

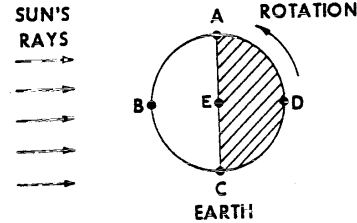
Model of the Earth Review

Set 4

ANSWERS AND EXPLANATIONS

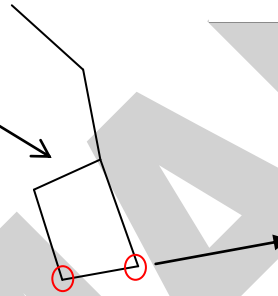
1. (1) **42°08'N , 79°14'W** – Jamestown is located just North of the 42° latitude and just to the left of the 79° longitude.

2. (2) **6:00am** - Point A is on the fringe of night and day. The rotation arrow shows that point A is turning into the light indicating that it is sunrise - 6:00am.



3. (3)

Big Dipper



The circled stars in the Big Dipper are known as the “pointer stars”. Just draw a line through these two stars and you will find Polaris above the Big Dipper.

4. (4) **15°C** - *ESRT* page 14 – At sea level, the temperature line starts right at 15°C.

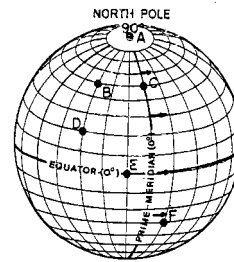
5. (1) **155°W** – On page 5 on the *ESRT*, the Hawaii Hot Spot is in between the 150° and 160° longitude lines and is to the left of the Prime Meridian (in the area we shaded as west longitudes).

6. (2) **nitrogen** - *ESRT* page 1 - The number one gas in the troposphere is nitrogen (78% by volume)

Use the diagram to the right to answer **questions 7-11**.

7. (4) **90°** – Altitude of Polaris = latitude of the observer
Point A is right at the North Pole at 90°N.

8. (3) **B and D** – are on the same longitude and therefore in the same time zone

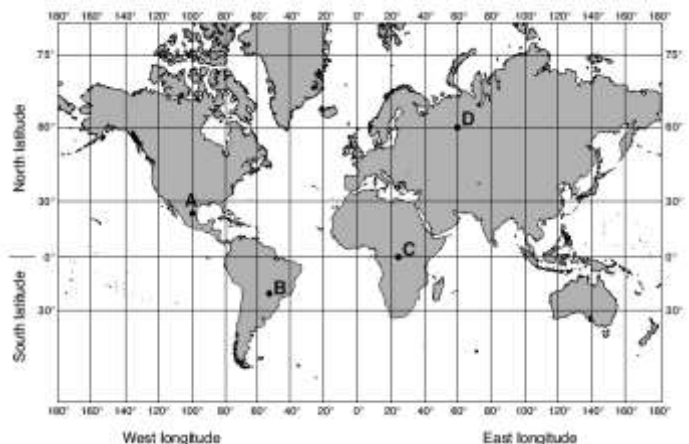


9. (2) **8:00pm** - Point D is 4:00pm. Point F is 4 lines (15° per line) to the right of point D. This means point F is 4 hours later in time than point D – add four hours onto 4:00pm to get 8:00pm

10. (2) **F** – Polaris can only be viewed in the Northern Hemisphere. Point F is below the Equator and therefore an observer there cannot see Polaris.

11. (2) **decrease** – If an observer moved from B to E, he would move south. Therefore, Polaris would get lower in the sky.
12. (2) **23.5°S** - *ESRT* page 4 – The Tropic of Capricorn is labeled on the map.
13. (4) **Syracuse** – Altitude of Polaris = latitude of the observer. Syracuse is 43°N latitude.
14. (2) **The temperature constantly decreases from the Earth's surface to the upper thermosphere.**
According to the temperature graph on the *ESRT* page 14, the temperature trend varies in each layer of the atmosphere. It decreases with height in the troposphere, then increase in the stratosphere, decreases in the mesosphere, and then increases again in the thermosphere.
15. (4) **80 km** – *ESRT* page 14 - The coldest temperature shown in the atmosphere is at the mesopause (altitude of 80km) where the temperature is -90°C.
16. (1) **43°05' N** - *ESRT* page 3 – the NYS map shows that Utica located just a little bit above the 43°N line. You could do this question without having to look it up as well. If the city is in NY, then its latitude has to have an “N” attached to it. Only choice 1 does this ...
17. (4) **troposphere** – The troposphere is the lowest layer of the atmosphere where almost all the water vapor is located. *ESRT* page 14 shows that as altitude increases, water vapor decreases. This means that most water vapor would be located near Earth's surface - in the troposphere.
18. (1) **silicon** – *ESRT* page 1 - After oxygen, silicon is the next abundant element by mass.

19. (2) **B** – Location B is supposed to be at the Tropic of Capricorn (23.5°S) which is below the Equator. Polaris can only be seen in the Northern Hemisphere. Places below Equator cannot see Polaris at any time.



20. (3) **ozone which protects humans from the harmful ultraviolet rays of the Sun**
Chlorofluorocarbons are also known as CFC's. They are chemicals once widely used in industry that, when released into the atmosphere, have been found to destroys ozone located in the stratosphere. The ozone layer is important to humans because it absorbs much of the harmful ultraviolet radiation of the Sun before it reaches Earth.