

intergalactic /ˌɪntəgəˈlæktɪk/ *adj.* 星系间的 of, relating to, or existing between two or more galaxies

comet /ˈkɒmɪt/ *n.* 彗星 an object that travels around the sun leaving a bright tail behind it

asteroid /ˈæstərɔɪd/ *n.* 小行星 also called minor planet, planetoid, any of numerous small celestial

bodies that move around the sun mainly between the orbits of Mars and Jupiter

meteor /ˈmiːtɪə/ *n.* 流星 a piece of rock or metal that burns very brightly when it enters the Earth's atmosphere from space

meteorite /ˈmiːtɪəraɪt/ *n.* 陨石 a rocklike object consisting of the remains of a meteoroid that has fallen on the Earth

rotation /rəʊˈteɪʃn/ *n.* 旋转 circular movement

constellation /ˌkɒnstəˈleɪʃn/ *n.* 星座 a group of stars which form a pattern and have names

eclipse /ɪˈklɪps/ *n.* 日（月）蚀 The total or partial obscuring of one celestial body by another. A solar eclipse occurs when the moon passes between the sun and the Earth; a lunar eclipse occurs when the Earth passes between the sun and the moon

corona /kəˈrəʊnə/ *n.* 日冕 also called aureole, the outermost region of the sun's atmosphere, visible as a faint halo during a solar eclipse

nova /ˈnəʊvə/ *n.* 新星 a star that unexpectedly becomes very bright and then returns to its normal brightness over a period of months or years

gravitation /ˌgrævɪˈteɪʃən/ *n.* 吸引力 any process or result caused by this interaction, such as the fall of a body to the surface of the Earth

nebula /ˈnebjʊlə/ *n.* 星云 a very large cloud of dust and gas that exists in outer space

C Listening Exercise

Listen to a conversation about astronomy and choose the best answers to the questions you hear.

1. A. Saturn.
   B. Jupiter.
   C. Venus.
   D. Mars.
2. A. For knowing signs from their gods.
   B. For personal discovery.
   C. For finding their way across huge areas of ocean.
   D. For guiding their ships to home.
3. A. These mysteries were objects that don't move.
   B. These objects seemed always to move in one direction.
   C. Almost every ancient culture knew of these five mysteries.
   D. Nowadays we cannot find the five wanderers using only our eyes.

4. A. Saturn, Jupiter, Venus, Mercury and Mars.
   B. Saturn, Jupiter, Venus, Comet and Mars.
   C. Saturn, Sirius, Jupiter, Mercury and Mars.
   D. Saturn, Venus, Sirius, Mercury and Mars.
5. A. The science of astronomy.
   B. The study of Mars.
   C. The study of stars.
   D. Five great mysteries.

Part II While Listening

Text A Fun Facts about Astronomy

Prediction

1. What do you know about the sun and the moon?
2. What do you know about stars and planets?

Cultural Notes

Astronomy is a natural science which is the study of celestial objects (such as stars, galaxies, planets, moons and nebulae), the physics, chemistry, and evolution of such objects, and phenomena that originate outside the atmosphere of Earth, including supernovae (超新星) explosions, Gamma Ray (伽马射线) bursts and cosmic microwave background radiation. Astronomy is one of the few sciences where amateurs can still play an active role, especially in the discovery and observation of transient (短暂的) phenomena. Amateur astronomers have contributed to many important astronomical discoveries.

Exercise 1 Global Understanding

Listen to the text for the first time, focus on the global idea of the passage and then write down the two branches of astronomy and several aspects of astronomy mentioned.

1. Two branches: (1) _____ astronomy and (2) _____ astronomy
2. Aspects: fun facts about (3) _____
   (4) _____
   (5) _____
   (6) _____

Exercise 2 Listening and Note-taking

Listen to the part about the sun and the moon and read the two examples of note-taking, then decide which one is better and why?

Example A

sun: age—4.5 bn yr
energy—383 bntn kw
sunlight: 8 min → Earth
↘ ocean currents & weather patterns
Earth: elliptical uneven orbit
av. size: 98%/total matter/solar system
solar winds: ≈50 AU
lightning: ≈3 times hotter > sun

moon: only 1(⊗Earth)—man walked
Dr. Eugene Shoemaker's ashes, scattered, Lunar Prospector spacecraft, 1999
oldest footprint—Neil Armstrong
Earth, ← 3cm, per yr

Example B

sun: age—4.5 billion years old & produces 383 billion trillion kilowatts of energy; sunlight: takes 8 minutes to the Earth & responsible for ocean currents & weather patterns; Earth orbits sun in an elliptical uneven orbit; average size, but accounts for 98% of the total matter in our solar system; solar winds: about 50 AU; lightning: nearly 3 times hotter than the sun.

moon: only non-earth object a man has walked; Dr. Eugene Shoemaker loves moon; his ashes was scattered over the moon by Lunar Prospector spacecraft in 1999; Giant footprint by Neil Armstrong—oldest footprint; Every year moon is moving away from the Earth by 3 cm.

