



# Earth Science

Section Green

Topic 2 Practice

Name: \_\_\_\_\_

Date: \_\_\_\_\_

## Part I

Base your answers to questions 1 and 2 on the following temperature field map provided.

The map shows air temperatures, in degrees Fahrenheit, recorded at the same time at weather stations across North America. The air temperature at location A has been deliberately left blank.



- On the map provided, use smooth, curved solid lines to draw the 30°F, 40°F, and 50°F isotherms.
  - What is the most probable air temperature at location A?
- 
- The approximate latitude of Utica, New York, is
 

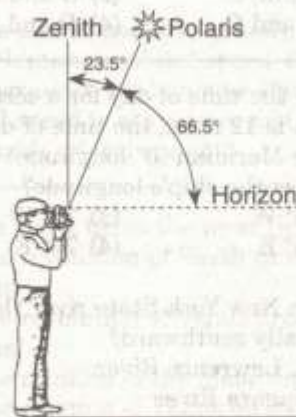
(1) 43°05' N	(3) 75°15' E
(2) 43°05' S	(4) 75°15' W
  - The topographic map that follows shows a hill. Points X and Y represent locations on the hill's surface. Elevations are shown in meters.



What is the gradient between points X and Y?

- |             |              |
|-------------|--------------|
| (1) 40 m/km | (3) 100 m/km |
| (2) 80 m/km | (4) 120 m/km |

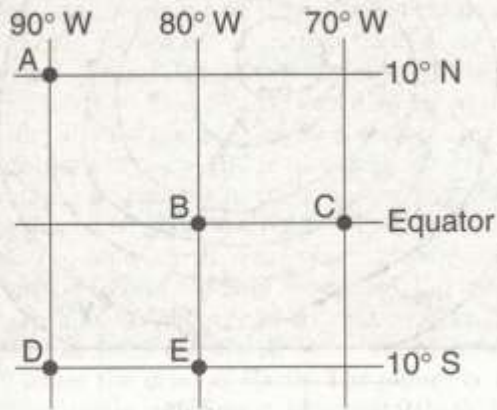
- The diagram below shows an observer on Earth measuring the altitude of *Polaris*.



What is the latitude of this observer?

- |             |             |
|-------------|-------------|
| (1) 90° N   | (3) 43° N   |
| (2) 66.5° N | (4) 23.5° N |

Base your answers to questions 6 and 7 on the map below, which shows the latitude and longitude of five observers, A, B, C, D, and E, on Earth.



6. What is the altitude of *Polaris* (the North Star) above the northern horizon for observer A?
- (1)  $0^\circ$                       (3)  $80^\circ$   
 (2)  $10^\circ$                       (4)  $90^\circ$
7. Which two observers would be experiencing the same apparent solar time?
- (1) A and C                      (3) B and E  
 (2) B and C                      (4) D and E
- 
8. When the time of day for a certain ship at sea is 12 noon, the time of day at the Prime Meridian ( $0^\circ$  longitude) is 5 p.m. What is the ship's longitude?
- (1)  $45^\circ$  W                      (3)  $75^\circ$  W  
 (2)  $45^\circ$  E                      (4)  $75^\circ$  E
9. Which New York State river flows generally southward?
- (1) St. Lawrence River  
 (2) Niagara River  
 (3) Genesee River  
 (4) Hudson River
10. Which temperature zone of Earth's atmosphere contains the most water vapor?
- (1) mesosphere                      (3) thermosphere  
 (2) stratosphere                      (4) troposphere
11. An environmental scientist needs to prepare a report on the potential effects that a proposed surface mine in New York State will have on the watershed where the mine will be located. In which reference materials will the scientist find the most useful data with which to determine the watershed's boundaries?
- (1) topographic maps  
 (2) geologic time scales  
 (3) tectonic plate maps  
 (4) planetary wind maps
12. Which element is most abundant in Earth's lithosphere?
- (1) oxygen                      (3) hydrogen  
 (2) silicon                      (4) nitrogen
13. As a ship crosses the Prime Meridian, an observer on the ship measures the altitude of *Polaris* at  $60^\circ$ . What is the ship's location?
- (1)  $60^\circ$  south latitude and  $0^\circ$  longitude  
 (2)  $60^\circ$  north latitude and  $0^\circ$  longitude  
 (3)  $0^\circ$  latitude and  $60^\circ$  east longitude  
 (4)  $0^\circ$  latitude and  $60^\circ$  west longitude
14. At which New York State location will an observer most likely measure the altitude of *Polaris* as approximately  $42^\circ$ ?
- (1) Jamestown                      (3) Oswego  
 (2) Plattsburgh                      (4) New York City
15. The North Star (*Polaris*) can be used for navigation in Earth's Northern Hemisphere because
- (1) *Polaris* is located directly over the Tropic of Cancer  
 (2) *Polaris* is the brightest and most easily located star  
 (3) the altitude of *Polaris* is equal to the observer's latitude  
 (4) the position of *Polaris* changes with the seasons

