Student name:_____

What type of geographers concentrate on studying landforms and processes on Earth's surface and in the oceans and atmosphere, and how they affect life?

Human geographers

Physical geographers

Religious geographers

Historical geographers

Which of the following is a feature of what physical geographers study?

The impacts of spatial distributions of the natural environment on people.

The processes that created and changed the spatial distributions of natural features.

The interconnections between different aspects of the natural environment.

Physical geographers study all these.

Which of the following topics of study would best incorporate the holistic perspective?

The impact of political policies on soil erosion

The examination of soil grains under a microscope to identify the amount of pore space between grains

The degree to which soil particles expand when they are wet and contract when they dry out

The identification of the soil type from a sample collected in the field

Geography is

a natural science.

a social science.

both a natural and a social science.

neither a natural nor a social science.

The spatial perspective that distinguishes geography from other fields of study means

geographers use computers only after they examine maps.

geographers examine how the spatial features affect and are affected by non-spatial issues.

geographers use field work to report results.

geographers do not need to follow the scientific method when they solve research problems.

In looking at the steepness of a slope, which of the following would a geographer be able to determine about that area?

the ethnicity of the human settlement which may have lived on the slope

the type of rock that might be present to form the soil

how far the location is from the equator

the strength of the wind at the location

The relationship between mountains and precipitation can be generalized by saying

mountaintops tend to have more precipitation in summer but less precipitation in winter than the surrounding lowlands.

mountaintops tend to have more precipitation in winter but less precipitation in summer than the surrounding lowlands.

mountaintops generally experience more precipitation than the surrounding lowlands.

mountaintops generally experience less precipitation that the surrounding lowlands.

The conceptual basis of geographic questions involves the notion that

the location of an object affects other features in the natural environment, but not the human environment.

the location of an object is affected by other features in the natural environment, but not the human environment.

the location of an object affects, and is affected by, other features in both the natural and human environment.

the location of an object is unique and largely unaffected by other features in both the natural and human environment.

Which of the following is an example of qualitative data?

A physical geographer measuring the time required for a plume of air pollution to reach a town

A physical geographer taking a census of the number of pine trees infested with a certain disease

A physical geographer monitoring the water temperature in a stream

A physical geographer noting the color of a soil

Which of the following is an example of quantitative data?

A physical geographer sketching the general appearance of a landscape

A physical geographer describing the shape of rock fragments

A physical geographer measuring the total rainfall from a storm

A physical geographer observing that the clouds are flat and blanket-like

A hypothesis is

a conclusion based on results of an investigation.

a proposed explanation developed before formal investigation.

a question developed that leads to an observation.

a strategy for solving a scientific problem.

Once a hypothesis is rejected

an observation cannot be made.

the experiment fails.

it can be revisited in future studies.

the scientific method has been violated.

Which of the following shows the correct order for a scientific explanation?

observation → question → hypotheses → predictions → results of investigation → conclusions

hypotheses → question → observation → predictions → results of investigation → conclusions

predictions → hypotheses → results of investigation → question → observation → conclusions

The "sphere" that intersects with all the other spheres is the

atmosphere.

biosphere.

hydrosphere.

lithosphere.

The lithosphere refers to the

plastic-like interior of Earth that moves in response to heating from the interior.

molten lava that is ejected from volcanoes.

land part only of Earth.

solid upper part of Earth, including the crust and uppermost mantle.

Of Earth's four overlapping spheres, which of the following does NOT involve material above Earth's surface?

Atmosphere

Lithosphere

Biosphere

Hydrosphere

Of Earth's four overlapping spheres, which of the following is (are) mostly between the lithosphere and atmosphere?

Atmosphere

Lithosphere

Biosphere

Hydrosphere

Both the biosphere and hydrosphere

The difference between open and closed systems is that

open systems are not predictable but closed systems are.

open systems can acquire matter and energy, but closed systems cannot.

open systems are much simpler in terms of the number of interactions between objects in the system.

open systems occur on land and closed systems occur in the ocean.

When you shake fish food into in an aquarium, you are contributing to a(n)

open system.

negative feedback system.

positive feedback system.

closed system.

A dynamic system refers to a system in which

motion causes the matter within the system to contain less energy than it would have contained when sitting still.

water molecules are constantly increasing in speed over time.

the first law of thermodynamics does not apply.

matter, energy, or both, are constantly changing their positions, amounts, or forms.

A snowball that rolls down a hill, gradually gaining more and more mass and rolling faster and faster as it continues, is an example of a(n)

positive feedback system.

negative feedback system.

open system.

closed system.

Which of the following statements is true about the transfer of energy, matter, or momentum in the atmosphere?

Momentum is usually transferred from the surface upward.

Energy transfer occurs when water changes state between solid, liquid, or gas.

Matter is transferred so effectively that the spatial distribution of matter in the atmosphere is uniform.

No transfer of energy, matter, or momentum can occur in the polar part of the atmosphere.