Your choice: _____

Note-taking

The importance of note-taking

Why do we bother to take notes when we are already having a hard time figuring out what the lecturer says in class? Following are some of the reasons: first of all, having good lecture notes to review can help us later to prepare for and perform on exams. Secondly, taking notes can help us concentrate on the on-going lecture and prolong our attention span. Last but not least, efficient note-taking can promote our critical thinking. To be effective, note-taking has to be done quickly to minimize lecture distraction; effective notes must summarize; and effective notes have to be reviewed or they are useless.

Tips on note-taking

Each person should develop his or her own habit of taking notes and using notes, but it'll help to keep the five "R"s in our mind, i.e. record, reduce, recite, reflect and review.

1. Record

You should try to capture the main ideas and identify the main points. You may choose to use outlines or mind maps, keywords, graphs or pictures, to get down the important information quickly. Use symbols and diagrams. Things like arrows, dots and boxes, diagrams, charts, and other visual aids are often effective ways to associate and remember key concepts, especially if you're a visual learner.

2. Reduce

Don't write down every word you hear. Be selective and condense your understanding in note forms, even in shorthand. Summarize the ideas. Avoid quotations unless it is necessary. Make your notes as brief as possible. Never use a sentence when you can use a phrase or a phrase when you can use a word.

3. Recite

Review from memory what you have learned. Use the left hand margin's keywords and questions, talk through, or illustrate definitions, concepts, etc. Create your own examples and phrase your own doubts and questions.

4. Reflect

Consider in what way the lecture notes are related to your prior knowledge. Learn to apply, compare and evaluate on the basis of your notes.

5. Review

Read the notes at your next study session and when you study for tests. You will gain not only an academic edge (学术优势) but also greater motivation to take good notes.

Exercise 3 In-depth Listening

Listen to the part about planets and complete the following statements.

1. Mercury is the (1) _____ planet in the solar system and has (2) _____. It can get as hot as (3) _____ and cold as (4) _____ below zero. One year on Mercury is equal to (5) _____ days on Earth.
2. Venus is the only planet that rotates from (6) _____. A year on this planet is equal to (7) _____ days on Earth.
3. Earth is nearly (8) _____ miles away from the sun. It takes about (9) _____ horsepower to break the Earth's gravitational pull.
4. According to scientists, in around (10) _____ years, a day on Earth will be (11) _____ long and somewhere during that time the sun will explode.
5. The planet Neptune was discovered more than (12) _____ years ago in 1846, and since then it still has to complete an orbit around the sun, as one Neptune year equals to (13) _____ Earth years.
6. Pluto's size is very small which made scientists demote it to a (14) _____ planet status.

Exercise 4 Discussion

1. What fun facts about astronomy fascinate you?
2. What other astronomical knowledge do you know, such as black hole, different types of stars?

Vocabulary

celestial /sə'lestɪəl/ *adj.*	天上的
kilowatt /'kɪləwɒt/ *n.*	千瓦
elliptical /ɪ'lɪptɪkəl/ *adj.*	椭圆的
Proxima Centauri /'prɒksɪmə sen,tɔ:'raɪ/	比邻星
protostar /'prəʊtəstɑ:/ *n.*	原恒星
dwarf star /dwɔ:f stɑ:/	矮星
pulsar /'pʌlsɑ:/ *n.*	脉冲星
Polaris /pəʊ'leɪrɪs/ *n.*	北极星
Mercury /'mɜ:kjərɪ/ *n.*	水星
Venus /'vi:nəs/ *n.*	金星
horsepower /'hɔ:spaʊə(r)/ *n.*	马力
Neptune /'neptju:n/ *n.*	海王星
Pluto /'plu:təʊ/ *n.*	冥王星
demote /dɪ'məʊt/ *v.*	降级

Text B Shenzhou-10 Mission

Prediction

1. What are China's achievements in space exploration?
2. What do you know about Shenzhou-10 mission?

Cultural Notes

Shenzhou-10 was a manned spaceflight of China's Shenzhou program that was launched on 11 June 2013. It was China's fifth manned space mission. The mission had a crew of three astronauts: Nie Haisheng, who was the mission commander and previously had flown on Shenzhou-6, Zhang Xiaoguang, a former PLAAF squadron commander who conducted the rendezvous and docking, and Wang Yaping, the second Chinese female astronaut. The astronauts performed physical, technological and scientific experiments while on board. Shenzhou-10 was the final mission to Tiangong-1 in this portion of the Tiangong program.

