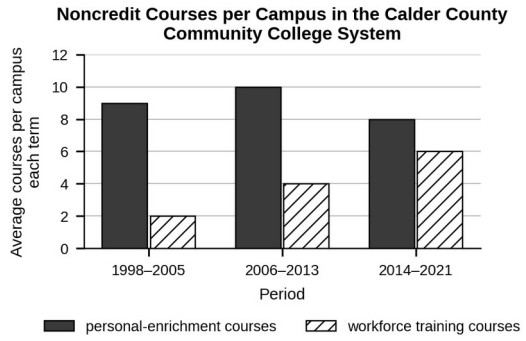
Command of Evidence: Data Questions

Module 2 Homework

Here are twenty data questions at the level of the harder second module. Each one is an isomorph of a hard official question: sixteen from the harder Module 2 of the Official Guide practice tests (the same tests you'll find in Bluebook) and four from the College Board's Question Bank, each with the same skeleton on a new topic. Expect them to look worse than they are. The passages are longer, the graphics are busier, several scales run backward or upside down, and many wrong answers are perfectly true. Slow down for the claim, read the frame, predict, then test. Aim for 24 minutes, test-day pace, and don't be discouraged if a few feel brutal the first time through.

Question 1



For decades, the noncredit catalogs of most community colleges were devoted to personal enrichment: watercolor painting, conversational French, ballroom dancing. By the 1990s, though, the first computer labs on campus hinted at a new role. Education historian Ezra Whitlow combed through the course schedules, brochures, and enrollment reports of the 22 campuses of the Calder County Community College system for three periods spanning more than two decades. Whitlow contends that over this span the system remade itself, step by step rather than all at once, into a place where adults come to train for new careers, from medical billing to welding.

Which choice best describes data from the graph that support Whitlow's contention?

A) At the average campus, workforce training courses grew more numerous with each successive period.
B) In every period, the average campus offered more personal-enrichment courses than workforce training courses.
C) The average campus offered more of each kind of course in 2014–2021 than it had in 1998–2005.
D) Personal-enrichment courses were offered most often, at the average campus, in the middle period.

Question 2

Specimens on Surviving Herbarium Sheets, by Collector and Plant Group

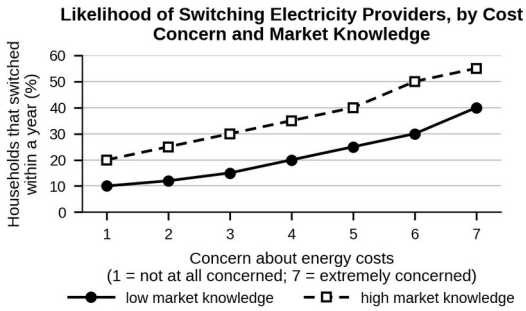
Collector	Years active as a collector	Flowering plants	Ferns	Mosses
Joachim Brack	1755–1770	302	0	0
Margarethe Vogl	1761–1779	214	37	0
Anselm Rudd	1768–1790	96	0	41
Thomasina Pell	1772–1785	153	22	9

Eighteenth-century botanists who traveled in search of plants pressed and dried their finds, glued each one to a sheet of paper, and wrote the collector's name on the sheet. In the table, a specimen is counted only if such a labeled sheet survives, and most did not: sheets were ruined by damp, eaten by insects, burned, or stripped of their labels when collections were broken up and sold. Losses also varied widely: some collections lost relatively few sheets, while others were almost entirely destroyed. The figures for these four collectors are therefore what can still be traced to them, not a record of everything they gathered. Given these losses, a reasonable inference is that _____

Which choice most effectively uses data from the table to complete the statement?

A) Vogl collected no more than 180 flowering plants during her career.
B) Brack's collecting produced exactly 302 specimens, every one of them a flowering plant.
C) Brack gathered more flowering plants than any of the other three collectors did.
D) Rudd gathered more mosses than the 41 that can now be traced to him.

Question 3



In markets where households may choose their electricity provider, many customers stay with the same company for years even when a cheaper plan is available. Switching is often easy, and it can save a household hundreds of dollars a year. Economists Petra Vasko and Odell Rimmer surveyed thousands of households about their worries over energy costs and their knowledge of the market, then checked which households changed providers within a year. Vasko and Rimmer argue that what holds many households back is not loyalty or contentment but uncertainty about the alternatives, so households that know the market well should be readier to switch than otherwise similar households that do not.