Name the cycle that describes water processes that occur on land, in the atmosphere, and in the oceans.

hydrologic

rock

spin

life

The hydrologic cycle includes all the following processes except

evaporation.

precipitation.

runoff.

uplift.

The most likely and direct consequence of a reduced rate of "burial" of sediment in the rock cycle would be

the delayed rate of formation of rock.

slower rates of uplift of rocks back to the surface.

more rapid deposition of more sediment.

increased rates of rock deformation.

In the rock cycle, sediment is stripped away and transported by the process of_____ *after* the process of_____ has taken place.

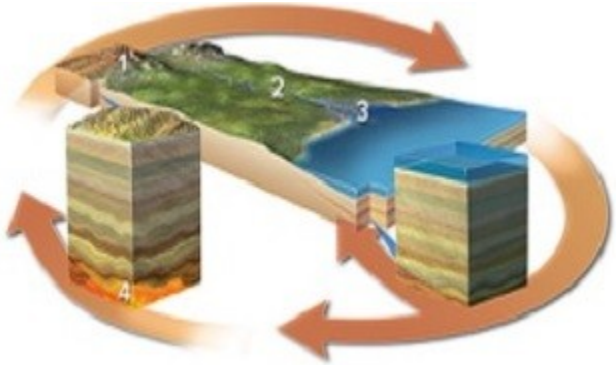
erosion; weathering

weathering; erosion

uplift; solidification

solidification; uplift

Which of the following locations would have weathering of bedrock or loose sediment?



Location 1

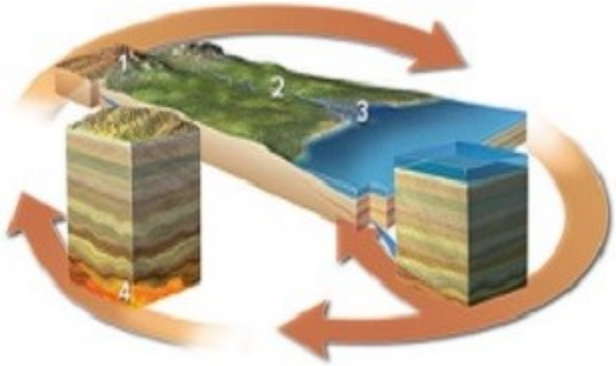
Location 2

Location 3

Location 4

Locations 1 and 2

Which of the following best indicates a location where sediment is transported?



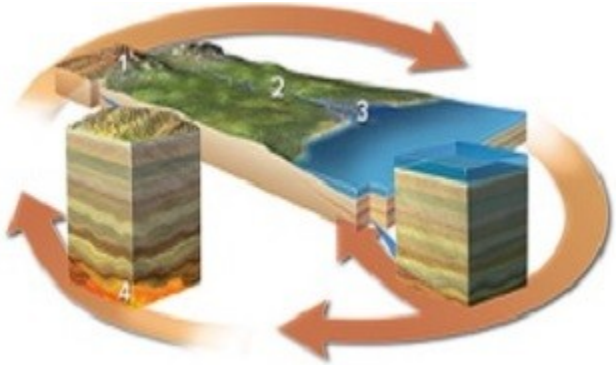
Location 1

Location 2

Location 3

Location 4

Which of the following best indicates a location where sediment is deposited but not eroded?



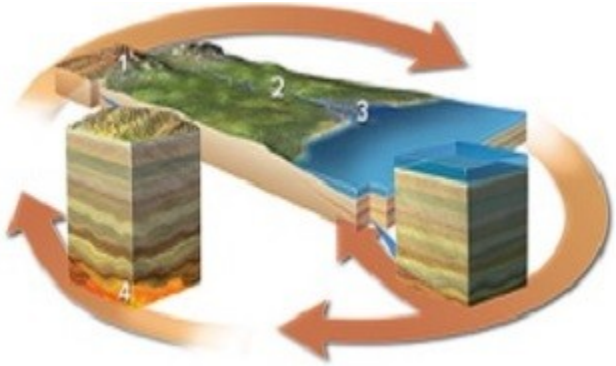
Location 1

Location 2

Location 3

Location 4

Which of the following settings would result in the formation of igneous rocks?



Location 1

Location 2

Location 3

Location 4

Which of the following does NOT list processes in an order consistent with a logical progression through the rock cycle?

weathering → erosion → deposition

solidification → melting → burial

erosion → deposition → burial

uplift → weathering → erosion

burial → metamorphism → melting

According to the rock cycle, sediment that is being transported by a river could become a metamorphic rock after

uplift and weathering.

melting and solidification.

deposition and burial.

solidification and uplift.

Uplift can occur during the rock cycle

only after deformation and metamorphism.

only after melting and solidification.

only after metamorphism or solidification.

at any point after burial.

The cycling of chemical substances throughout the biosphere is accomplished through

vertical transfer of momentum.

the first law of thermodynamics.

the rock cycle.

the work of living things and physical and chemical processes.

One of the main roles of plants in biogeochemical cycles is to

reduce the rate of weathering.

decrease the amount of time that water remains in contact with rocks and soils.

extract carbon dioxide from the atmosphere.

harden the soils.