Exercise 1 Global Understanding

Listen to the text for the first time, focus on the global idea of the passage and then choose the right answers to the questions you hear.

1. A. June 13th.
   B. June 20th.

C. June 24th.

D. June 25th.

2. A. The Tiangong-1 and Shenzhou-10 manned space mission has achieved most of its goals.

B. China hasn't set up a permanent space station.

C. More than 16 million students and teachers watched the live broadcast of the lecture.

D. On June 23rd, Zhang Xiaoguang piloted the spacecraft while the other two monitored the instruments and flight path.

Exercise 2 Listening for Details

Listen to the first part and decide whether the following statements are true (T), false (F) or not given (NG).

1. Wang Zhaoyao is the director general of the State Council Information Office. ( )
2. The goals achieved by Shenzhou-10 manned space mission included precise docking. ( )
3. The next step is to set up a permanent space station. ( )

Exercise 3 Compound Dictation

Listen to the second part and complete the following table.

Shenzhou-10 Mission	
Dates	**Events**
June 11th	Shenzhou-10 (1) _____.
June 13th	Shenzhou-10 automatically (2) _____ with the Tiangong-1. Astronauts entered Tiangong-1 to (3) _____.
(4) _____	Wang Yaping (5) _____ from space.
June 23rd	The crew conducted (6) _____.
June 24th	President Xi Jinping (7) _____ with the astronauts via a (8) _____.
June 25th	Shenzhou-10 (9) _____ Tiangong-1 & docked with (10) _____.

Exercise 4 Reflection on the Text

Introduce Shenzhou-10 mission according to the expressions you used in Exercise 3.

Vocabulary

crowning /ˈkraʊnɪŋ/ *adj.*	最高的，至高无上的
injection /ɪnˈdʒekʃən/ *n.*	（卫星等的）入轨
docking /ˈdɒkɪŋ/ *n.*	（航天器在轨道上的）对接
blast off /blɑːst/	离地升空，点火起飞
Tiangong-1 space module /ˈmɒdjuːl/	天宫一号是中国第一个目标飞行器和空间实验室，于2011年9月29日21时16分3秒在酒泉卫星发射中心发射，飞行器全长10.4米，最大直径3.35米，由实验舱和资源舱构成。
impetus /ˈɪmpɪtəs/ *n.*	动力

Part III After Listening

A Definition of Chronology

Chronology is an organizational pattern that deals with order and sequence of information. Most often chronology is referred to as an organizational method in which items and events are placed into the order in which they have occurred. Chronology is an arrangement of items or events in "order of occurrence". And it also relates to measuring divisions of time and assigning dates to specific events.

Using chronology is to present information with a certain organizational pattern. Because items or events are placed in order according to time, it helps individuals understand sequence and its effect on events.

B Use of Chronology

1. Method

Items can be placed in chronological order either forward or reversely. In other words, events can be placed in order from first to last or from last to first. Typically, when organizing events chronologically, it is important to start with main sections of time and be clear about the sequence of events.

2. Examples

(1) Marie Curie, one of the first women scientists to win worldwide fame, was born in Warsaw, Poland **in 1867**. She was winner of two Nobel Prizes, for physics **in 1903** and chemistry **in 1911**. She died **in 1934**.

(2) The American Civil War started **in 1861**. **Over four years**, 237 named battles were fought. The war ended **in 1865**, with the victory of the North, and the abolishment of slavery.

(3) China began its economic reform **in the 1980s**. To adapt to the market economy and improve the competitiveness of State-owned enterprises **in the 1990s**, China began restructuring its enterprises through mechanisms such as mergers. **Now thirty years later** great changes have taken place nationwide.

(4) The Industrial Revolution saw the rise of banks and industrial financiers. A stock exchange was established in London **in the 1770s**. **In 1776**, Scottish moral philosopher and economist Adam Smith, who was citied as "the father of modern economics", published *The Wealth of Nations*. The New York Stock Exchange was founded **in the early 1790s**.

(5) The first Olympic Games for which we still have written records were held in **776 BC** in Greece. The ancient Olympic Games were played every four years **for nearly 1200 years**. **In 393 AD**,

the Roman emperor Theodosius (迪奥多西) I, abolished the Games. **1500 years later**, a young Frenchman named Pierre de Coubertin (顾拜旦) began their revival. **In 1896**, the first modern Olympics were held in Athens, Greece. **Since then** the games have been held regularly every four years, each time in a different city in the world.

3. Chronology Used in Part II

The chronology method used in Text B

The speaker uses chronology method to describe **the space exploration mission conducted by Shenzhou-10**.