Part II

- What is the approximate diameter of Earth?
  - 3476 km
  - 6378 km
  - 12,756 km
  - 25,512 km
- According to the *Earth Science Reference Tables*, as altitude increases from the tropopause to the mesopause, the atmospheric temperature will
  - decrease only
  - increase only
  - decrease, then increase
  - increase, then decrease
- The hydrosphere is mostly
  - solid rock
  - liquid water
  - gaseous air
  - water vapor
- Earth's lithosphere is divided up into many moving sections called
  - tectonic plates
  - pauses
  - gradients
  - continental crusts
- As a person travels due west across the United States, what happens to the altitude of *Polaris* (the North Star)?

Base your answers to questions 6 and 7 on your knowledge of earth science and the following map which shows a north polar view of Earth. Some of the latitude and longitude lines have been labeled. Points A through E are points on Earth's surface.



- Which two points have the same latitude?
  - 30° N, 120° E
  - 30° N, 120° W
  - 320° N, 30° E
  - 120° N, 30° W
- The location of point D is
  - 30° N, 120° E
  - 30° N, 120° W
  - 320° N, 30° E
  - 120° N, 30° W
- As a ship crosses the Prime Meridian, the altitude of *Polaris* is 65°. What is the ship's location?
  - 0° longitude, 65° South latitude
  - 0° longitude, 65° North latitude
  - 0° latitude, 65° West longitude
  - 0° latitude, 65° East longitude

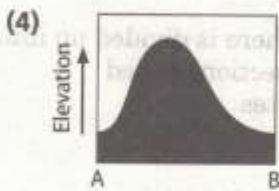
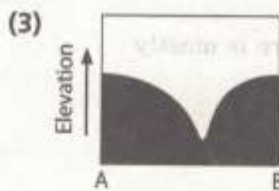
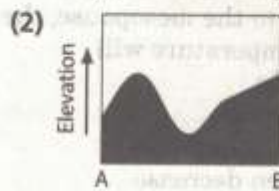
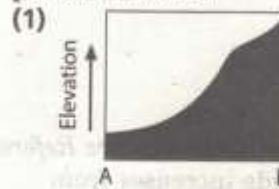
9. If an isoline bends south on a map, what will happen to its value?
10. The layer of bedrock near Earth's surface that forms a continuous shell around Earth is called the
- (1) troposphere (3) lithosphere  
(2) stratosphere (4) hydrosphere

Base your answers to questions 11 through 16 on the following topographic map and your knowledge of earth science.



11. What is the elevation at the intersection of Jones Road and Smith Road?
- (1) 450 m (3) 550 m  
(2) 500 m (4) 600 m
12. What is the elevation of the highest contour line on hill W?
- (1) 440 m (3) 560 m  
(2) 510 m (4) 610 m
13. On which side of hill X is the steepest slope found?
- (1) north (3) southeast  
(2) east (4) southwest
14. In which general direction is Trout Brook flowing when it passes under Smith Road?
- (1) northeast (3) southeast  
(2) northwest (4) southwest

15. Which diagram best represents the profile along a straight line between points A and B?



16. If the scale of the map is 1 cm = 1 km, what is the total length of Jones Road on the map to the nearest 0.1 km?

17. Which list shows atmospheric layers in the correct order upward from the Earth's surface?
- (1) thermosphere, mesosphere, stratosphere, troposphere  
(2) troposphere, stratosphere, mesosphere, thermosphere  
(3) stratosphere, mesosphere, troposphere, thermosphere  
(4) thermosphere, troposphere, mesosphere, stratosphere