The uppermost part of the oceans, as expressed by normal ocean waves, are in constant motion due to the effects of the

wind.

ultraviolet radiation.

gravity.

tides.

The most important agent for sculpting the Earth is

blowing wind.

flowing water.

gravity.

wave action.

ultraviolet radiation.

The most direct example of an atmosphere-lithosphere exchange is

a forest being planted.

an active coral reef colony.

a volcanic eruption.

a wave breaking on a shoreline.

In this diagram, the most likely place where sediment will be deposited on the streambed is at



Steven J Reynolds

A.

B.

C.

D.

When the lithosphere and biosphere interact,

plants remove nutrients from the soil but return few if any nutrients to the soil.

plants return nutrients to the soil but remove few if any nutrients from the soil.

plants remove nutrients from the soil and return nutrients to the soil.

plants acquire their nutrients directly from the air so that they do not disturb the nutrient structure in the soil.

All the following are likely effects of deforestation except

increased runoff into rivers and streams.

increased rate of soil erosion.

increased rate at which carbon dioxide is extracted out of the atmosphere.

increased rate of destruction of plant and animal habitats.

All the following are typical effects of dam construction except

interruption of the normal seasonal variation in flows of water.

increased amount of sediment carried downstream of the dam.

disruption of natural ecosystems.

protecting towns from flooding.

Geographic factors are important when considering environmental issues or when evaluating potential sites for a new agricultural area or business because

location and spatial distributions often affect environmental, social, or economic behavior.

the most important environmental issues and the advantages of sites for new agricultural areas or businesses are often the same across space.

environmental policies and zoning regulations seldom reference geographic factors.

it is seldom important to investigate environmental issues or evaluate potential sites from a holistic approach.

What type of map is shown here?



Shaded-relief map

Topographic map with contours

Satellite image

Geologic map

What type of map is used primarily to show the shape of the land by simulating light and dark shading on the hills and valleys?

Shaded relief map

Satellite image

Geology map

Topographic map

Shaded relief maps are most directly helpful in

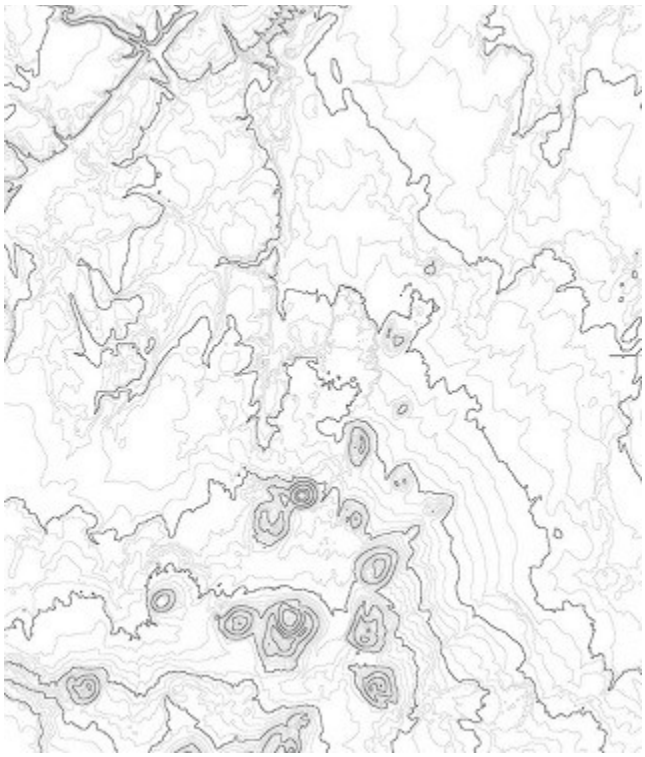
determining the average annual climatic features across Earth's surface.

identifying the shape of features of Earth.

representing the types of features on the surface of Earth.

"seeing through" the surface of Earth to the subsurface.

What type of map is shown here?



Shaded-relief map

Topographic map with contours

Satellite image

Geologic map

Which type of map or diagram would best indicate elevation of the land surface?

shaded-relief map

satellite image

topographic map

stratigraphic section

What type of map depicts the shape of the land surface by showing the elevation of the land surface with a series of lines called contours?

