Inference Questions

Module 2 Homework

Ready for a step up? These twenty questions are at the level of the harder Module 2, with the skeletons mixed and nothing to tell you which is which. The passages are longer and denser than at Module 1 level, and the wrong answers are built to tempt: one may get half the logic right, another may say just a little too much. Work each question through the three steps — they still hold — and keep to real-test pace, about 71 seconds a question: 24 minutes.

Question 1

Shakespeare is believed to have written *Macbeth* around 1606, but the play survives only in the First Folio, the first collected edition of his plays, printed in 1623, seven years after his death. In two of the play's scenes, the witch-goddess Hecate speaks lines that differ markedly in style and meter from the rest of the play, and the stage directions in those scenes give only the opening words of two songs whose full lyrics appear in *The Witch*, a play by Thomas Middleton that scholars date to several years after 1606. For these reasons, many scholars believe that

_____

Which choice most logically completes the text?

A) Middleton likely borrowed the two songs from performances of *Macbeth* that he had attended.

B) Shakespeare likely gave Hecate a distinctive style to set the goddess apart from the play's other characters.

C) the songs' appearance in both plays likely reflects conventions for staging witchcraft that were common at the time.

D) the version of *Macbeth* printed in 1623 likely differs from the play as Shakespeare first wrote it.

Question 2

Drill-based math lessons typically present long streaks of problems that can all be solved by one procedure, and earlier work with college students found that such streaks can leave problem solving mechanized: rigid and driven by habit. Education researchers Ines Halloran and Kofi Brandt gave students from drill-based classes and from mixed-practice classes the same series of water-jar puzzles, each requiring a set amount of water to be measured out with up to three jars of fixed sizes. Their results fit the earlier work:

_____

Which choice most logically completes the text?

A) students from the drill-based classes made more arithmetic errors than students from the mixed-practice classes did, though only on the puzzles that involved the largest jars.

B) when the researchers mixed in puzzles that called for different methods, students from the drill-based classes repeatedly tested new approaches, much as students from the mixed-practice classes did.

C) students from the drill-based classes often kept solving later puzzles with the three-jar routine that had worked on the first ones, even where two jars would do, unlike students from the mixed-practice classes.

D) both groups fell into mechanized strategies, the students from the drill-based classes on the hardest puzzles and the students from the mixed-practice classes on the easiest.

Question 3

The cottons that Indigenous peoples domesticated in the Americas, including the upland cotton that now supplies most of the world's cotton fiber, carry two genomes that were joined in a plant growing on those continents: one from a wild American cotton and one from an Old World lineage otherwise native only to Africa and Asia. Remains unearthed in Peru and Mexico show that these cottons were being grown there thousands of years before the first European voyages across the Atlantic. Comparing the cottons' DNA with that of related species, botanist Jonathan Wendel and colleagues estimated that the two genomes merged 1 to 2 million years ago. By contrast, people have lived in the Americas for only tens of thousands of years, so _____

Which choice most logically completes the text?

A) the Old World lineage likely arose in the Americas and only later spread to Africa and Asia.
B) the Old World lineage likely reached the Americas without any help from people.
C) the Old World lineage likely reached the Americas with people only tens of thousands of years ago.
D) the hybrid cottons likely spread between Mexico and Peru through trade among Indigenous farmers.

Question 4

An inventory of the saplings lining a trucking corridor in one city found that an alarming proportion of the corridor's sugar maples had died. Municipal arborists ascribed the die-off to the de-icing salt spread on the corridor each winter, and the sugar maple's well-documented sensitivity to salt lends their verdict some plausibility. Yet the corridor's honey locusts perished in comparable proportion, though theirs is a species often chosen for roadsides because it withstands salt. City budget records, for their part, show that during the drought summers that followed their planting, while the saplings were still establishing their roots, the city paid for supplemental irrigation of its park trees alone. Read together, the inventory and the records suggest that _____

Which choice most logically completes the text?

