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Topic Break Down

Topic	No. of Questions
Topic 1, Reading	310
Topic 2, Writing and Language	310
Topic 3, Math	310
Total	930

QUESTION NO: 1

If b − a = c − b = d − c, which of the following is equal to d − b?

A. d + a

B. b + a

C. c + a

D. c − a

E. b − c

ANSWER: D

Explanation:

b − a = c − b = d − c => b − a = d − c

=> d = b − a + c => d − b = c − a

QUESTION NO: 2

Although often confused with each other, global warming and ozone depletion are two separate problems threatening Earth's ecosystem today. Global warming is caused by the build-up of heattrapping gases in the atmosphere. It was dubbed the "greenhouse effect" because it is similar to a greenhouse in that the sun's rays are allowed into the greenhouse but the heat from these rays in unable to escape. Ozone depletion, however, is the destruction of the ozone layer. Chemicals such as chlorofluorocarbons and methyl bromide react with ozone, leaving a "hole" in the ozone layer that lets dangerous UV rays through. Both are serious threats to life on Earth. While the greenhouse effect maintains the appropriate temperature for life on Earth, problems are exacerbated when the quantity of greenhouse gases in the Earth's atmosphere increases drastically. When this occurs, the amount of heat energy that is insulated within the Earth's atmosphere increases correspondingly and results in a rise in global temperature.

An increase of a mere few degrees Celsius does not appear very threatening. However, numbers can be deceiving. When you consider that the Ice Age resulted from temperatures only slightly cooler than those today, it is obvious that even very subtle temperature changes can significantly impact global climate. Global warming threatens to desecrate the natural habitats of organisms on Earth and disturb the stability of our ecosystem. The climate changes that would result from global warming could trigger droughts, heat waves, floods, and other extreme weather events.

Like most other environmental problems, humans are the cause of global warming. The burning of fossil fuels is largely responsible for the increase in the concentration of carbon dioxide in the atmosphere. Every time someone drives a car or powers their home with energy derived from power plants that use coal, carbon dioxide is released into the atmosphere. The atmospheric concentrations of carbon dioxide and methane have risen meteorically since preindustrial times, mainly due to the contributions of factories, cars, and large-scale agriculture. Even if we immediately stopped emitting greenhouse gases, we would continue to see the effects of global warming for decades because of the damage we have already inflicted.

Despite the pessimistic outlook, there are things that can be done to reduce global warming. Although the problem may seem overwhelming, individuals can make a positive difference in combating global warming. Simple things like driving less, using public transportation, and conserving electricity generated by combustion of fossil fuels can help reduce the emissions

of greenhouse gases. It is important to realize that it is not too late to make a difference. If everyone does what they can to reduce their contributions of greenhouse gases to the atmosphere, the efforts of people around the world will act in concert to thwart the progression of global warming. If the effort is not made immediately, the delicate global ecosystem could be thrown irreversibly out of balance, and the future of life on Earth may be jeopardized.

In the above passage the word thwart is used to mean?

A. baffle

B. hinder

C. facilitate

D. countenance

E. increase

ANSWER: B

Explanation:

You can infer the definition from the context clues “the progression of global warming.”

QUESTION NO: 3

DIRECTIONS: In the passage below, certain phrases are underlined and numbered . The question will present alternatives for the underlined part. In most cases, you are to choose the one that best expresses the idea, makes the statement appropriate for standard written English, or is worded most consistently with the style and tone of the passage as a whole. If you think the original version is the best, choose "NO CHANGE".

Read the passage and answer question <1>.

The Spine

Good spine health is important for every person. The human spine support the weight of the head, protects the body’s organs, and receives <1> the gravitational pull that helps with posture. Comprised of 33 bones, each called vertebra, the spine is divided into five regions: cervical, <2> thoracic, lumbar, sacral, and coccygeal. Vertebra are named according to the region where they are located along the spine and in numerical order. Discs serve as cushions between each vertebra. Nerves run along the spine, carrying signals between the spine and the rest of the body.

There are many reasons why people experience problems with their spine. Some people like us are born <3> with defects such as spina bifida, which stunts infant <4> brain and spine development. Trauma to the spine can also create problems, in addition <5> when the damage is irreversible. Paralysis happened <6> when the spine is injured beyond repair, and may result in loss of function in the arms or legs. Another reason for damage is the body’s natural deterioration. As a person ages, the spine wears out. The discs that separate each vertebra lose moisture, and nerves that run alongside the spine can become more narrow, which <7> decreases the spines <8> ability to absorb pressure, especially when walking, jogging, or jumping.

