Locating Positions on Earth

To locate a position on Earth's surface a coordinate system is used. Every location has a unique address which includes two numbers: latitude and longitude. The latitude and longitude system and our system of time are based on celestial observations.

Latitude is the angular distance north and south of the **Equator**. Latitude ranges from 0° at the Equator to 90° North or South at the Poles. The lines of latitude are drawn east and west and parallel to each other beginning at the Equator. Latitude divides Earth into Northern and Southern Hemispheres. Latitude is based on the observation of the Pole star, *Polaris*. The altitude of the Pole Star above your horizon is your latitude in the Northern Hemisphere.

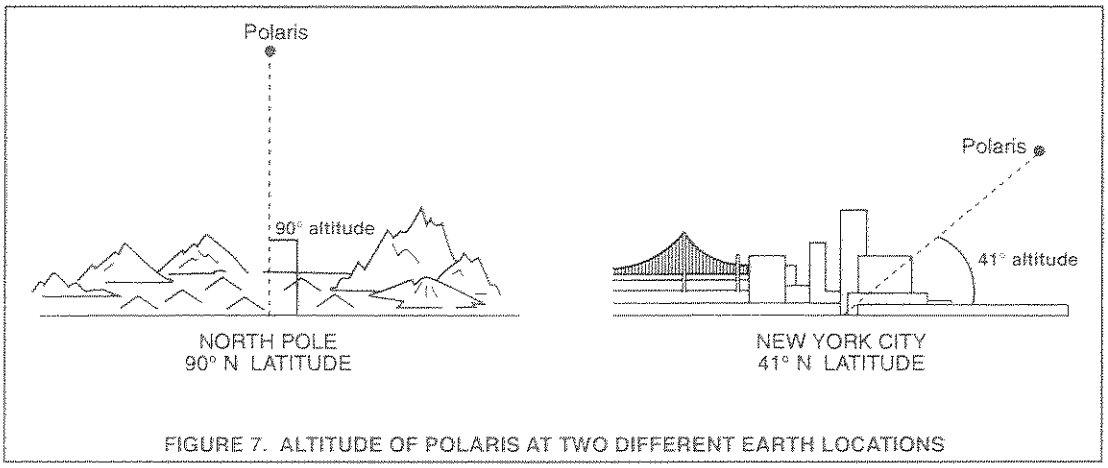


FIGURE 7. ALTITUDE OF POLARIS AT TWO DIFFERENT EARTH LOCATIONS

Longitude is the angular distance east and west of the Prime Meridian. Longitude ranges from 0° to 180° East or West. Meridians of longitude are drawn north to south meeting at the poles. The Prime Meridian (0°) divides Earth into Eastern and Western Hemispheres.

Longitude is based on observations of the Sun. Every 15 degrees of longitude is equal to one-hour time difference. This is the basis for the twenty-four time zones of the world. Locations with the same longitude are usually in the same time zone.

