

SPACE EXPLORATION UNIT TEST ASSESSMENT

Student Name _____

Class _____

1. The *axis for the frame of reference* to identify locations on the earth are ...
 - A. Equinox and Solstice
 - B. Ecuador and Madagascar
 - C. Equator and Prime Meridian
 - D. Tropics of Cancer and Capricorn

2. The Ancient Egyptians believed that the Sun God *Ra* was pulled across the sky in a sacred ...
 - A. sled
 - B. boat
 - C. wagon
 - D. chariot

3. The *astrolabe* is a device that is used to measure azimuth. It was invented by ...
 - A. Aristotle
 - B. Galileo Galilei
 - C. Ancient Greeks
 - D. Ancient Egyptians

4. The stars are used as a frame of reference to track the *actual motion* of each celestial body, because the motions we look at in the sky are different from the big motion caused by the Earth's ...
 - A. rotation
 - B. altitude
 - C. azimuth
 - D. orbit

5. *Ptolemy and Copernicus* each developed a model of celestial bodies in our universe that explained the 'epicycles' of the planets. The biggest difference between their representations was that ...
 - A. Ptolemy had the sun at the centre
 - B. Copernicus had the sun at the centre
 - C. Ptolemy had the Earth revolving around the Sun
 - D. Copernicus had the Sun revolving around the Earth

6. A navigation device that ancient people used to measure altitude of stars in the night sky was the ...
 - A. sextant
 - B. astrolabe
 - C. quadrant
 - D. compass

7. Galileo's telescopic observations of the moons orbiting Jupiter, supported ...
 - A. Copernicus's Sun-centered model
 - B. Ptolemy's Earth-centered model
 - C. Kepler's Earth-centred model
 - D. Pythagorus' Sun-centred model

8. In order to get finer detail in a telescopic image, the telescope must improve it's ...
 - A. ocular power
 - B. resolving power
 - C. telescopic power
 - D. reflective power

9. The **Hubble Space Telescope** is a cylindrical reflecting telescope, 13 m long and 4.3 m in diameter. Because parts of this telescope can be removed and replaced it is considered to be ...
 - A. functional
 - B. modular
 - C. flexible
 - D. mobile

10. Kepler solved the problem of the epicycles by insisted that the orbits of the planets should be ...
 - A. elliptical
 - B. epicycled
 - C. circular
 - D. semi-circular

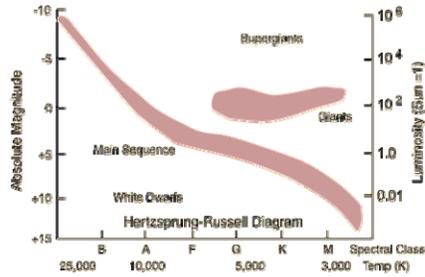
11. A device enabling you to pass light through a narrow slit before sending it through a prism is called a ...
- A. **spectroscope**
 - B. spectrograph
 - C. spectrogram
 - D. spectrometer
12. With thousands of closely spaced slits much better detail in the spectrum can be produced using this device ...
- A. deflector dish
 - B. reflective grid
 - C. refracting prism
 - D. **diffraction grating**
13. The spectrum of an *approaching star* shows the dark bands shift to the
- A. **blue end of the spectrum**
 - B. center of the spectrum
 - C. violet part of the spectrum
 - D. red part of the spectrum
14. The spectrum that produces dark lines when white light passes through a cooler substance is called...
- A. emmission
 - B. continuous
 - C. **absorption**
 - D. defraction
15. The spectroscope's application to astronomy has helped astronomers determine the ...
- A. orbital rotation
 - B. distance of stars
 - C. **composition of stars**
 - D. life cycle of a star
16. The NTT (New Technology Telescope) directs computers to control an image, always moving the mirror to reflect changes in the Earth's atmosphere. The technology that does this is called ...
- A. fibre optics
 - B. **adaptive optics**
 - C. reflective optics
 - D. spectral optics
17. The *twinkling effect* of a star is created by the ...
- A. **atmospheric motion**
 - B. debris in space
 - C. size of the star
 - D. composition of the star
18. Two ways to measure long distances indirectly, on the ground, or in space are triangulation and ...
- A. spectroscopy
 - B. holography
 - C. diffraction
 - D. **parallax**
19. Using the parallax technique, the longest baseline that astronomers can use is the diameter of Earth's ...
- A. **orbit**
 - B. crust
 - C. surface
 - D. atmosphere
20. Triangulation is based on a process of estimation, using these 3 steps:
1. Making a scale drawing
 2. Creating a baseline
 3. Measuring angles from the end of the baseline
- The correct order of the steps to follow in this method of estimating distance is ...
- A. 1 2 3
 - B. 2 3 1
 - C. **2 1 3**
 - D. 3 2 1