Which choice best describes data from the graph that support Vasko and Rimmer's argument?

A) Customers with little market knowledge grew steadily more likely to switch as their concern about energy costs rose.

B) Customers who were extremely concerned about energy costs were more likely to have high market knowledge than low market knowledge.

C) However worried customers were about costs, those who knew the market well switched at a higher rate than those who knew it poorly.

D) Among customers with high market knowledge, the likelihood of switching more than doubled from the least concerned to the most concerned.

Question 4

Recovery After Knee Surgery, by Music Condition (averages on day 2)

Measure	Patients who chose their own music	Patients given a staff-chosen playlist
Satisfaction with recovery (1–7)	6.1	4.8
Pain rating (0–10)	3.2	5.5
Hours of sleep, second night	6.4	5.6

Many hospitals now offer music to patients recovering from surgery, but few have tested whether it helps to let patients pick the music themselves. A team led by nurse researcher Selma Oduya had knee-surgery patients listen to music for an hour a day: one group heard playlists the patients had chosen, while a comparison group heard a calming playlist chosen by hospital staff. Two days after surgery, the team compared the groups on three measures. On two of them, larger numbers signal a better recovery; on the pain rating, a smaller number does. Taken together, the averages show that, compared with patients given the staff playlist, patients who chose their own music _____

Which choice most effectively uses data from the table to complete the statement?

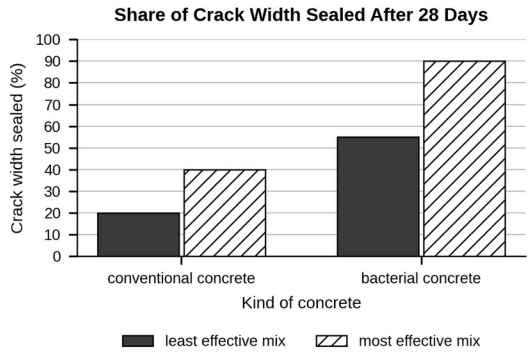
A) fared better on satisfaction and sleep but worse on pain.

B) fared better on every measure, their lower pain rating included.

C) varied more widely in how well they recovered than the other patients did.

D) slept more than an hour longer on the second night than the other patients did.

Question 5



Concrete cracks as it ages, and water seeping through the cracks corrodes the steel inside, weakening bridges and parking garages alike. Ordinary concrete can seal hairline cracks on its own as leftover cement reacts with water, but only slowly and only partly. Civil engineer Henrik Saelid and colleagues tested a bacterial alternative: concrete laced with dormant bacteria that, once water reaches them, produce limestone that fills the gap. The team cast several mixes of each kind of concrete, cracked the samples, and measured how much of each crack's width had closed four weeks later. They concluded that bacterial concrete is the better self-sealer of the two.

Which choice best describes data from the graph that support Saelid and colleagues' conclusion?

A) The most effective bacterial mix sealed about 80 percent of its crack width, about twice as much as the most effective conventional mix.

B) The bacterial mixes varied considerably, with the most effective sealing far more of its crack width than the least effective did.

C) Even the least effective bacterial mix sealed more than half of its crack width.

D) The least effective bacterial mix sealed a larger share of its crack width than the most effective conventional mix did.

Question 6

Varsholm around 1340: Four Reconstructions of Its Population

Evidence	Researchers (year)	Low estimate	High estimate
grain-tax records	Ottesen (1997)	1,500	2,300
house foundations	Lindqvist and Aro (2004)	4,200	5,600
house foundations	Hale and Mirza (2016)	4,000	5,900
cemetery skeletons	Brannock (2019)	11,000	14,500

Varsholm, a walled trading town on the Baltic coast, was largely abandoned after the plague years of the fourteenth century, and how many people lived there at its height, around 1340, remains uncertain. Reconstructing medieval populations is notoriously difficult, since few towns kept anything like a census. Scholars have produced estimates from several kinds of evidence: skeletons in the town's cemeteries, the stone foundations of its houses, and records of taxes paid in grain. Historian Annika Rautio suggests that these figures may reveal as much about the evidence behind them as about the town itself; in her view, the kind of evidence a researcher relies on goes a long way toward fixing the answer.

