

DATE:

NAME:

CLASS:

TOPICS 1-2

Unit 5 - Space Exploration

BLM 5-7

ASSESSMENT

Topics 1-3 Review

objective lens
 ellipse
 altitude
 spectral lines
 compass
 planets
 Blue shift
 diffracting grating

eyepiece (ocular)
 reflectors
 frame of reference
 constellations
 refractor
 universal gravitation
 altitude-azimuth co-ordinates
 spectroscope
 celestial bodies

spectroscopy
 Doppler effect
 Red shift
 astrolabe
 resolving power
 telescope
 azimuth
 geocentric

Definitions

1. To find a star in space, you first find North and rotating yourself until you face the correct direction. This is called your azimuth. The instrument used to find this measurement is called a compass. The next measurement is then called the altitude and is the height of the object above the horizon. The device used to find this is called a astrolabe. What are two things that you need to know before you find your coordinates to make sure you are finding the correct star?

1. alt-azi coord
2. frame of reference

2. A telescope is a device that is used to see an object that is far away. The lens in which we look through is called the eyepiece lens. The larger lens at the front is known as the objective lens. The larger lens is responsible for increasing the amount of detail that can be seen. The fineness of the detail that can be seen is known as the resolving power. What would the magnification of a telescope be if the focal length of the small lens was 3cm and the focal length of the large lens was 60cm? 20x

3. The original ideas pertaining to the shape of the universe were based on the Earth being the centre of the universe. This theory was called Geocentric. As information increased, a man by the name of Copernicus/ Galileo developed a theory called Heliocentric universe. This newer theory explained that the sun is at the centre.

4. To understand what a star is made up we study the small black lines found in the sun's spectrum called Spectral lines. The device that we look through to see these spectral lines is called a Spectroscope. This device works because the light is passed through a clear film that has small slits cut into it to produce a focused spectrum. This film is called a diffraction grating and creates the same effect found on the back of CD's. This study of the star's lines found in its spectrum is called Spectroscopy.

5. Looking at the spectrum of a star also told us additional information about the star's direction. Astronomer's notice the when a star was moving towards us, their spectral lines were blue shifted. When the star's spectral lines were red shifted, this meant that the star was moving away from us. The effect that looks at waves to understand the direction of an object is called the Doppler effect.

Matching

Match each definition in column A with the correct term in column B.

A

6. Kepler's discovery — the shape of planetary orbits
7. name given to a group of stars
8. telescope with a mirror for an objective
9. an object seen in the sky beyond Earth
10. when a planet turns on its axis
11. a telescope that used both mirrors and lens
12. a telescope that uses lens as their objective

B

- 10 rotation
- 9 celestial body
- 8 reflecting
- 12 refracting
- 6 elliptical
- 7 constellations
- 11 combination

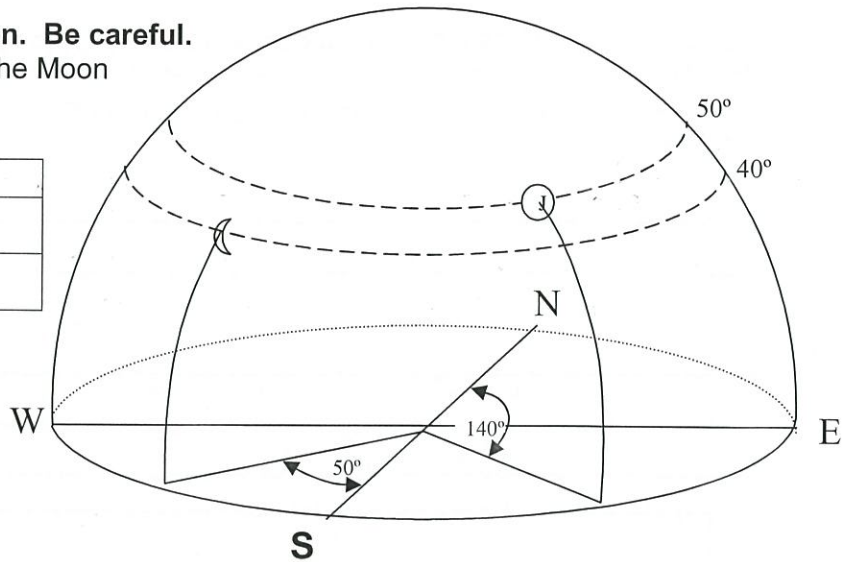
14. How did the ancient astronomers know that the planets were different from the stars? (2 marks)

Planets moved through the sky, stars
did not

Use this diagram to answer the next question. Be careful.

