

Student name: _____

TRUE/FALSE - Write 'T' if the statement is true and 'F' if the statement is false.

If the axial rotation of Earth slowed, the day-to-night temperature variation on Earth's surface would decrease.

true

false

Radiometric dating is based on the rate at which a radioactive isotope decays.

true

false

When viewed from above the South Pole, Earth rotates clockwise.

true

false

When crossing the international date line from east to west, the date increases by one day.

true

false

Determination of the latitude requires that the time be kept very accurately.

true

false

All latitude circles are great circles.

true

false

Earth turns westward as it rotates on its axis.

true

false

The residence time of water in the atmosphere is equal to the residence time of water in the oceans.

true

false

The hydrologic cycle requires an excess of evaporation over precipitation as averaged over the world's oceans.

true

false

The middle latitudes in the Northern Hemisphere have about equal areas devoted to both land and water.

true

false

The sidereal day is more constant and shorter than the solar day.

true

false

Mercury, Venus, Earth, and Mars are smaller in size and closer to the Sun than Jupiter, Saturn, Uranus, or Neptune.

true

false

There is more land located in the Northern Hemisphere than in the Southern Hemisphere.

true

false

Water is moved through the hydrologic cycle at different rates and in different directions in each climate zone.

true

false

Our solar system is part of the Milky Way galaxy.

true

false

The Milky Way galaxy formed from an expanding nebula.

true

false

The Milky Way galaxy contains about 100-400 billion stars.

true

false

Earth rotates on its axis from west to east.

true

false

On average, water in a river will have a longer residence time than water in the oceans.

true

false

The magnetic field surrounding Jupiter's moons may be the result of salt water bodies.

true

false

If a sea exists on Jupiter's moon Europa, it is probably much smaller and shallower than the Earth's ocean.

true

false

There is no evidence of a past or present ocean on any planet but Earth.

true

false

Free oxygen was a common constituent of the Earth's early atmosphere.

true

false

On the autumnal equinox, every place on Earth experiences 12 hours of daylight and 12 hours of darkness.

true

false

Lines of latitude are known as meridians.

true

false

Planets exist outside of our solar system.

true

false

A cluster rarely contains more than 10 galaxies.

true

false

Earth formed shortly after the Big Bang.

true

false

More fresh water is stored in ice caps and glaciers than in freshwater lakes.

true

false

Most of the water evaporated from the oceans returns directly to the oceans in precipitation.

true

false

Earth maintains a constant distance from the Sun as it moves in its orbit.

true

false

The location of the Prime Meridian is an arbitrary choice.

true

false

The shortest distance between two points on Earth's surface is always along the meridian passing through them.

true

false

The parallel with the largest circumference is the Equator.

true

false

CHECK ALL THE APPLY. Choose all options that best completes the statement or answers the question.

Identify all of the planets that are rich in metals and rocky materials.

Saturn

Mercury

Venus

Uranus

Jupiter

Earth

Neptune

Mars

Identify all of the planets that are rich in ices of water, ammonia, and methane.

Saturn

Mercury

Venus

Uranus

Jupiter

Earth

Neptune

Mars

MULTIPLE CHOICE - Choose the one alternative that best completes the statement or answers the question.

Earth's age is estimated at _____ years.

4.6×10^6

3.7×10^6

4.6×10^9

3.7×10^9

4.6×10^{12}

The mean radius of Earth is _____ meters.

3371×10^2

6371×10^4

6371×10^6

12742×10^6

12742×10^9

The mean surface temperature of Earth is about _____.

5°C

10°C

16°C

22°C

26°C

The Big Bang occurred roughly _____ years ago.

4.6 billion

250 million

13.8 billion

10 billion

750 million

The Tropic of Capricorn is at _____ latitude.

$23\frac{1}{2}^{\circ}\text{N}$

$23\frac{1}{2}^{\circ}\text{S}$

$66\frac{1}{2}^{\circ}\text{N}$

$66\frac{1}{2}^{\circ}\text{S}$

0°

Earth is the _____ planet from the Sun.

first

second

third

fourth

fifth

The Arctic and Antarctic Circles are displaced _____ degrees from their respective poles.

