

# THE SHAPE OF THE EARTH

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1. The north-south distance between the Earth's Equator ( $0^\circ$ ) and the North Pole ( $90^\circ$  N) is 10,002 kilometers. The distance between  $0^\circ$  and  $10^\circ$  N is 1,106 kilometers. Which statement is best supported by this information?

- A The shape of the Earth is not perfectly spherical.**
- B The lines of longitude are not parallel.
- C The north-south distance for every  $10^\circ$  of latitude is a constant value.
- D The Earth's equatorial radius and polar radius are equal.

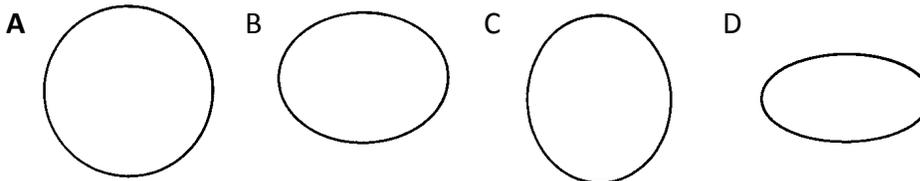
2. Which object best represents a true scale model of the shape of the Earth?

- A a Ping-Pong ball**
- B a football
- C an egg
- D a pear

3. The Earth is slightly flattened from a perfect spherical shape because of

- A its rotation**
- B the pull of the sun and moon
- C storms on the sun's surface
- D its molten core

4. Which diagram most accurately shows the cross-sectional shape of the Earth drawn to scale?



5. The best evidence that the Earth has a spherical shape is provided by

- A photographs of the Earth taken from space satellites**
- B the amount of daylight received at the North Pole on June 21
- C the changing orbital speed of the Earth in its orbit around the Sun
- D the cyclic change of seasons

6. The polar circumference of the Earth is 40,008 kilometers. What is the equatorial circumference?

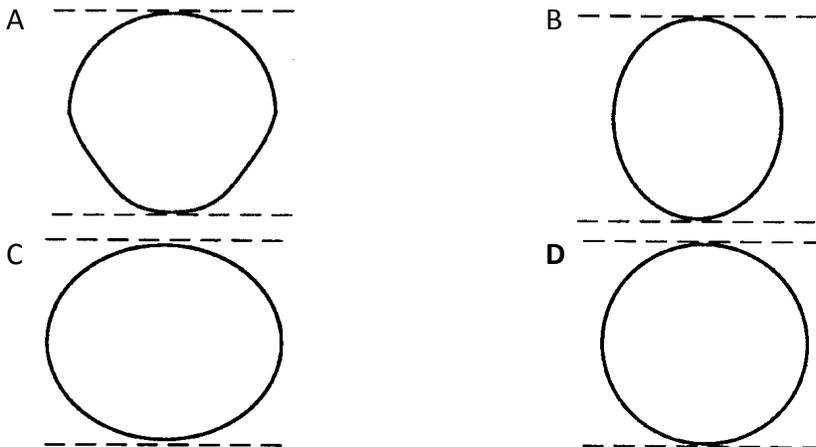
- A 12,740 km
  - B 25,000 km
  - C 40,008 km
  - D 40,076 km**
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7. Measurements taken from space show the Earth to be

- A greatest in diameter at the Equator**    B greatest in diameter at the poles  
C a perfect sphere    D pear shaped

8. Which diagram most accurately shows the cross-sectional shape of the Earth?



9. The Earth's actual shape is most correctly described as

- A a circle    B a perfect sphere  
**C an oblate sphere**    D an eccentric ellipse

10. A gravity meter is used to measure the amount of gravitational pull at the Earth's North Pole and at the Earth's Equator. How would these readings of gravitational pull compare? [Assume both readings are taken at sea level.]

- A The reading would be lower at the North Pole than at the Equator.  
**B The reading would be higher at the North Pole than at the Equator.**  
C The readings would be the same at the North Pole and at the Equator.

11. An observer watching a sailing ship at sea notes that the ship appears to be "sinking" as it moves away. Which statement best explains this observation?