Which choice best describes data from the table that support Rautio's suggestion?

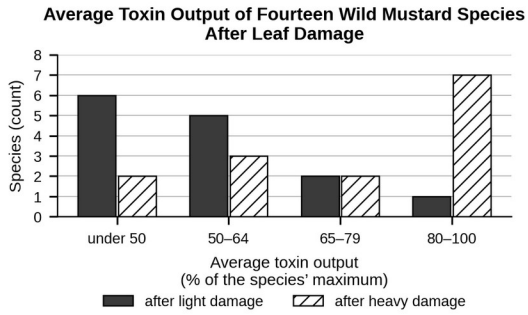
A) The two house-foundation estimates nearly match, while the skeleton and tax studies land far above and below them.

B) The grain-tax study by Ottesen produced the highest upper estimate of any reconstruction in the table.

C) Brannock's skeleton-based reconstruction put the town's population at somewhere between 11,000 and 14,500 people.

D) The oldest study in the table, which relied on grain-tax records, produced the narrowest range of estimates.

Question 7



When caterpillars chew their leaves, many plants respond by producing defensive toxins. Making those toxins is expensive, though: every molecule of defense uses nitrogen and energy that could otherwise go into new leaves, flowers, or seeds. Botanist Mireille Oyelaran measured, for fourteen species of wild mustard, how much toxin each produced after light and after heavy caterpillar damage, expressing each species' average output as a percentage of the most it is able to produce. Light damage rarely threatens a plant, but heavy damage can kill a young one. Even so, Oyelaran found that heavy damage often left a species short of its chemical limit: _____

Which choice most effectively uses data from the graph to complete the text?

A) when damage was light, only three of the species reached even 65 percent of their maximum.

B) every species produced more toxin after heavy damage than after light damage.

C) after heavy damage, seven of the species still averaged less than 80 percent of their maximum output.

D) the number of species averaging at least 80 percent of their maximum rose from one after light damage to seven after heavy damage.

Question 8

Power Management in Clustered and Standalone Servers (daily averages)

Server type	Length of a sleep stretch	Length of a waking stretch	Energy used per day
clustered	1.6 hours	64 minutes	4.8 kilowatt-hours
standalone	2.6 hours	50 minutes	5.9 kilowatt-hours

Computer engineer Daria Holtz predicted that servers running on their own would sleep in longer stretches, and stay awake in shorter ones, than servers mounted together in a cluster. Her reasoning: when demand is light, a server can drop into a low-power sleep state, but waking is costly, since the server must spin up its drives and cooling fans before it can work. Servers in a cluster share fans and storage, so both waking up and staying awake cost each of them less. Software that minimizes energy use should therefore keep a standalone server asleep longer and send it back to sleep sooner.

Which choice best describes data from the table that support Holtz's prediction?

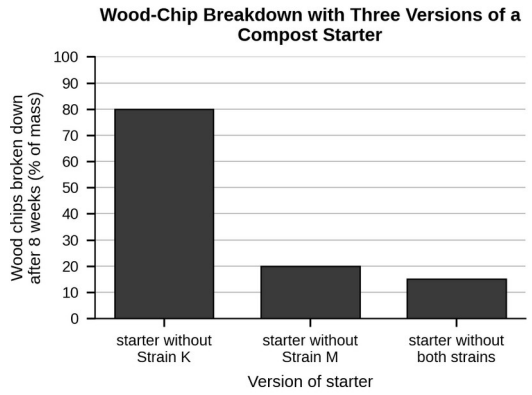
A) Standalone servers stayed awake longer during each waking stretch than they slept during each sleep stretch.

B) Standalone servers slept an hour longer per stretch and stayed awake 14 fewer minutes than clustered ones.

C) Standalone servers' sleep stretches lasted more than twice as long as clustered servers' sleep stretches did.

D) Standalone servers used more energy per day, on average, than clustered servers did.