90

$66\frac{1}{2}$

45

$23\frac{1}{2}$

0

During the Northern Hemisphere's summer solstice, the Sun stands above _____.

$23\frac{1}{2}^{\circ}\text{N}$

$23\frac{1}{2}^{\circ}\text{S}$

0°

66½ °N

66½ °S

The area north of 66½ °N is in darkness when the Sun is directly_____.

over the Equator

over 23½ °N

over 23½ °S

at the Arctic Circle

at the Antarctic Circle

The Sun stands directly above the equator_____.

once each year

twice each year

once in midwinter (Northern Hemisphere)

once in midsummer (Northern Hemisphere)

None of these is correct.

Which circle of latitude or longitude has the smallest circumference?

the Equator

30°N

the Prime Meridian

45°W

80°S

Longitude is given in degrees_____.

east and west of the Equator

north and south of the Equator

east and west of the Prime Meridian

north and south of the Prime Meridian

None of these is correct; longitude is not measured in degrees.

A great circle can be described as_____.

having its center at Earth's center

being the shortest path between two points on Earth's surface

always being a straight line on an equatorial cylindrical projection

having its center at Earth's center and being the shortest path between two points on Earth's surface

All of these are correct.

One degree of latitude is about equal to_____.

1 nautical mile

1 land mile

60 nautical miles

60 land miles

600 nautical miles

Earth turns on its axis about_____.

1 degree in 4 minutes

4 degrees in 1 minute

4 degrees in 1 hour

15 degrees in 1 minute

30 degrees in 1 hour

An error in time of 2 minutes in determining longitude from local time and Greenwich Mean Time will cause a _____ error in longitude.

2 degree

1 degree

0.75 degree

0.50 degree

0.25 degree

If a clock is set to Greenwich Mean Time and the Sun is observed to reach its zenith at 10:00 A.M., what is the longitude?

45°E

45°W

30°E

30°W

0°

A time zone is approximately _____ degrees wide.

5

15

90

180

365

Water covers _____ percent of Earth's surface.

17

29

50

71

78

The residence time for water in any of Earth's principal reservoirs can be calculated by dividing_____.

reservoir volume by rate of water supply

rate of water removal by reservoir volume

rate of water removal by water supply

reservoir volume by rate of water supply, rate of water removal by reservoir volume, and rate of water removal by water supply

None of these is correct.

The average depth of the ocean is about_____.

3800 m

3900 km

3800 mi

11,000 m

11,000 mi

Relationships between oceanic depths or land elevations and Earth's area are shown on a_____.

Mercator projection

bathymetric chart

hypsographic curve

navigational chart

None of these is correct.

An area drawn on a hypsographic curve equates to a(n)_____.

area of the Earth

volume of land or water

mean elevation or depth

All of these are correct.

None of these is correct.

How many hours must be added to New York City's Eastern daylight time to obtain Greenwich Mean Time or Universal Time?

+5

−5

+4

−4

+3

If a clock set to Greenwich Mean Time or Universal Time is moved to a location where noon, according to the Sun, occurs at 4:30 P.M. clock time, what is the longitude of the clock?

67.5°W

67.5°E

43.0°E

43.0°W

0.0° longitude

The U.S. Global Positioning System (GPS) is used to _____.

determine latitude and longitude

measure altitude

position storms, currents, and tides

determine latitude and longitude and measure altitude

determine latitude and longitude, measure altitude, and position storms, currents, and tides

At what latitude is the Sun directly overhead on the June Solstice?

Tropic of Cancer

Tropic of Capricorn

Equator

Arctic Circle

Antarctic Circle

Which ocean basin is located primarily in the Southern Hemisphere?

Pacific

Atlantic

Indian

Arctic

None of these is correct.

Which ocean basin is the deepest on average?

Pacific

Atlantic

Indian

Arctic

None of these is correct.

Which ocean basin is the largest?

Pacific

Atlantic

Indian

Arctic

None of these is correct.

Which of the following factor(s) enable(s) the existence of liquid water on the Earth's surface?

Earth's solar orbit

Rotation of the Earth on its axis

The Earth's atmospheric gases

Earth's solar orbit and the Earth's atmospheric gases

All of these are correct.

Approximately what percentage of water on Earth is contained within the oceans?