A) the corridor's losses are better explained by how the city allocated its upkeep of trees than by a susceptibility peculiar to sugar maples.
B) the maples most likely succumbed to the salt, whereas the locusts, which unlike the maples received no irrigation, succumbed to the drought.
C) the die-off stems chiefly from the sugar maple's frailty, which left the species unable to withstand either winter salt or summer drought.
D) the truck traffic most likely compacted the soil around the saplings' roots, harming salt-tolerant and salt-sensitive trees indiscriminately.

Question 5

Play, which biologists define as voluntary, repeated activity that serves no immediate purpose, has been documented mainly in mammals and birds, animals with large, complex brains (a raven's brain, for example, contains more than two billion neurons), and many researchers have taken this as a sign that play requires such a brain. Biologist Rhea Okonkwo's team tested the idea with paper wasps, insects whose brains hold about a million neurons. Given small wooden beads in their nest boxes, many wasps pushed the beads around again and again, although the beads were never food and never became nesting material, and young wasps did so more often than older ones, just as young mammals play more than adults do. These findings suggest that _____

Which choice most logically completes the text?

A) young paper wasps may push beads not for food but for the same reasons that young mammals play.
B) the size of a mammal's or bird's brain may have little to do with whether it plays.
C) the wasps' bead pushing may be better explained as practice for building nests than as play.
D) the link between play and large, complex brains may be weaker than researchers had assumed.

Question 6

Homing pigeons can find their way home even on days when the sky is completely overcast. Seeking to learn how, biologist William Keeton fitted some experienced pigeons with small bar magnets, which distort the magnetic field around a bird, and others with brass bars of the same size and weight, which have no magnetic effect. Released on sunny days roughly 25 to 50 kilometers from their loft, the two groups oriented homeward equally well. Under total overcast, however, the brass-bar birds still headed for home, whereas the magnet-carrying birds often scattered in no consistent direction. These results suggest that _____

Which choice most logically completes the text?

A) the ability to sense Earth's magnetic field is likely limited to experienced pigeons.
B) pigeons likely use a magnetic cue in place of the sun when they cannot see it.
C) pigeons likely become more sensitive to magnetic fields as the sky grows cloudier.
D) pigeons can likely orient homeward only when released at least 25 kilometers from their loft.

Question 7

For decades after its discovery in Mongolia in 1965, the dinosaur Deinocheirus mirificus was known mainly from its shoulders and a pair of arms, each about 2.4 meters long and tipped with claws about 20 centimeters long. Because most large theropods (members of the dinosaur group that includes Tyrannosaurus) were meat-eaters, those formidable arms led some researchers to picture Deinocheirus as a fearsome predator. In 2014, however, paleontologist Yuong-Nam Lee and colleagues described two new skeletons that together revealed nearly the whole animal, including a toothless, duck-like bill and, in one specimen's stomach region, fish bones and scales alongside more than 1,400 stones of the kind some animals swallow to grind up plant matter. The animal these skeletons reveal, Lee's team argues, _____

Which choice most logically completes the text?

A) hunted more successfully than *Tyrannosaurus* did, thanks to its much longer arms.
B) carried more teeth in its bill than the plant-eating theropods of its time did.
C) was likely an omnivore instead of the hunter some researchers had imagined.
D) had shorter arms than the 1965 fossils had indicated.

Question 8

By the early 1900s, rowers and officials expected a winner's medal at an international event to be at least 75 percent gold; anything paler was widely seen as an insult to the champions. The organizers of the Aldmere Regatta, held from 1890 to 1938, met that standard easily at first, and their 1905 medal is about 95 percent gold and 5 percent silver. By 1921, however, years of financial losses had drained the regatta's funds, and that year's medal, struck from 60 percent gold and 40 percent silver, came out a pale, washed-out yellow that no rower could miss. Historians believe the regatta's prestige suffered as a result, and that the organizers, who never again had much gold to spare, most likely won it back with one change to the medals: they began to _____

Which choice most logically completes the text?

A) make each medal about a quarter lighter than a 1921 medal while keeping just as much gold in it.
B) replace part of the silver in each medal with an equal weight of gold, restoring the medals' former color.
C) pay for the mining of a newly discovered silver deposit near the city where the regatta was held.
D) strike heavier medals whose gold and silver stood in the same ratio as in the medals of 1921.