topographic map

satellite image

shaded relief map

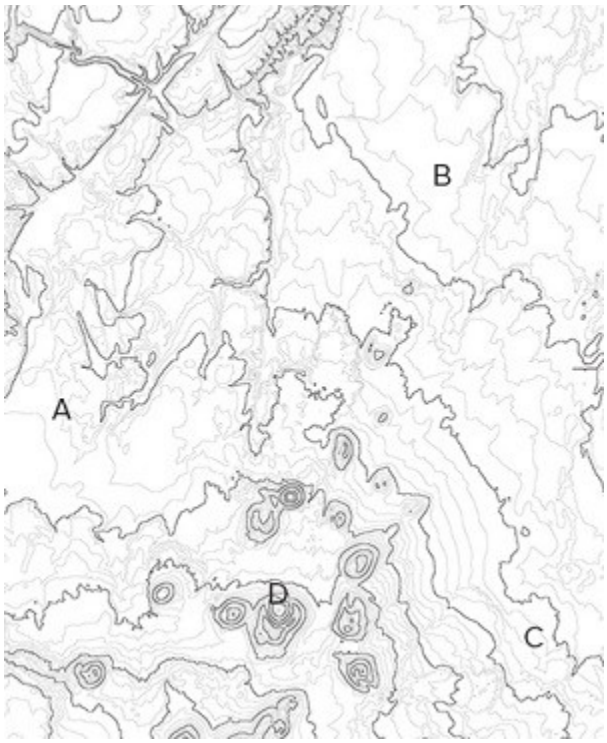
geologic map

Topographic maps often have some contour lines that are darker than other contour lines. These darker lines are called

index contours.

contour intervals.

In this topographic map, the place with the greatest relief among the four choices is at



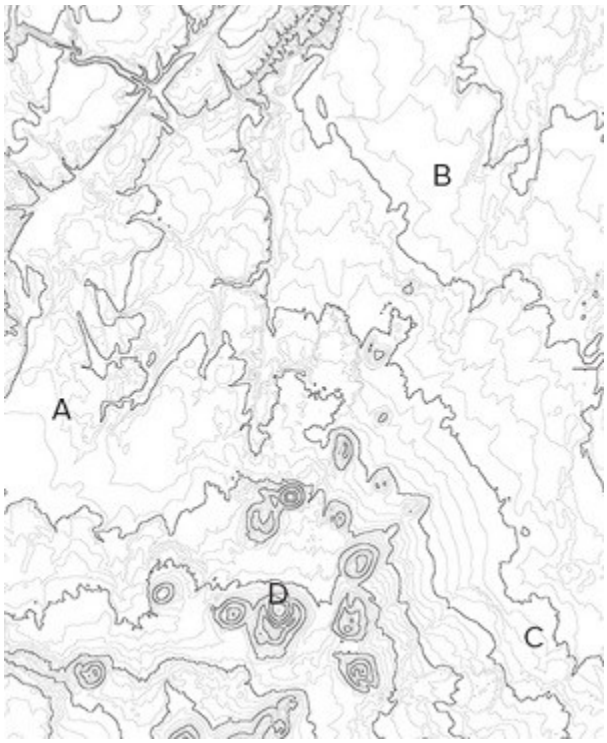
A.

B.

C.

D.

The most logical place to build a soccer or football field on the following map would be at



A.

B.

C.

D.

Imagine three points on a topographic map that are located on the same side of a specific contour. These three locations all will have

rocks of the same mineral composition, unless there is no index contour on the map.

elevations that are either all above or all below the elevation that the contour represents.

rivers and streams that run parallel to the contour line, while locations on the other side of that contour have rivers and streams that do not run parallel to the contour line.

a more similar climate than locations on the other side of that contour line.

A steep slope implies a

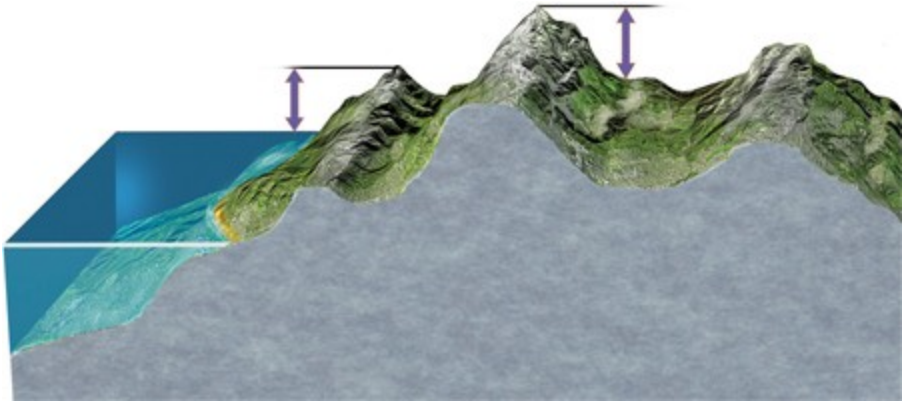
weak gradient and closely-spaced contours.

steep gradient and closely-spaced contours.

weak gradient and widely-spaced contours.

steep gradient and widely-spaced contours.

In this diagram, the arrow on the left represents



elevation and the right arrow represents relief.

relief and the right arrow represents slope.

elevation and the right arrow represents depth.

relief and the right arrow represents elevation.

Slopes that drop or rise sharply in elevation are

steep.

plains.

contours.

A gradient of .037 implies that

the slope will drop by 37 meters (or feet or inches) for every 1000 meters (or feet or inches) of horizontal distance.

there are .037 times as many index contours as there are other contours on the map.

the slope is steeper than another location with a gradient of .040.

neither a topographic nor a shaded-relief map can be constructed for the area because the gradient is too small.