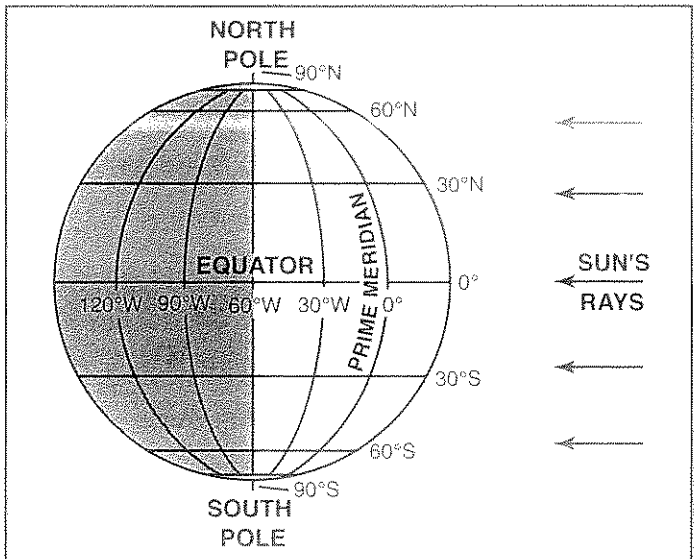


FIGURE 8. LATITUDE – LONGITUDE SYSTEM

Review Questions

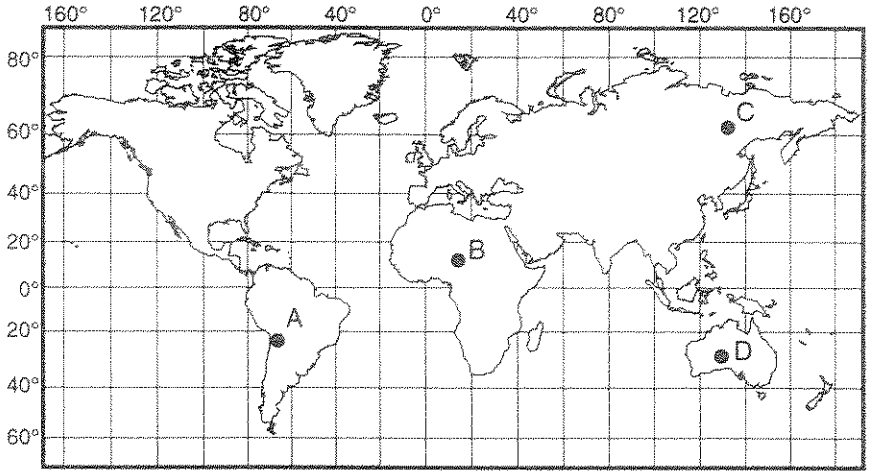
29. Parallel lines that are drawn east and west on the globe measure _____.

30. Lines of _____ meet at the poles.

31. Latitude is based on a measurement of the _____.

32. The range of longitude is 0° to _____ East or West.

33. Use the map below. Determine the latitude and longitude of the following points.



a. A = _____, _____

b. B = _____, _____

c. C = _____, _____

d. D = _____, _____

e. The two points that are most likely in the same time zone are _____ and _____.

Topographic Maps

Topography refers to the shape of the land. Topography is caused by the actions of weathering, erosion, and deposition of sediment. Topography is also affected by crustal movements, earthquakes, and volcanoes.

The shape of the land is shown on **topographic maps**. Contour lines connect points of the same elevation on the map. Closely spaced lines on the map indicate a steep slope. Widely spaced contour lines indicate a gentle slope. Circular contour lines show a hill or mountain. Hachure marks show places of depression where the elevation goes down. Contour lines show the direction of stream flow because they make a "V" shape that points upstream.