Question 9



Gardeners speed up composting by adding a starter, a blend of microbes that break down plant matter. Soil microbiologist Aldo Ferrell and colleagues study a starter whose two main fungal strains, K and M, each release enzymes that dissolve tough plant fibers. In an earlier trial, starters missing Strain K broke down straw far more slowly than starters missing Strain M did. In a new trial, the team composted wood chips using three versions of the starter: one missing Strain K, one missing Strain M, and one missing both strains. Taken together, the two trials led Ferrell's team to propose that _____

Which choice most effectively uses data from the graph to complete the statement?

A) removing Strain K slowed the breakdown of wood chips nearly as much as removing both strains did.

B) Strain K matters more for breaking down wood chips than for breaking down straw.

C) wood chips are harder for the starter to break down than straw is.

D) the two strains may divide the work, with Strain M doing most of the work on wood chips.

Question 10

How 2°C of Warming Would Change Energy Use in Two Model Cities (%)

Energy use	City where air conditioners are common	City where air conditioners are rare
Heating energy	−12.6	−12.2
Residential cooling electricity	+4.2	+20.5
Commercial cooling electricity	+3.3	+16.8

Warmer weather will push up demand for cooling, but by how much? Cooling already accounts for a large share of summer electricity use in many cities. Urban energy analyst Tamsin Ekwall's team ran a simulation of two model cities, identical except that air conditioners are common in one and rare in the other, to see how annual energy use would shift if average temperatures rose by 2°C. In both, the simulation showed warming increasing the electricity used for cooling. The team's central conclusion, however, is that a city's existing stock of air conditioners largely determines how big that increase will be.

Which choice best describes data from the table that support the team's central conclusion?

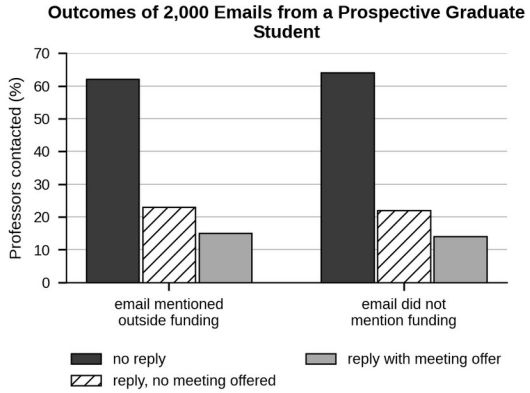
A) In the city where air conditioners are common, residential and commercial cooling electricity would climb by 4.2% and 3.3%, and heating energy would drop by 12.6%.

B) Heating energy would fall by more than 12% in the city where air conditioners are rare, a bigger change than the rise in cooling electricity in the city where they are common.

C) Cooling electricity would rise modestly in the city where air conditioners are common but by a percentage about five times as large in the city where they are rare.

D) Cooling electricity would rise by roughly the same amount in both cities, while heating energy would fall far more in the city where air conditioners are rare.

Question 11



Prospective graduate students often email professors before applying, hoping to arrange a meeting. Many of these emails go unanswered, and students often wonder what might improve their odds. Sociologists Margit Solveig and Ansel Morrow suspected that professors weigh what a student would cost them: a student who arrives with an outside fellowship costs a professor's lab nothing, so an email mentioning such funding, they predicted, would draw far more replies and meeting offers. They sent nearly identical emails from a fictitious student to 2,000 professors; half of the emails mentioned that the student had secured outside funding, and half did not.

Which choice best describes data from the graph that weaken Solveig and Morrow's prediction?

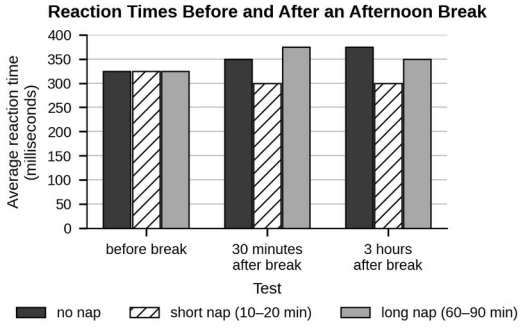
A) The two versions of the email drew nearly identical rates of replies and of meeting offers.

B) Among professors who received the email mentioning outside funding, no reply was the most common outcome.

C) The email that did not mention funding drew a meeting offer from roughly one professor in seven.

D) Among professors who replied to the email mentioning funding, fewer offered a meeting than replied without offering one.