The meanings of elevation and relief imply that

elevation and relief are the same when the location is far inland.

elevation cannot be smaller than relief except when comparing areas below sea level.

relief must always exceed elevation in coastal areas but elevation must always exceed relief in mountainous areas.

the units of measurement of elevation must be different from the units of measurement of relief.

Which of the following is true of parallels?

Parallels run from north to south.

The highest degree label for meridians is 180°.

All points on a parallel are the same distance from the pole.

Parallels always follow great circles.

Which of the following is true of meridians?

Meridians run from east to west.

The highest degree label for meridians is 90°.

Meridians are always parallel to each other.

Meridians always follow great circles.

The significance of any great circle is that it always

connects two points on the surface of a sphere with the shortest distance.

follows the same line of latitude.

passes through the point where the equator intersects with the Prime Meridian.

passes through the North or South Pole.

Which of the following is an example of a small circle?

Prime Meridian

Tropic of Cancer

Equator

International Date Line

If two places have the same latitude but different longitudes,

the two places are directly east or west of each other.

the two places are directly north or south of each other.

the places will be directly east or west of each other on some map projections but not others.

the places will be directly north or south of each other on some map projections but not others.

0° of latitude is found at the_____, and 90° of latitude is found at the_____.

South Pole; North Pole

South Pole; Equator

Equator; North and South Poles

North Pole; Prime Meridian

The Prime Meridian separates

great circles from small circles.

the Northern Hemisphere from the Southern Hemisphere.

the Eastern Hemisphere from the Western Hemisphere.

places experiencing one day on the calendar from places experiencing another day on the calendar.

The number of degrees of longitude that a place has is derived from the angle formed by the place's location on Earth surface,

the center of Earth at the same latitude, and the North Pole (if in the Northern Hemisphere) or South Pole (if in the Southern Hemisphere).

the center of Earth, and the equator.

the center of Earth at the same latitude, and the Prime Meridian at the same latitude.

the center of Earth at the same latitude, and the International Date Line at the same latitude.

The number of degrees of latitude that a place has is derived from the angle formed by the place's location on Earth surface,

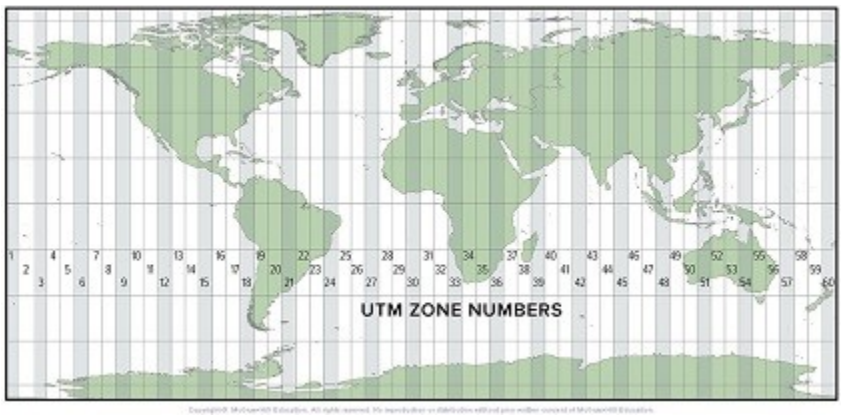
the center of Earth at the same latitude, and the North Pole (if in the Northern Hemisphere) or South Pole (if in the Southern Hemisphere).

the center of Earth, and the equator.

the center of Earth at the same latitude, and the Prime Meridian at the same latitude.

the center of Earth at the same latitude, and the International Date Line at the same latitude.

This map is showing zone numbers associated with which coordinate system?



Universal Transverse Mercator

State Plane Coordinate System

Public Land Survey System

Which of the following coordinate systems is used outside of the United States?

Universal Transverse Mercator

State Plane Coordinate System

Public Land Survey System

All these are used outside of the United States.

In the State Plane Coordinate System, the rationale for dividing states into long, narrow zones is to

keep major highways in the same zone.

put as many as possible of the state's cities in the same zone while keeping rural areas in different zones.

ensure that each zone falls into just one time zone.

minimize the distortion in drawing maps of the area.

The Public Land Survey System (PLSS) is not employed in states where

large rivers or lakes interrupt the rectangular pattern of townships.

settlement by the French resulted in different survey systems that pre-dated the PLSS.

mountains and other rugged terrain made it too difficult to survey the land.

there is little publicly-owned land.

In the Public Land Survey System (PLSS), beginning at the Principal Meridian, the land is subdivided into six-mile-wide, north-south strips of land called_____; beginning at the Base Line, the land is subdivided into six-mile-wide, east-west strips of land called_____.

northings; eastings

eastings; northings

townships; ranges

ranges; townships

In the Public Land Survey System (PLSS), a township labeled T3N, R1W indicates that it is

a one-mile by one-mile tract of land that is 3 townships north of the nearest base line and 1 range west of the nearest principal meridian.

a one-mile by one-mile tract of land that is 3 townships north of the nearest principal meridian and 1 range west of the nearest base line.

a six-mile by six-mile tract of land that is 3 townships north of the nearest base line and 1 range west of the nearest principal meridian.

a six-mile by six-mile tract of land that is 3 townships north of the nearest principal meridian and 1 range west of the nearest base line.