12%

31%

52%

85%

97%

How long does it take for the Earth to make one rotation on its axis?

60 seconds

1 hour

24 hours

30 days

365 days

How long does it take for the Earth to make one revolution around the Sun?

60 seconds

1 hour

24 hours

30 days

365 days

What type of material is thought to explain the larger size of the outer planets relative to the inner planets?

rock

ice

metals

liquid water

None of these is correct.

Approximately what percentage of gas emitted by volcanoes is water vapor?

1%

10%

25%

45%

70%

The South Pole is tilted toward the Sun on what day?

March Equinox

June Solstice

September Equinox

December Solstice

All of these are correct.

Why are meteorites used to establish an age for the Earth?

They are believed to be the same material from which Earth formed.

They are not radiogenic so they do not decay over time.

Rocks on Earth have been recycled since the Earth was formed and are not believed to be as old as the Earth itself.

They are believed to be the same material from which Earth formed and rocks on Earth have been recycled since the Earth was formed and are not believed to be as old as the Earth itself.

All of these are correct.

Roughly what percentage of matter in the universe is identical to the type of matter that comprises the planets and stars?

65%

50%

25%

5%

1%

Arrange the following life forms in their order of appearance on Earth from first to appear to last to appear.

reptiles, dinosaurs, fishes, birds, flowering plants

fishes, reptiles, dinosaurs, birds, flowering plants

flowering plants, reptiles, fishes, dinosaurs, birds

birds, flowering plants, reptiles, dinosaurs, fishes

dinosaurs, reptiles, flowering plants, fishes, birds

What percent of a parent radioactive element would remain after three half-lives of decay to its daughter isotope?

75

50

25

12.5

6.25

The greatest mass extinction of all time, resulting in the disappearance of 96% of all species, occurred roughly _____ million years ago.

252

201

66

45

12

The International Hydrographic Organization defined the northern boundary of the Southern Ocean to be _____.

80°S

45°S

70°S

30°S

60°S

Earth's surface is protected from extreme temperature change and water loss by _____.

its orbital distance from the Sun

its atmosphere

its period of rotation

All of these are correct.

None of these is correct.

The age of planet Mars is _____.

- 4 billion years
- 4.6 billion years
- 4.6 million years
- 65 million years
- 4 million years

The lunar month is defined by a period of _____ days.

- 7.25 days
- 27.25 days
- 29.5 days
- 30.5 days
- 365.25 days

The Earth is closest to the Sun on what day?

- June Solstice
- June Equinox
- March Equinox
- September Equinox
- December Solstice

The Earth's axis is at an angle of _____ relative to the vertical of the plane of rotation about the Sun.

- 0°
- 13.5°
- 23.5°
- 45°
- 66.5°

During a calendar year, the Sun appears to move and stand directly above the Earth's surface between latitudes _____.

9° N and S

23.5° N and S

45° N and S

66.5° N and S

90° N and S

The ground at which of the following latitudes experiences the greatest speed around the Earth's axis of rotation?

9° N

45° S

23.5° N

16° S

66.5° S

The ground at the Earth's Equator moves about the Earth's axis of at _____.

0.1 km/h

16.7 km/h

1670 km/h

3340 km/h

3.34×10^6 km/h

Given an approximate ocean water volume of 1.4×10^9 km³ and a rate of input/output of 320×10^3 km³/y, the residence time of water in the ocean is _____.

2 hours

2 months

2286 years

4375 years

2×10^6 years

Given an approximate ocean surface area of $362 \times 10^6 \text{ km}^2$, how much water must melt from the glaciers and ice caps to result in a 3-meter sea-level rise?

$109 \times 10^3 \text{ km}^3$

$362 \times 10^3 \text{ km}^3$

$109 \times 10^6 \text{ km}^3$

$362 \times 10^6 \text{ km}^3$

$109 \times 10^9 \text{ km}^3$

Which marine water body connects directly the Arctic Ocean and the Southern Ocean?

Pacific Ocean

Atlantic Ocean

Indian Ocean

Mediterranean Sea

Sea of Azov

Answer Key

Test name: ch1 Investigating Oceanography e4

FALSE

TRUE

TRUE

TRUE

FALSE

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FALSE

TRUE

TRUE

TRUE

TRUE

TRUE

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