

Skills Worksheet

Critical Thinking

ANALOGIES

In the space provided, write the letter of the pair of terms or phrases that best complete the analogy shown. An analogy is a relationship between two pairs of words or phrases written as a:b::c:d. The symbol : is read is to, and the symbol :: is read as.

- _____ 1. contour line : relief ::
a. ring : peak
b. abstract : concrete
c. point : scale
d. set : subset
- _____ 2. equator : prime meridian ::
a. tropics : temperate zones
b. longitude : latitude
c. 360° : 180°
d. length : width
- _____ 3. topographic map : elevation ::
a. surface : interior
b. breadth : height
c. road : road map
d. geologic map : geologic units
- _____ 4. projection : globe ::
a. photo : sculpture
b. hypothetical : actual
c. future : present
d. tangible : intangible
- _____ 5. scale : legend ::
a. common : extraordinary
b. chapter : book
c. reality : myth
d. size : volume
- _____ 6. isobar : isogram ::
a. actual : picture
b. metal : graphic
c. equal : unequal
d. apple : fruit
- _____ 7. degrees : minutes ::
a. kilometers : meters
b. liters : ounces
c. minutes : hours
d. inches : feet
- _____ 8. parallel : meridian ::
a. distance : time zone
b. perpendicular : median
c. latitude : longitude
d. length : width
- _____ 9. axis of rotation : magnetic poles ::
a. longitude : latitude
b. geographic north : geomagnetic north
c. tilt : angle
d. geographic north : geographic south

INTERPRETING OBSERVATIONS

Read the following passage, and answer the questions below.

Although latitude had been used to calculate north-south distances with reasonable accuracy since ancient times, by the early 1700s calculating east-west distances using longitude was still inaccurate.

The apparent path of the sun across the sky can be used to determine north-south distances relative to the equator. But knowing the longitude of a location involves time. At sea, clocks are reset to noon local time everyday using the sun as reference. If you travel 15° westward, the local time in your new location is one hour behind the local time where you started.

Conversely, if you travel 15° eastward, the new local time is an hour ahead. If you know the local time at your location and also know the local time at another location, you can calculate the distance between the two locations. But it was the mid-1700s before a timepiece was invented that was accurate enough to allow this calculation to be made with precision.

10. Why is the ability to calculate east-west distances across the globe important?

11. What would happen if you tried to calculate longitude with a timepiece that ran two minutes slow every hour?

12. Why is 15° of longitude equal to an hour of difference in local time?

Critical Thinking *continued*

AGREE OR DISAGREE

Agree or disagree with the following statements, and support your answers.

13. Greenland appears to be the same relative size on all map projections.

14. Contour lines on a map will indicate valleys and depressions.

15. Maps are made by combining information gathered through remote sensing and through field surveys.

16. A degree of longitude covers a greater distance at the equator than it does at 60°N latitude.

17. Because of magnetic declination, the geomagnetic north pole and the geographic North Pole are the same.

Critical Thinking *continued*

REFINING CONCEPTS

The statements below challenge you to refine your understanding of concepts covered in the chapter. Think carefully, and answer the questions that follow.

18. A tunnel was dug under the English channel between England and France. Digging began on each side and met in the middle. How would the Global Positioning System have been useful in this project? Explain your answer.

19. Before remote sensing, why did maps tend to be less accurate?

20. If the relief in the area shown on a topographic map is 25 meters, what will the contour interval probably be like? Explain your answer.