All map projections introduce at least some distortion because

it is impossible to represent a three-dimensional surface on a two-dimensional plane perfectly.

the best mathematical algorithms used in map projections have not been discovered yet.

Earth is not a perfect sphere.

Earth’s orbit around the Sun is not perfectly circular.

What do we call someone who makes maps?

Geographer

Surveyor

Cartographer

Engineer

An important strategy in choosing the correct map projection should always be to

decide whether it is more important to show area of features or shape of features accurately.

minimize distortion in the part of the map that is most important for the application at hand.

determine whether distortion needs to be minimized at a single point on the map or along a linear area of the map.

All these are important strategies in choosing the correct map projection.

A conformal map projection is one that

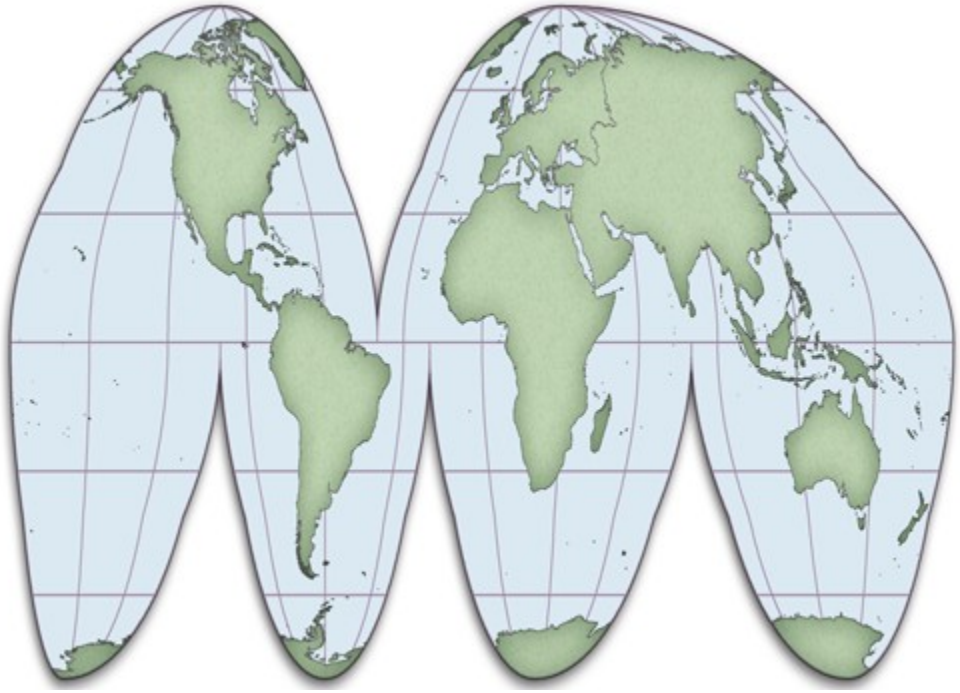
is based on the idea of projecting the image on all or part of the globe onto a cone.

preserves (i.e., does not distort) the shapes of features such as countries or continents.

preserves (i.e., does not distort) the area of features such as countries or continents.

allows only one hemisphere or less of Earth’s surface to be shown on a map.

This map uses what type of map projection?



Cylindrical

Sinusoidal

Conical

Planar

Sinusoidal projections operate based on the premise that

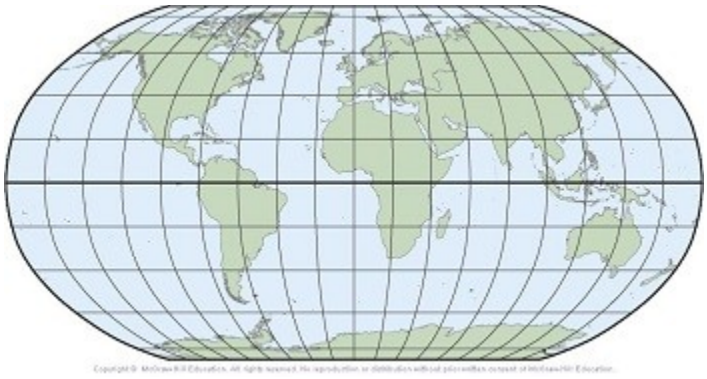
distortion should be minimized in polar areas and maximized in equatorial areas.

the map can be interrupted in areas that are not important to show on a particular map, and distortion can be minimized in areas that are more important to show accurately.

parallels of latitude and meridians of longitude should intersect at right angles.

the globe is projected onto a cone, with minimized distortion along the arc or arcs where the cone intersects with the globe.

What type of map is the Mercator projection?



Cylindrical

Sinusoidal

Conical

Planar

If you need to show the entire Earth on a map, which of the following projections would you use?

conical

sinusoidal

polar stereographic

Robinson

Which of these types of map projections has only a single point at which no distortion is introduced?