15. Write the altitude-azimuth co-ordinates for the Moon and Jupiter in the diagram. (2 marks)

	Azimuth	Altitude
Moon	230	40
Jupiter	140	50

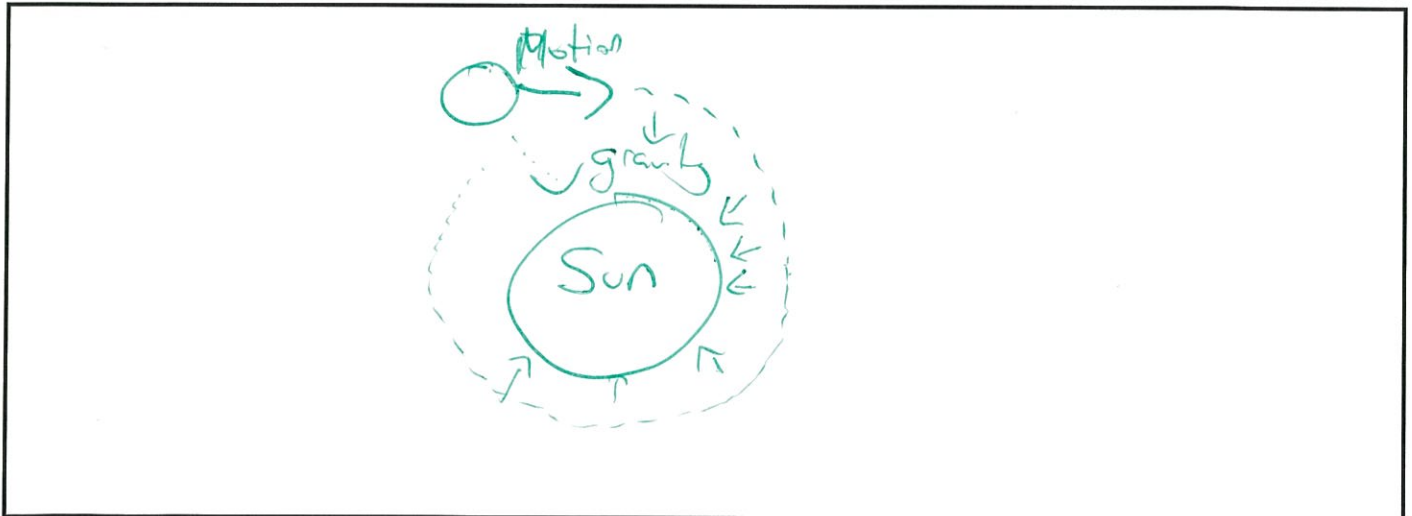


16. What are **two** methods of evidence that early astronomers used (such as Galileo) to support the idea of a Heliocentric Model? Explain each. Be specific. (4 marks)

Evidence #1	Evidence #2
Moons orbited Jupiter, not Earth	orbits of planets

17. How did Newton's Laws of Motion help to support the notion of Universal Gravity and the planet's orbits around the sun? Explain in detail what is happening. Use labeled drawings to help support your ideas. (5 marks)

- All things have gravity
- All things travel in straight lines unless there is a force



18. Show how, when a star is heading towards us or away from us, that the spectral lines or the light that it gives off can be shifted. What is happening to the waves that the star produces? (Look back at your answer in question 2). Use **pictures** and **labels** to help explain what is happening to the light. (4 marks)

The waves are being red or blue shifted. The movement compresses or stretches the wavelengths