Question 12



Afternoon naps are often recommended as a way to sharpen attention, but sleep scientists have long suspected that longer naps carry a cost: waking from deep sleep can leave a person groggy for a while, a state known as sleep inertia. Psychologist Noor Halvorsen and colleagues measured how quickly participants pressed a button after a light flashed, once before an afternoon break in which they took no nap, a short nap, or a long nap, and twice afterward. Each nap took place in a quiet, darkened room. Halvorsen's team concluded that, for afternoon alertness, a nap of 10 to 20 minutes serves at least as well as one lasting an hour or more.

Which choice best describes data from the graph that support the team's conclusion?

A) Before the break, participants in all three groups responded at essentially the same speed.

B) Long nappers never matched the short nappers' speed on either test after the break.

C) Short nappers ended the study faster than they began it, while participants who skipped the nap ended it slower.

D) Thirty minutes after the break, the long nappers were slower than participants who had not napped, but three hours after the break they were faster.

Question 13

How Closely Noisiness Ratings Tracked Two Acoustic Measures (correlation coefficients)

Classrooms	Reverberation time	Speech clarity index
small	0.58	−0.77
large	0.81	−0.88
all	0.69	−0.82

A classroom can feel noisy for reasons that have little to do with volume. Two acoustic features matter: reverberation time, or how long sound lingers before fading, and speech clarity, or how easily spoken words can be told apart. Acoustician Lotte Brandvold surveyed students in dozens of classrooms about how noisy their rooms felt and then correlated those ratings with each feature, measured in every room. A correlation's strength depends on how far it lies from 0, whether it is positive or negative; its sign shows only the direction of the relationship. Brandvold concluded that the students' sense of noise was tied more closely to speech clarity than to reverberation time.

Which choice best describes data from the table that support Brandvold's conclusion?

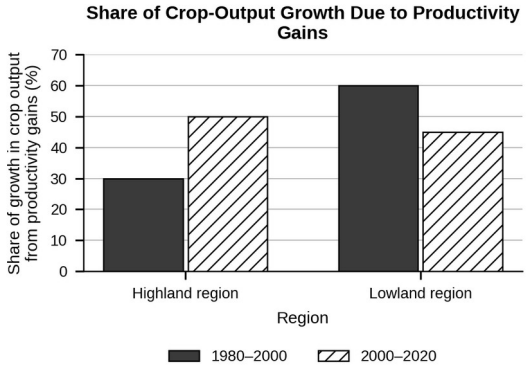
A) In small classrooms, large classrooms, and all classrooms together, the speech clarity correlation has the larger absolute value.

B) In every group of classrooms, the speech clarity correlation is lower than the reverberation correlation.

C) The reverberation correlation for large classrooms lies farther from 0 than the speech clarity correlation for small classrooms does.

D) The speech clarity correlation lies farther from 0 for large classrooms than for small classrooms.

Question 14



Farms can produce more food in two broad ways: by cultivating more land or by getting more out of the land already farmed through better seeds, fertilizers, and techniques. Agricultural economists Clara Amsel and Dmitri Varn estimated how much of the growth in crop output in two world regions came from such productivity gains rather than from expanding farmland. Amsel and Varn treat the productivity share as a rough gauge of how easily farmers can reach the fruits of agricultural research: the more accessible that research, the larger the share of growth that productivity gains should supply. Read this way, the graph suggests that _____

Which choice most effectively uses data from the graph to complete the statement?

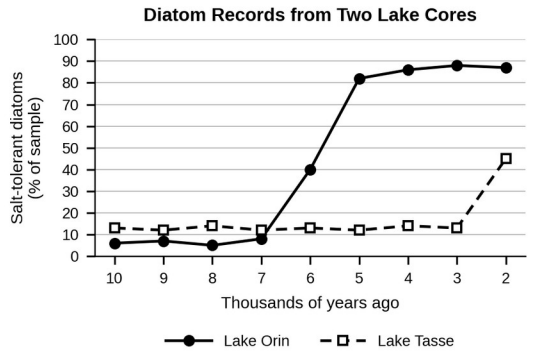
A) Highland farmers had better access to agricultural research than Lowland farmers did in both periods.

B) the Highland region expanded its farmland faster after 2000 than it had before.