*The Shenzhou-10 blasted off **on June 11th**, from northwest China's Jiuquan Satellite Launch Center. **On June 13th**, the Shenzhou-10 automatically docked with the Tiangong-1 space module… **A week later**, Wang Yaping became China's first teacher to give a lecture from space… **Then on June 23rd**, the crew conducted a manual docking procedure… **On June 24th**, President Xi Jinping spoke with three astronauts via a two-way video link… **On June 25th**, the Shenzhou-10 flew around Tiangong-1 and docked with the module.*

C Practices

1. Use chronology method to describe the daily routine of Tony Smith, manager of Sales Department of ABC Company, on a typical workday.

Life on a workday	
7:00	Get up
7:45	Leave for work
8:30	Arrive at office
9:00	Begin working by checking emails
10:00	Meet clients or business partners
12:00	Have lunch
2:00	Attend a staff meeting
5:00	Finish work
7:00	Have dinner at home

2. Use chronology method to describe the life and achievements of Bill Gates.

Life and achievements of Bill Gates	
Oct. 28, 1955	Born
1968	Discovered his interest in software
1973	Enrolled in Harvard University

At Harvard	Developed a version of the programming language BASIC for the first microcomputer—the MITS Altair
His junior year	Dropped out of Harvard and started Microsoft
Jan. 1, 1994	Married Melinda Gates
June 27, 2008	Retired from his day-to-day role in Microsoft and began to devote himself to charity

D Further Discussions

Discuss one of the following topics. You are required to make use of the speech strategy you have just learned in this unit.

1. Describe the achievements people have made in the sun exploration. You are required to search for information, fill in the chronological chart, and organize your speech based on the information you have collected.

Time	Achievements

2. Describe the achievements people have made in the moon exploration. You are required to search for information, fill in the chronological chart, and organize your speech based on the information you have collected.

Time	Achievements

Part IV Homework

A Listening Task

Listen to the passage about lunar mission and fill in the blanks with what you hear.

On April the 12th, 1961, the Soviets put their (1) _____ beyond doubt. Yuri Gagarin became the first man in space. Enough was enough. America's new president needed to make his own grand (2) _____.

"For the eyes of the world now look into space to the moon and the planets beyond. And we have (3) _____ that we shall not see it governed by a (4) _____ flag of conquest, but by a banner of freedom and peace. We choose to go to the moon, we choose to go to the moon, we choose to go to the moon in this (5) _____ and do the other things, not because they are easy, but because they are hard."

Apollo 17 was the final (6) _____. On board was Harrison Schmitt—the only scientist ever to fly to the moon.

"Challenger, you will go for the landing."

"Feels good. Stand by for touchdown. Stand by, down in 2, feels good. 20 feet, going down in 2. Ten feet. Ten feet, got contact."

He landed in the Taurus-Littrow Valley, the site of the cinder cones (7) _____ from Apollo 15.

Schmitt: "The beauty of the place was certainly not lost on me. But once you're there, you sort of slip into the mode of being a field geologist. And it's your profession, you got three days to practice it in this very remarkable location, beautiful location. And, and so you go at it."

On their second field trip, Schmitt and Cernan made their way to a crater called Shorty. (8) _____ _____.

"Guys, we don't have that much time."

"I know, Bob, I know."

Schmitt: "By the time we arrived at Shorty, we knew it was going to be a short stop. Half an hour really is all we had because of our oxygen supply."

"That's twenty nine and a half minutes from now, but remember they left that site a little bit late."

Schmitt: "We had anticipated though that we might see something exciting there in the event that this was really a volcanic crater. So I headed over to the edge of the crater and on the way I scuffed up some orange-looking material at my feet. And that's when the whole excitement started."

"Oh, hey, there's orange soil. It's all over."

"That's a volcanic vent."

"There it is. I can see it from here. It's orange."

(9) _____, a find that could challenge everything the earlier missions had discovered about the moon.

"I gotta dig a trench. Houston. Fantastic, sports fan, it's trench time."

(10) _____.

"How can there be orange soil on the moon?"

"They gotta leave at a certain time regardless of what they've got."

"There isn't enough time going, they do it no matter which way you want to do it, we need more time."

"Jim, you better make it clear to Parker we've got to pull out."

"We'd like you to leave immediately."

"Ok, oh golly, this time goes fast."

"Three, two, one, ignition."

"We're on our way, Houston."

These were the last men to walk on the moon.

B Speaking Task

You may use chronology to help you explain one of the following topics to your audience who are laymen of the field. You may also choose a different one you are interested in about astronomy.

1. Chinese space exploration
2. Exploration of the Planet Mars in the 21st century

C Research Project

1. Form a group of 3 students.
2. Conduct a research about astronomy and present it in class.
3. The first student reports on how you decide on a particular topic and collect information; the second student gives a formal presentation of the project, and the third student answers questions from your classmates.