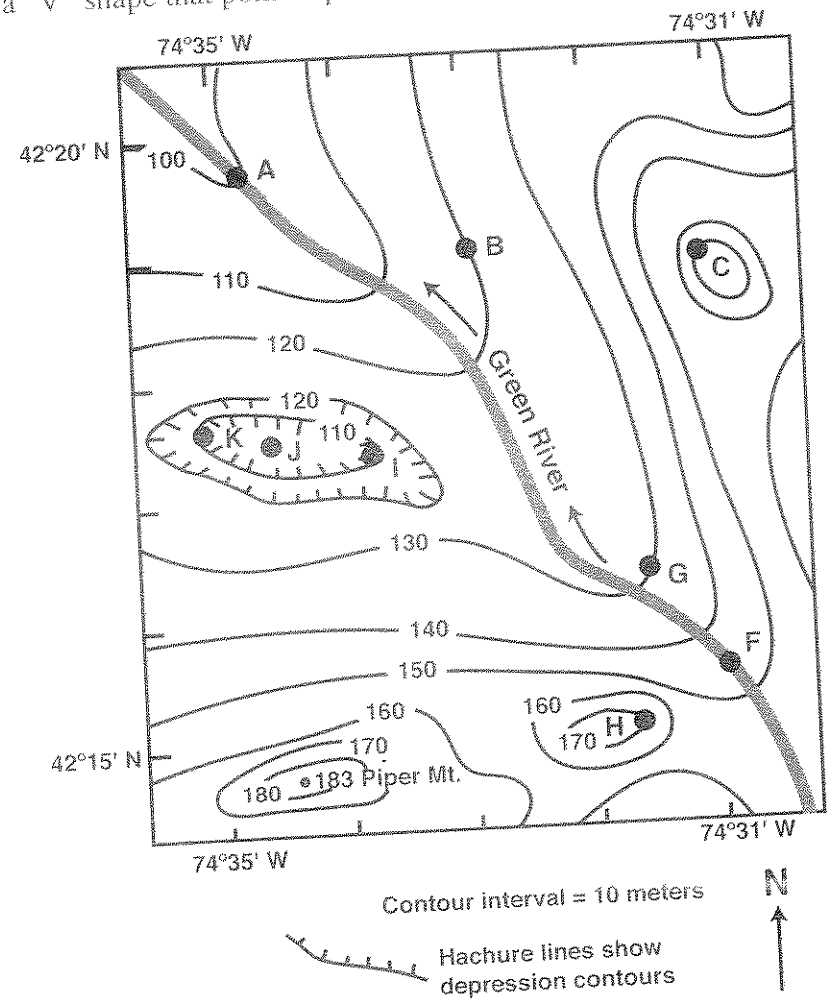


FIGURE 15. TOPOGRAPHIC MAP

Topographic maps show natural and man-made features of the land. The maps are color coded to show common features. For example, water areas are blue and forested areas are green. Symbols on the topographic map include benchmarks. A benchmark is a position where the exact elevation has been measured.

Review Questions

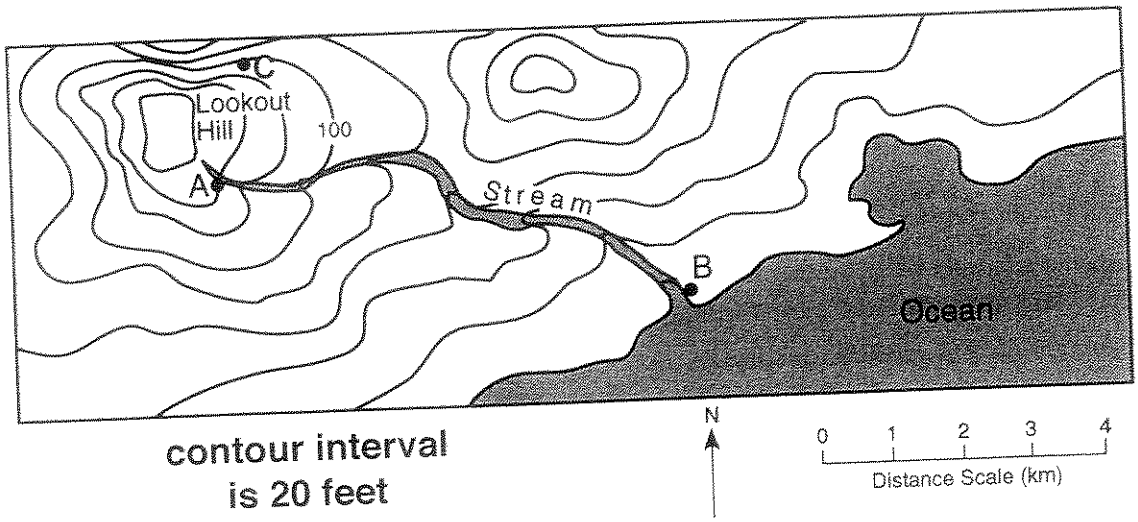
30. The shape of the land is shown on _____ maps.

31. Points of equal elevation are connected by _____ lines on a topographic map.

32. Closely spaced contour lines illustrate a _____ slope.

33. A benchmark indicates the exact _____ of a location.

34. Use the contour map below to answer questions a – e.



a. Elevation at point **A** is _____ feet.

b. Approximate elevation of point **B** is _____ feet.

c. Steep slopes are nearest point _____.

d. The stream flows in a _____ direction.

e. The distance from **A** to **B** is _____ km.