Cylindrical

Sinusoidal

Conical

Planar

The detailed roads of a very small area, such as your neighborhood, would need to be shown on a map at what scale?

Large

Small

You are reading a map and see the following: SCALE 1:24,000. What does that mean?

There is 1 error for every 24,000 data points on the map.

The map covers 24,000 meters across.

1 inch on the map equals 24,000 inches on the surface.

The use of stereo pairs is important in creating maps because they

allow the scale to become smaller.

remove the distortions introduced by the map projection.

reveal the three-dimensional features of a landscape.

penetrate through the clouds that may have been present on the day when the aerial photograph was taken.

Base maps are useful because they

contain no distortions introduced by the map projection.

do not require stereo pairs for their construction.

avoid using Goode's projection.

allow for the reporting of primary data on them.

Maps are secondary data sources when

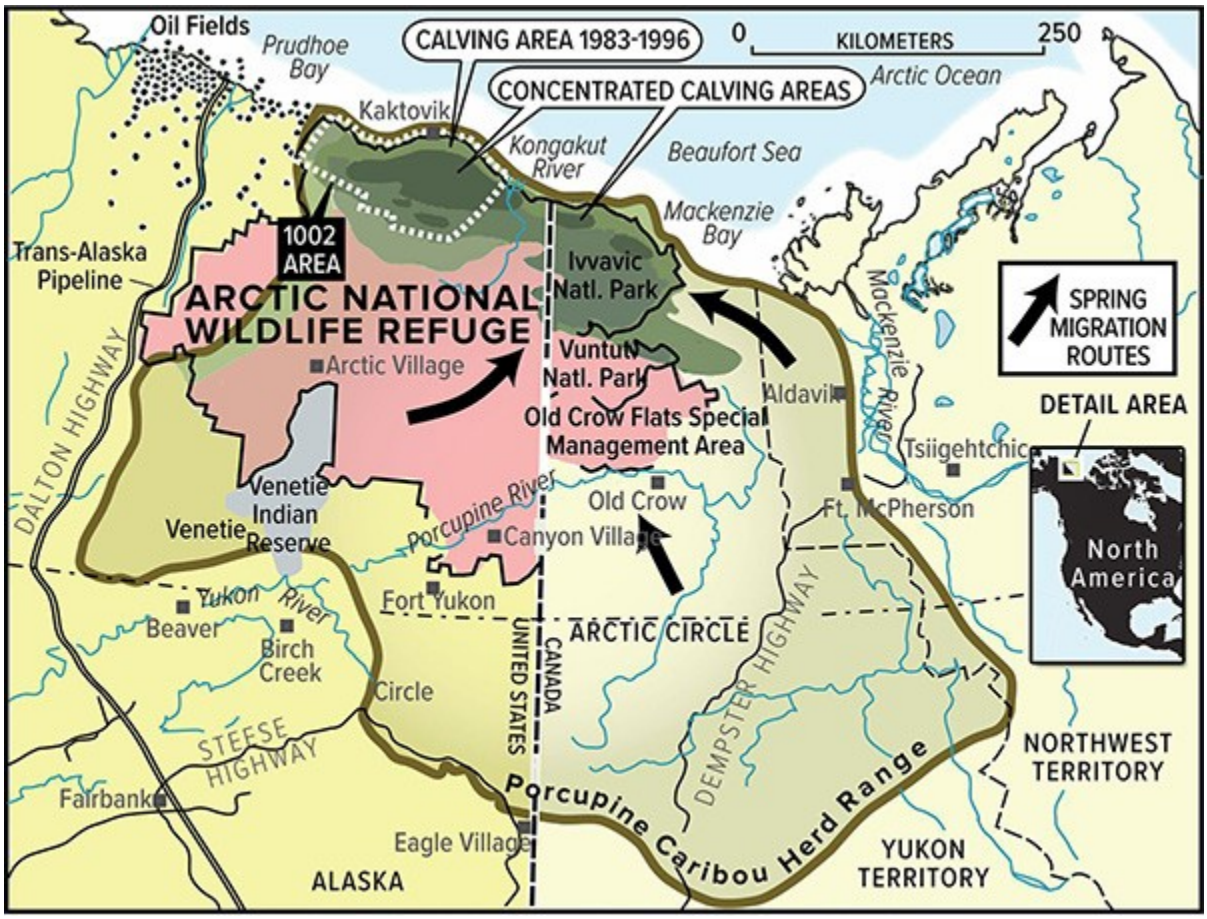
they are used to provide an interpretation for addressing some other question.

they have undergone two or more revisions in order to enhance their accuracy.

they express coordinates not only in latitude-longitude but also in at least one other survey system.

they are available in both paper and online formats.

On this map, all the following would be considered “interpretations” except



spring migration routes.

Ivvavic National Park.

concentrated calving areas.

porcupine caribou herd range.

Global positioning systems (GPS) can determine location by

measuring the time required for radio signals from four or more satellites to reach the receiver.

relating changes in detected radiation to changes in the position of the Sun.

continually measuring changes in angle to a stationary reference point, such as a streetlight, in the area of the receiver.

relating slight changes in magnetism and gravity to changes in the distance and direction of movement from the point at which the location of the receiver was last calibrated.