Prevention is the best way to maintain a healthy back. There are varieties of ways that people keep themselves pain free and functioning at optimum levels. Sleeping on your back with a pillow under the knees supports its <9> natural curve during the night. When sitting at a desk, keeping ears, shoulders, and hips in line while resting the back firmly against the chair helps with posture. Standing straight with relaxed shoulders, hips, and knees will eliminate undue pressure on the spine. Walking with your head held high, chin tucked, and toes pointed forward will prevent slouching. Plus, you will look fantastically confident. <10>

Diet and sunshine are also important for back health, well-balanced <11> foods build lean muscles that support the spine. Lean proteins, fresh fruits and vegetables, and plenty <12> of water to keep the body hydrated are best choices for a daily regimen. While Vitamin D is found in many foods such as salmon and green leaf lettuce. The <13> sunshine is a body's best source. At least ten minutes of day <14> sunlight will strengthen bones and provide energy to the body's systems, encouraging the body to stand straighter. <15>

A. NO CHANGE

B. The human spine supports the weight of the head, protects the body's organs, and receives

C. The human spine supports the weight of the head, protect the body's organs, and receive

D. The human spine support the weight of the head, protect the body's organs, and receive

ANSWER: B

Explanation:

This choice is the correct answer because of subject-verb agreement. The third person subject "spine" requires a singular verb.

QUESTION NO: 4

DIRECTIONS: Each passage below is accompanied by a number of questions. For some questions, you will consider how the passage might be revised to improve the expression of ideas. For other questions, you will consider how the passage might be edited to correct errors in sentence structure, usage, or punctuation. A passage or a question may be accompanied by one or more graphics (such as a table or graph) that you will consider as you make revising and editing decisions.

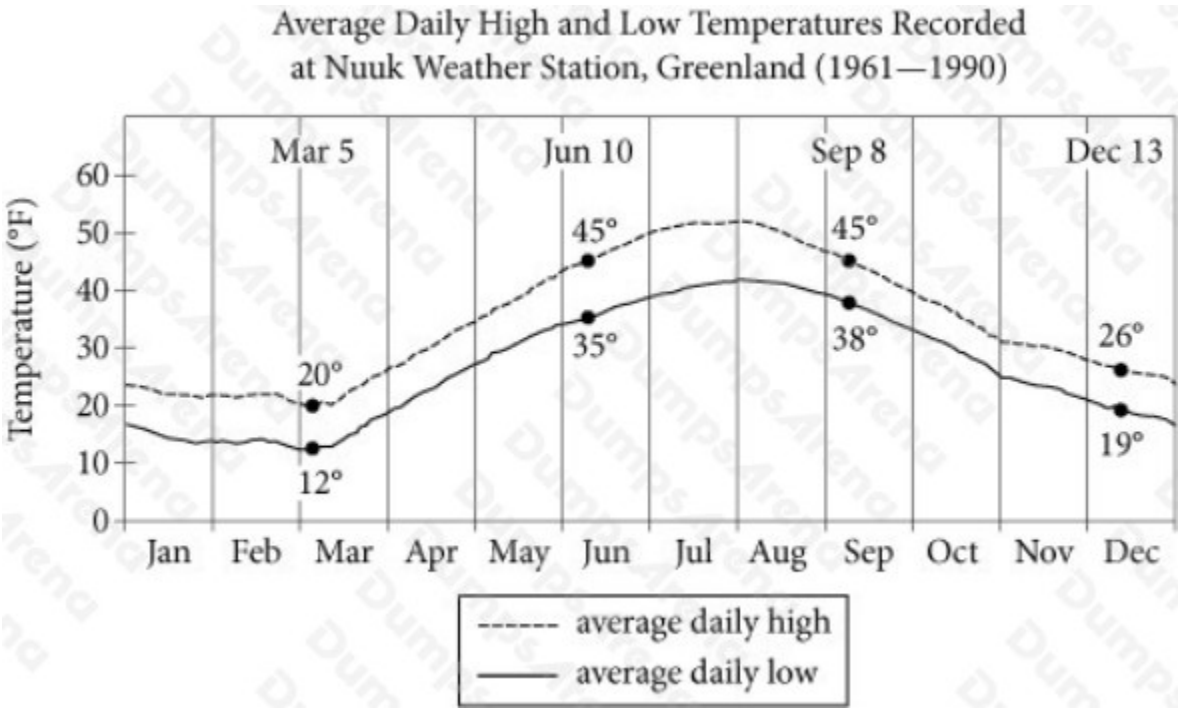
Some questions will direct you to an underlined portion of a passage. Other questions will direct you to a location in a passage or ask you to think about the passage as a whole.