21. One part of the electromagnetic spectrum is gamma waves. Their waves are known by their ...
- A. low frequency and long wavelengths
 - B. low frequency and short wavelengths
 - C. high frequency and long wavelengths
 - D. high frequency and short wavelengths
22. Radio telescope waves provide data, which astronomers graph, using computers to store the data and false color it to produce images of the radio waves, which are coded to the strength of the waves. For low intensity waves, they are colored ...
- A. red
 - B. blue
 - C. green
 - D. yellow
23. The greater the distance between the radio telescopes the more accurately they can measure ...
- A. size
 - B. distance
 - C. position
 - D. composition
24. To improve accuracy many radio telescopes are combined electronically. This collection of many radio telescopes is called ...
- A. a farm
 - B. an array
 - C. an order
 - D. a grouping
25. Additional resolution in a VLA image identified a central white region in a galaxy in deep space which astronomers think is the location of a ...
- A. new star
 - B. bying star
 - C. black hole
 - D. active galaxy
26. The science of rocketry relies on a basic physics principle: For every action –
- A. Forces will remain constant
 - B. There is an equal and opposite reaction
 - C. Distance and speed will be decreased
 - D. There is a reason to overcome gravity
27. All fuels create exhaust which comes out the end of the rocket. The speed of the exhaust leaving the rocket is called the *exhaust velocity*, which determines the. ..
- A. speed of the rocket
 - B. range of the rocket
 - C. direction of the rocket
 - D. altitude of the rocket
28. A bomb that is powered by a rocket engine like the *V-2 rocket* is called a ...
- A. hydrogen bomber
 - B. atomic reaction
 - C. ballistic missile
 - D. scuba missile
29. A method of acceleration which enables a spacecraft to achieve extra speed by using the gravity of a planet is called ...
- A. elliptical acceleration
 - B. gravitational assist
 - C. momentum acceleration
 - D. orbital velocity
30. Satellites can be natural or artificial – the only natural satellites in this list ...
- A. Moon
 - B. Anik 1
 - C. LANDSAT
 - D. RADARSAT

31. The Sun's energy is charged particles released in all directions. This solar wind bombards the Earth at 400km/s, but this protects us ...
- A. The Asteroid Belt
 - B. Earth's magnetic field
 - C. Earth's atmosphere
 - D. Axis and rotation of the Earth
32. The formation of our solar system is based on the ...
- A. Big bang theory
 - B. Theory of relativity
 - C. protoplanet hypothesis
 - D. Law of Conservation of Mass
33. The inner planets - Mercury, Venus, Mars and the Earth - because of their composition are considered to be ...
- A. terrestrial
 - B. gaseous
 - C. friendly
 - D. unfriendly
34. The astronomical unit is used for measuring 'local' distances in the solar system. It is equal to the distance from the center of the Sun to the ...
- A. first planet
 - B. next galaxy
 - C. center of the Earth
 - D. end of the solar system
35. In the 1920's, Ejnar Hertzsprung and Henry Norris Russell compared the surface temperature of stars with its luminosity. They graphed their data to show the relationship between ...
- A. color and intensity
 - B. heat and temperature
 - C. temperature and age
 - D. brightness and temperature
36. To get into orbit and stay there gravity must be overcome, with a speed of 8km/s. This is called...
- A. exit velocity
 - B. launch acceleration
 - C. gravitational lift
 - D. escape velocity
37. There are different types of spacecraft currently in use. The main function of a space probe is to ...
- A. explore space
 - B. coordinate missions
 - C. carry supplies
 - D. perform experiments
38. In 1839 Sir Edward Sabine (a Canadian) established the 1st magnetic observatory and discovered that the Aurora Borealis is associated with ...
- A. sunspot activity
 - B. electromagnetism
 - C. atmospheric interference
 - D. ozone depletion
39. Living in the microgravity of space can cause problems because of the effects of weightlessness on the human body. Bones have less pressure on them and so they
- A. shrink, lose calcium and become softer
 - B. become very flexible and break easily
 - C. expand, lose calcium and become more brittle
 - D. expand and explode if they are in space too long
40. Ion Drives are engines that use this gas instead of chemical fuel.
- A. neon
 - B. helium
 - C. argon
 - D. xenon

NR1. The **Hertzsprung-Russell** diagram (which includes data from thousands of stars) graphs the brightness and temperature of each class of star.

Rank the stars from hottest to coolest.

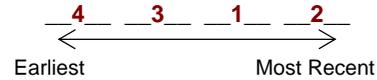


1 White Dwarf 4 Giant 2 Supergiant 3 Sun (main sequence)

1	4	2	3
.	.	.	.
0	0	0	0
1	1	1	1
2	2	2	2
3	3	3	3
4	4	4	4
5	5	5	5
6	6	6	6
7	7	7	7
8	8	8	8
9	9	9	9

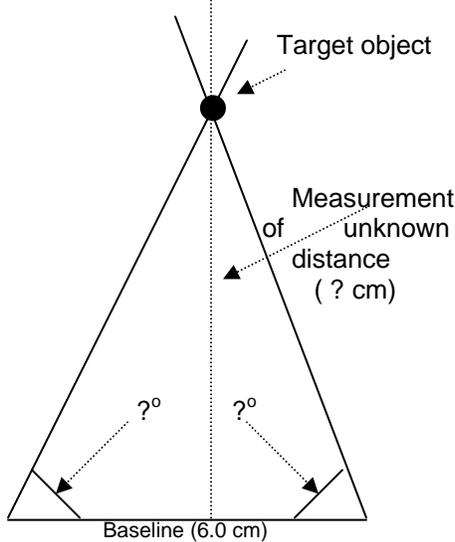
NR2. Place these events that represent a small part of the early achievements of space science in the order they happened, beginning with the earliest.

- 1 – Sputnik 1
- 2 – International Space Station
- 3 – Goddard's liquid fuel
- 4 – Fireworks



4	3	1	2
.	.	.	.
0	0	0	0
1	1	1	1
2	2	2	2
3	3	3	3
4	4	4	4
5	5	5	5
6	6	6	6
7	7	7	7
8	8	8	8
9	9	9	9

Measure the 'unknown distance' in the Illustration using the **triangulation** technique.



Show your work

Scale of drawing: 1 cm = 20 m

Use your *Solar System Data Cards* to complete the table

	Inner Planets	Outer Planets
Planets	_____	_____
Composition	_____	_____
Total # of Moons	_____	_____
Average Diameter	_____	_____
Average Temperature	_____	_____