Differential GPS is more useful than a handheld GPS when

portability and mobility is important.

the system is used in an isolated location far from a cellular telephone signal.

extremely precise measurements are needed.

two or more measurements are being taken simultaneously.

The difference between active and passive remote sensing systems is that

active systems involve the latest generation of satellites while passive systems use signals from older satellites.

active systems include aerial photography while passive systems rely on satellite imagery.

active systems can operate throughout cloud or fog cover while passive systems require clear sky conditions.

active systems emit their own energy while passive systems simply detect existing energy signals.

"Multispectral remote sensing" refers to

returning to the same site many times to analyze changes in the environment over time.

the use of many different types of satellites to detect environmental features at a place.

detecting energy at many wavelength bands of energy simultaneously.

the detection of features across a large part of Earth's surface at the same time.

If a researcher wanted to identify and map healthy vegetation using remote sensing, she would be most likely to use data that detects what type of energy?

Microwave

Near-infrared

Sonar

Thermal infrared

The concept of overlay in geographic information systems (GIS) refers to the

incorporation of multiple types of digital spatial data (layers) into a single map.

constant, automatic updating of digital spatial data (maps) of the same type with newer data.

use of digital spatial data (maps) to identify what lies deep beneath Earth's surface.

inclusion of a grid (such as latitude-longitude or universal Transverse Mercator) on a digital spatial dataset (map).

The spatial interpolation features of a geographic information system (GIS) would be most useful when a researcher needs to

detect energy at a wavelength that is not detected directly by an existing satellite.

estimate data at a particular point where it has not been measured.

use a large-scale map but only a small-scale map of the area of interest is available.

identify the optimal route through an area.

Which of the following is not a type of spatial distribution that can be assessed using geographic information systems (GIS)?

Clustered

Random

Regular

Irregular

If a geographer wanted to use a geographic information system (GIS) to study soil contamination and determined that only the areas within 1.5 kilometers of a toxic waste dump needed to be considered and mapped, he/she would be most likely to choose which type of GIS function?

Buffering

Kriging

Area calculation

Point-pattern analysis

Greenwich mean time (GMT) is a system of

coordinating the global rules for what time should appear on a clock.

determining what years should be considered leap years and which should not.

identifying the phase of the lunar cycle.

determining when daylight savings time should go into effect.

The International Date Line (IDL) is located

at the equator.

in different places depending on the season.

mainly at 180° longitude.

along the Prime Meridian.

If it is 9:00 a.m. in your time zone, two time zones west of you the clock will say

7:00 a.m.

11:00 a.m.

The purpose of Daylight Savings Time is to

allow an extra hour per day for crops to grow during the growing season, at the expense of an hour per day when crops are not in the ground.

provide an extra hour of daylight in the evening hours at the expense of an hour of daylight in the morning hours.

adjust for variations in the speed of Earth's orbit around the Sun at different times of the year.

allow the Greenwich Mean Time system to represent the actual position of the Sun in the sky more accurately.

Rates in Earth system processes

span the range from very rapid to very slow.

are nearly always very slow.

are nearly always very fast.

can never be calculated accurately.

The formula to determine an object's average rate of movement is

distance/time.

time/distance.

time/speed.

speed/time.

How much something changed, divided by the time required for the change to occur is,_____.

density

mass

volume

rate

If a stream flow measures 12 meters in 60 seconds, what is the stream's average rate of flow?

2 m/s

0.2 m/s

0.5 m/s

5 m/s

Which of these is the least important when deciding to create a concept sketch of a landscape?

The types of vegetation present

The topography

The types of rocks and sediments present

The distance to the nearest human structure

Which order is correct for the creation of a concept sketch?

Make a list of what to discuss → decide what to sketch → annotate your sketch

Annotate your sketch → decide what to sketch → make a list of what to discuss

Decide what to sketch → annotate your sketch → make a list of what to discuss

Annotate your sketch → make a list of what to discus → decide what to sketch

How much detail should you include in a concept sketch?

As much detail as you can squeeze into the space you have available

Just the basics, so other looking at it can fill in the rest for themselves

As much detail as you need to depict the features and explain the processes

The 416 Fire of 2018 near Durango, Colorado likely started due to

lightning.

an unattended campfire.

a lava eruption.

embers from a coal-burning train.

Officials and scientists used GIS during the 416 Fire of 2018 near Durango, Colorado to monitor the fire's

size.

direction of movement.

proximity to infrastructure.

size, direction of movement, and proximity to infrastructure.

The monsoon that followed the 416 Fire of 2018 near Durango, Colorado, led to

debris flows.

floods.

more fires.

tornadoes.

What was the underlying cause for the large-scale damage associated with the 416 Fire of 2018 near Durango, Colorado?

Debris flows

Deforestation

Long-term drought

High elevations

Answer Key

Test name: Ch1_Exploring Physical Geography_2025

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