C) Lowland farmers had a harder time reaching agricultural research after 2000 than before.

D) access to agricultural research worsened in the Highland region after 2000.

Question 15



Diatoms are microscopic algae whose glassy shells settle in lake sediments, layer upon layer. Some diatom species thrive only in salty water, so the share of salt-tolerant species in a sediment layer rises whenever a lake shrinks and its water grows saltier: the higher the share, the lower the lake. A freshwater mussel vanished from Lake Orin about 6,000 years ago and from nearby Lake Tasse about 4,000 years ago; the two lakes lie in the same basin, less than 30 kilometers apart. Paleoecologist Hedda Morland links the loss at Orin, though not the one at Tasse, to shrinking water, pointing out that _____

Which choice most effectively uses data from the graph to complete the statement?

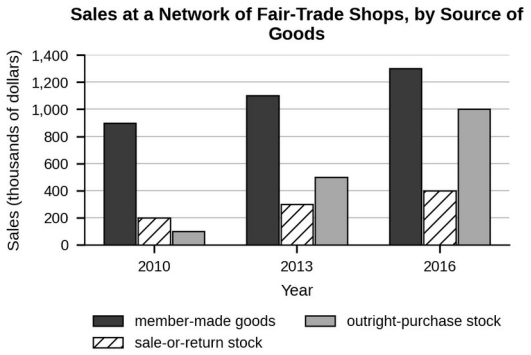
A) both lakes dropped sharply in the thousand years before the mussel vanished from each.

B) Lake Orin's water was saltier than Lake Tasse's throughout the period shown.

C) the share of salt-tolerant diatoms in Lake Orin fell sharply during the centuries when the mussel vanished there.

D) the mussel left Lake Orin as the lake was shrinking fast but left Lake Tasse while its level held nearly steady.

Question 16



The buyer for a network of fair-trade shops recalls that at first, unsure which goods from outside artisans would sell, the shops avoided being left holding unsold stock, but that as their sales records built up between 2010 and 2016, they grew willing to take on that risk. The network sells three kinds of goods. Some are made by the network's own member artisans; the rest come from outside artisans under one of two arrangements. Under sale-or-return, goods that fail to sell go back to the artisan, who bears the loss. Under outright purchase, the shop owns the goods, so anything left unsold is the shop's loss.

Which choice best describes data from the graph that support the buyer's recollection?

A) Outright-purchase sales rose roughly tenfold over the period, while sale-or-return sales merely doubled.

B) By 2016, outright-purchase stock had become the top-selling of the network's three sources of goods.

C) Sales of member-made goods grew by about $400,000 from 2010 to 2016.

D) In 2010, member-made goods accounted for about three-quarters of all the sales the network recorded.

Question 17

Share of Recorded-Music Revenue by Format in Two Regional Markets (%)

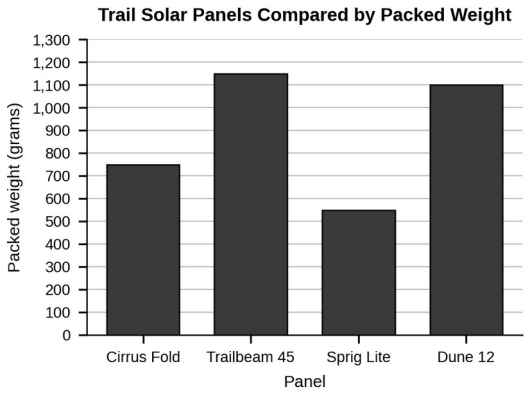
Market and format	2004	2008	2012	2016	2023
North, physical	90	80	66	52	8
North, downloads	9	17	26	18	3
North, streaming	1	3	8	30	89
South, physical	88	79	68	20	6
South, downloads	10	18	24	15	2
South, streaming	2	3	8	65	92

When music fans began buying songs as digital files and then streaming them, sales of CDs and other physical formats collapsed. In the two regional markets that a trade report calls North and South, physical formats went from nearly all recorded-music revenue in 2004 to almost none by 2023, while streaming rose from almost nothing to the great majority. Downloads, by contrast, enjoyed only a brief heyday in between. Yet the two markets did not travel this road at the same pace throughout: for a time, one raced ahead of the other. The markets' paths diverged most sharply between _____

Which choice most effectively uses data from the table to complete the statement?