Question 9

Histories of nineteenth-century shipping typically recount the displacement of sail by steam, a narrative that accommodates steam clippers only awkwardly, for these vessels, built in the 1850s and 1860s as sailing ships fitted with steam engines and screw propellers, carried both of the technologies that the narrative casts as rivals. Historian Ilse Marchetti asked whether, as their engines might lead one to expect, the clippers had come to cross oceans chiefly under steam, retaining their rigging only as a backup. To find out, she sorted the entries in the logs of the steam clipper *Wexcombe* into the three categories she had earlier applied to the logs of transatlantic steamships, which likewise carried masts and sails: sail alone, sail and steam together, and steam alone. Only the first and last of these categories appear in the *Wexcombe*'s logs, the last solely in the hours when the ship was leaving or entering port. Marchetti took this pattern as evidence that _____

Which choice most logically completes the text?

A) the *Wexcombe* was often run in ways that none of Marchetti's categories could capture.
B) the *Wexcombe* relied on sail alone during its crossings but combined steam with sail whenever it was leaving or entering port.
C) the *Wexcombe*, at least, depended at sea on the more traditional of its two means of propulsion alone and never drew on both at once.
D) every ship of the era that carried both sails and an engine, transatlantic steamships included, crossed oceans under sail alone.

Question 10

In Calder County, more and more households are installing backyard rainwater tanks, and some urban planners attribute the trend partly to the money residents save by watering their gardens with collected rain instead of tap water. Hydrologist Mireille Osei and colleagues see it differently. They found that the tanks often make little difference to water bills, and that the county's stormwater fee treats the tanks differently from rain gardens, which are comparably effective at keeping runoff out of storm drains. The fee rules classify a tank as "impervious-surface mitigation," meaning that what a household spends on one can be credited against the separate stormwater fee it owes each year, whereas the same outlay on a rain garden, classed as landscaping, cannot. What Osei's team found suggests that _____

Which choice most logically completes the text?

A) a fee change giving rain gardens the same treatment as tanks would hardly lower households' water bills but might well lead still more households to install tanks.
B) households with rainwater tanks have actually ended up paying more for water, a cost hidden by the credits the tanks earn against the stormwater fee.
C) the planners' account of the tanks' spread may rest on an overestimate of the fee credits and water savings that the tanks provide.
D) households' growing adoption of rainwater tanks may be motivated less by any savings on water bills than by an indirect subsidy built into the county's fee rules.

Question 11

On Earth, dark streaks that lengthen down slopes in warm months and fade in cold ones often mark water seeping through the soil. Spacecraft orbiting Mars have photographed hundreds of similar streaks on steep, sun-facing slopes, and because the Martian streaks lengthen and fade on much the same seasonal calendar as those on Earth, many scientists have concluded that briny water trickles down those slopes each summer. In the orbiters' thermal images, the streaked ground rarely shows the slower daytime warming that damp ground produces, an observation that has led other researchers to propose that _____

Which choice most logically completes the text?

A) the streaks may only seem seasonal because the orbiters photograph those slopes mostly in summer.
B) something about the Martian environment, not seeping water, may be producing the streaks.
C) the dark features cannot actually be lengthening and fading at all.
D) Martian brines, unlike the water that seeps through soil on Earth, likely leave slopes no darker than before.

Question 12

The Kestrel ice-sheet model, which reproduces satellite-measured flow speeds well in several regions of Antarctica, treats the heat rising from Earth's interior into the base of the ice as the same everywhere beneath the continent. That heat, called geothermal heat flux, controls how much of the ice's underside melts, and meltwater at the base lets the ice slide seaward more readily. Direct borehole measurements of the flux are few. Continent-wide maps inferred mainly from magnetic and seismic surveys disagree sharply over the details, but every one of them shows the flux varying greatly from place to place. The model's single value therefore means that _____

Which choice most logically completes the text?