- A The surface of the ocean has depressions.  
**B The Earth has a curved surface.**  
C The Earth is rotating.  
D The Earth is revolving.
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12. Precise measurements of the Earth indicate that its polar diameter is

- A shorter than its equatorial diameter**
- B longer than its equatorial diameter
- C the same length as its equatorial diameter

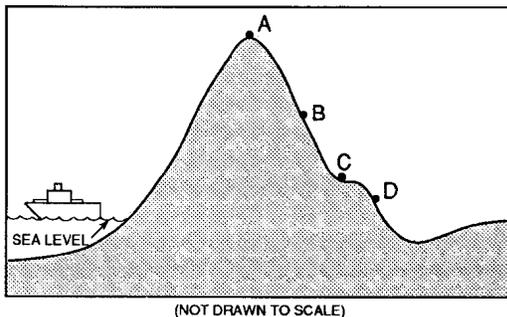
13. According to the data below, what is the exact shape of the Earth?

Actual Dimensions of the Earth

Equatorial Radius	6,378 km
Polar Radius	6,357 km
Equatorial Circumference	40,076 km
Polar Circumference	40,008 km

- A slightly flattened at both the Equator and the Poles
- B slightly bulging at both the Equator and the Poles
- C slightly flattened at the Equator and slightly bulging at the Poles
- D slightly flattened at the Poles and slightly bulging at the Equator**

14. In the diagram below, letters A through D represent the locations of four observers on the Earth's surface. Each observer has the same mass.

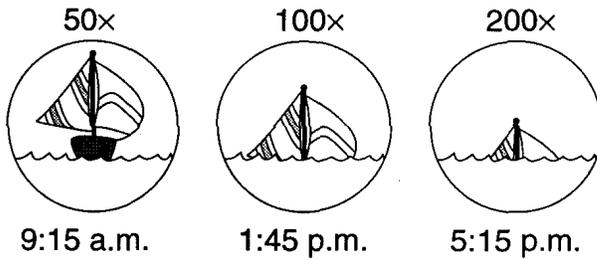


The gravitational force is strongest between the center of the Earth and the observer at location

- A A
  - B B
  - C C
  - D D**
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15. The diagrams below represent photographs of a large sailboat taken through a telescope over time as the boat sailed away from shore out to sea. Each diagram shows the magnification of the lenses and the time of day.



Which statement best explains the apparent sinking of this sailboat?

- A The sailboat is moving around the curved surface of Earth.**
- B The sailboat appears smaller as it moves farther away.
- C The change in density of the atmosphere is causing refraction of light rays.
- D The tide is causing an increase in the depth of the ocean.

16. The best evidence of the Earth's nearly spherical shape is obtained through

- A telescopic observations of other planets
- B photographs of the Earth from an orbiting satellite**
- C observations of the Sun's altitude made during the day
- D observations of the Moon made during lunar eclipses

17. Compared to the weight of a person at the North Pole, the weight of the same person at the Equator would be

- A slightly less, because the person is farther from the center of Earth**
  - B slightly less, because the person is closer to the center of Earth
  - C slightly more, because the person is farther from the center of Earth
  - D slightly more, because the person is closer to the center of Earth
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18. The table below shows the distance that an observer must travel on a north-south line along the surface of the Earth in order to change the observed altitude of *Polaris* by 5°.

LATITUDE	DISTANCE TRAVELED TO CHANGE THE OBSERVED ALTITUDE OF POLARIS BY 5°
Between 0° and 5° N	552.75 kilometers
Between 45° N and 50° N	555.78 kilometers
Between 85° N and 90° N	558.36 kilometers

The best inference about the Earth's shape that can be made from these observations is that the Earth

A is a perfect sphere

B is flattened at the Equator

**C has a curved surface**

D has a very smooth surface

# Answer Key

## The Shape of the Earth

1. A
  2. A
  3. A
  4. A
  5. A
  6. D
  7. A
  8. D
  9. C
  10. B
  11. B
  12. A
  13. D
  14. D
  15. A
  16. B
  17. A
  18. C
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