A) 2016 and 2023.
B) 2004 and 2012.
C) 2004 and 2023.
D) 2012 and 2016.

Question 18

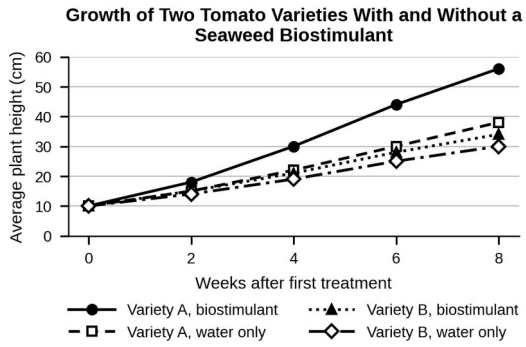


Hikers who carry folding solar panels to charge phones and headlamps care about both power and weight. In full sun, the Trailbeam 45 delivers 45 watts; the Dune 12, a sturdier panel built to survive desert heat, delivers just 12. Because every gram counts on a long trail, gear tester Wren Aldana rates panels by how many watts they deliver for each gram a hiker must carry, so that a heavy panel can still rate well if it is powerful enough, and a light one can rate poorly if it is weak. Aldana concludes that the Trailbeam 45 delivers far more power per gram than the Dune 12 does.

Which choice best describes data from the graph that support Aldana's conclusion?

A) The Cirrus Fold weighs about 400 grams less than the Trailbeam 45.
B) The Sprig Lite is the lightest of the four panels.
C) The Trailbeam 45 is less than 100 grams heavier than the Dune 12.
D) The Trailbeam 45 and the Dune 12 are the two heaviest panels shown.

Question 19



Biostimulants, such as seaweed extracts that are sprayed on crops to promote growth, are increasingly popular with farmers, but their effects can vary from one crop variety to another. The extracts contain hormones and minerals thought to stimulate root and shoot growth. Horticulturist Imogen Hartell treated seedlings of two tomato varieties with either a seaweed-based biostimulant or plain water and measured the plants' average height every two weeks for two months, growing all the plants in the same greenhouse under identical light and watering schedules. Hartell reports that the two varieties responded to the biostimulant in markedly different ways, noting that _____

Which choice most effectively uses data from the graph to complete the text?

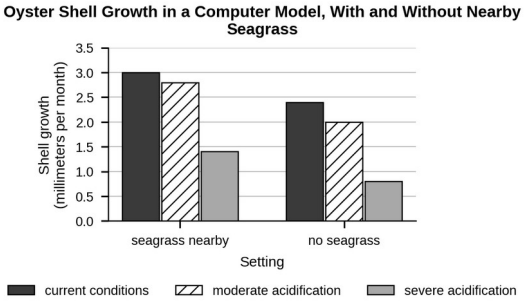
A) among plants given only water, Variety A plants had grown taller by week 8 than Variety B plants had.

B) the biostimulant lifted Variety A's height over its water-only plants far more than it did Variety B's.

C) Variety B plants given the biostimulant grew quickly at first and then stopped growing.

D) the biostimulant's effect on Variety A did not become visible until the final two weeks of the study.

Question 20



Ocean acidification, which occurs as seawater absorbs carbon dioxide from the air, makes it harder for oysters to build their shells. Seagrass meadows may help: as seagrass photosynthesizes, it draws carbon dioxide out of the surrounding water. Marine ecologist Talia Rennick and colleagues used a computer model to estimate monthly shell growth for oysters living near seagrass and for oysters living far from it, today and under two possible futures. Rennick's team concluded that under moderate acidification, the benefit of nearby seagrass would exceed the harm done by the acidification itself; under severe acidification, it would not.

Which choice best describes data from the graph that support Rennick and colleagues' conclusion?

A) Seagrass sped shell growth in every scenario, while growth slowed as acidification worsened, with or without seagrass.

B) Under moderate acidification, oysters near seagrass outgrew today's seagrass-free oysters; under severe acidification, they did not.

C) Oysters without seagrass lost more growth between moderate and severe acidification than between current conditions and moderate acidification.

D) Under severe acidification, oysters near seagrass still outgrew oysters without it.