A) borehole data will eventually reveal which one flux value best represents the whole bed of the ice sheet.
B) the model probably overstates how fast the ice moves in regions where its output has not been checked against satellite data.
C) region-to-region contrasts in the model's simulated flow speeds are a sign of uneven heating beneath the ice.
D) the ice in some regions probably moves at speeds that the model fails to reproduce.

Question 13

Four genetically distinct populations of one oyster species live in four estuaries whose waters differ in chemistry, and all four must cope with acid from farm runoff and decaying algae. If each population were suited to its own estuary, marine biologist Lucía Brannigan reasoned, its young should grow fastest, and suffer least from acid, in water from home. Her team therefore raised young oysters from every population in water from every estuary, keeping temperature and diet the same throughout and adding no acid, a moderate dose, or a large dose. Home water gave no population an advantage, and the acid slowed growth by an amount set by the dose alone. These results suggest that _____

Which choice most logically completes the text?

A) any adaptation of these populations to their home estuaries likely involves something other than the chemistry of the estuaries' water.
B) the populations' genetic differences are not adaptations to their home estuaries.
C) the populations probably differ in how well they tolerate acidity, even though they grow equally well in one another's water.
D) the oysters were probably too young for differences in their tolerance of acidity to show.

Question 14

In one woodland, saplings of a single tree species tend to unfold their first leaves each spring within days of the tree that produced their seed, though only for a while: the match is close in a sapling's first two springs and has largely faded by its fifth. Most saplings grow within a few meters of that seed parent. Forest ecologist Teodora Lind and colleagues studied the pattern using 25 years of records and genetic tests that identified each tree's seed and pollen parents. Unrelated trees on similar soil agreed only slightly at any age, and saplings agreed with their pollen parents no more closely than with unrelated trees, even once soil differences were set aside. Weighing three possible influences (soil, genes, and cues about a parent tree's surroundings that pass into its seeds), the team concluded that _____

Which choice most logically completes the text?

A) changing soil is the main reason saplings drift from their parents' timing, with seed-borne cues playing a supporting part.
B) a tree's leafing date shifts with its growing conditions instead of reflecting anything inherited or carried in the seed.
C) for their first few springs, saplings probably take their timing from cues carried in the seed, and the soil they share with their parents may add to the match.
D) inherited genes, along with cues carried in the seed, likely explain why saplings at first leaf out in step with their seed parents.

Question 15

The traditional ballads of England and Scotland that Francis James Child gathered in the late 1800s tell their stories in stark outline: a murder, a betrayal, or a drowning is reported in a few spare verses, and the characters' feelings are rarely spelled out. Many folk singers today slow these songs down, add verses in which the characters explain themselves, and set the words to new accompaniments. Purists complain that such versions tell us more about modern listeners' tastes than about the ballads themselves, whose bleak spirit, they argue, is lost. The singers' defenders answer by pointing to Child's own volumes, which print as many as two dozen versions of a single ballad, each reshaped by earlier singers for the listeners of their own town or valley, a record suggesting that _____

Which choice most logically completes the text?

A) today's singers are reacting against the earlier singers' versions, which made the ballads bleaker than they had first been.
B) reworking the ballads for present-day listeners need not be a break from the way earlier singers treated the songs.
C) adding new verses that explain the characters' feelings is a practice with a long history.
D) listeners today, unlike listeners in earlier centuries, want the characters in a song to explain themselves.

Question 16

Students at schools that set aside 40 minutes a day for free reading often gain more new words each year than other students do, but whether the reading time itself causes those gains is hard to test. A convincing test would compare participating students with nonparticipants who match them in everything else that can speed vocabulary growth, from school funding to family involvement. Schools, however, decide for themselves whether to adopt such programs; researchers cannot assign the programs to some schools and withhold them from others. Consequently, researchers hoping to measure the programs' effect _____

Which choice most logically completes the text?

A) are unlikely to locate a comparison group that differs from the participants in nothing but the program.
B) are likely to find that schools without such programs keep too few vocabulary records to study.
C) should limit their studies to schools whose daily reading periods run longer than 40 minutes.
D) would do best to compare participating students with students at schools that have less funding and less involved families.

Question 17

Some political theorists hold that in early modern Europe a king's decree was regarded as legitimate simply because the king had issued it, regardless of how the decree came about. Historian Marta Lisowska finds a sharply different outlook in political writings from sixteenth-century Poland. In these texts, a royal decree was judged by whether it had won the approval of the Sejm, the parliament whose consent the Nihil Novi statute of 1505 required for new laws, and by how well it preserved the liberties that the nobles regarded as their birthright. If these writings reflect Polish political thought of the period more broadly, Lisowska's analysis implies that _____

Which choice most logically completes the text?

A) Polish writers of the time would have let a decree's effects on the kingdom settle, by themselves, whether it was legitimate.
B) Polish writers of the time would have rejected any test of a decree's legitimacy that considered nothing but who had issued it.
C) Polish writers of the time would have considered the Sejm's approval enough, by itself, to make a decree legitimate.
D) a decree issued by a king who had defended the nobles' liberties could be judged legitimate even if the Sejm had not approved it.

Question 18

The bar-headed goose, which migrates across the Himalayas at altitudes above 5,000 meters, and the Andean goose, which lives year-round high in the Andes, both thrive where the air holds far less oxygen than it does at sea level. The two species share many anatomical features inherited from a common ancestor, and in both species hemoglobin—the blood protein that captures oxygen—binds oxygen unusually tightly. But the main genetic change responsible for this trait differs: in the bar-headed goose it alters one of the protein's two kinds of chains, whereas in the Andean goose it alters the other kind. Given that most of the two species' close relatives live at low elevations, researchers reason that

_____

Which choice most logically completes the text?

A) the two lineages had likely already separated before either one adapted to life at high altitude.
B) the two species likely adapted to high altitude during the same period, though through different changes to their hemoglobin.
C) differences in hemoglobin among populations within each species likely reflect the different altitudes at which those populations live.
D) the tight oxygen binding likely arose once, in the two species' common ancestor, and was later modified separately in each lineage.

Question 19

In reptiles and birds, a single bone carries sound across the middle ear, and the lower jaw, a composite of several bones, articulates with the skull at a joint formed by one bone of the jaw and one of the skull. Mammals depart from both arrangements: a chain of three ossicles (the hammer, anvil, and stirrup) transmits sound, and each half of the lower jaw is a single bone articulating with the skull directly. Since fossils trace mammals to ancestors with composite jaws, the two bones of the old hinge appear simply to have been discarded. The gene *Bapx1* marks the jaw hinge in birds and even in fish. In mouse embryos, researchers found it active between two developing ossicles, one of which originates at the rear tip of the cartilage rod around which the lower jaw forms, a result suggesting that

_____

Which choice most logically completes the text?

A) the cartilage rod, not the bones of the old hinge, gave rise to the middle ear, while the hinge bones were absorbed into the mammalian skull.
B) the fossils linking mammals to ancestors with composite jaws must have been misidentified, since mammals retain no trace of such a jaw.
C) the bones of the old hinge persist in mammals, repurposed as middle-ear bones, while the jaw articulates at a different joint.
D) a gene that marks the jaw hinge in birds and fish is too unreliable a guide to reveal anything about where mammalian ear bones came from.

Question 20

To compare the violins produced by two rival workshops, a panel of experienced musicians listened to recordings of each workshop's instruments, without being told which workshop had made them, and rated every recording on the same scales of richness, brilliance, and projection. The recordings, however, were made in different places: one workshop's violins were recorded in a small studio lined with sound-absorbing panels, and the other workshop's violins in a large concert hall with hard walls and a high ceiling. The violins recorded in the hall received higher ratings on every scale. Consequently, the panel's ratings _____

Which choice most logically completes the text?

A) can show which recording space flatters violins more, though not which workshop makes better instruments.
B) likely indicate that recordings are a poor substitute for hearing violins played live.
C) likely say more about the violins' richness than about their projection.
D) could make the two workshops' violins seem to differ in quality even if they do not.