After reading each passage, choose the answer to each question that most effectively improves the quality of writing in the passage or that makes the passage conform to the conventions of standard written English. Many questions include a "NO CHANGE" option. Choose that option if you think the best choice is to leave the relevant portion of the passage as it is.

Read the passage and answer question (9).

Dark Snow

Most of Greenland's interior is covered by a thick layer of ice and compressed snow known as the Greenland Ice Sheet. The size of the ice sheet fluctuates seasonally: in summer, average daily high temperatures in Greenland can rise to slightly above 50 degrees Fahrenheit, partially melting the ice; in the winter, the sheet thickens as additional snow falls, and average daily low temperatures can drop (1) to as low as 20 degrees.



Adapted from W M O. Copyright 2014 by World Meteorological Organization.

Typically, the ice sheet begins to show evidence of thawing in late (2) summer. This follows several weeks of higher temperatures. (3) For example, in the summer of 2012, virtually the entire Greenland Ice Sheet underwent thawing at or near its surface by mid-July, the earliest date on record. Most scientists looking for the causes of the Great Melt of 2012 have focused exclusively on rising temperatures. The summer of 2012 was the warmest in 170 years, records show. But Jason (4) Box, an associate professor of geology at Ohio State believes that another factor added to the early (5) thaw; the “dark snow” problem.

According to Box, a leading Greenland expert, tundra fires in 2012 from as far away as North America produced great amounts of soot, some (6) of it drifted over Greenland in giant plumes of smoke and then (7) fell as particles onto the ice sheet. Scientists have long known that soot particles facilitate melting by darkening snow and ice, limiting (8) it’s ability to reflect the Sun’s rays. As Box explains, “Soot is an extremely powerful light absorber. It settles over the ice and captures the Sun’s heat.” The result is a self-reinforcing cycle. As the ice melts, the land and water under the ice become exposed, and since land and water are darker than snow, the surface absorbs even more heat, which (9) is related to the rising temperatures.

Box’s research is important because the fires of 2012 may not be a one-time phenomenon. According to scientists, rising Arctic temperatures are making northern latitudes greener and thus more fire prone. The pattern Box observed in 2012 may repeat (10) itself again, with harmful effects on the Arctic ecosystem. Box is currently organizing an expedition to gather this crucial information. The next step for Box and his team is to travel to Greenland to perform direct sampling of the ice in order to determine just how much the soot is contributing to the melting of the ice sheet. Members of the public will be able to track his team’s progress – and even help fund the expedition – through a website Box has created. (11) Which choice best completes the description of a self-reinforcing cycle?

A. NO CHANGE

B. raises the surface temperature.

C. begins to cool at a certain point.

D. leads to additional melting.

ANSWER: D

Explanation:

Choice “leads to additional melting” is the best answer. The preceding sentences in the paragraph have established that a darker surface of soot-covered snow leads to more melting because this darker surface absorbs heat, whereas a whiter surface, free of soot, would deflect heat. As the passage points out, exposed land and water are also dark and cannot deflect heat the way ice and snow can. Only Choice “leads to additional melting” reflects the self-reinforcing cycle that the preceding sentences already imply.

Other choices are incorrect because the information each provides fails to support the previous claim that the “result” of the soot “is a self-reinforcing cycle.”

QUESTION NO: 5

Which line has a slope of −3?

A. 3x + 2y = 4

B. −3x + 2y = 4

C. 3x + y = 2

D. 6x + 3y = 9

E. −3x + 2y = 10

ANSWER: C

Explanation:

To find the slope of a line, the equation must be solved for y. The coefficient of x is the slope when the equation is solved for y. The only equation above that gives a coefficient for x of −3 is 3x + y = 2.

QUESTION NO: 6

Oliver Goldsmith (1730–1774) wrote criticism, plays, novels, biographies, travelogues, and nearly every other conceivable kind of composition. This good-humored essay is from a series published in the Public Ledger and then in book form as The Citizen of the World (1762).

Were we to estimate the learning of the English by the number of books that are every day published among them, perhaps no country, not even China itself, could equal them in this particular. I have reckoned not less than twenty-three new books published in one day, which, upon computation, makes eight thousand three hundred and ninety-five in one year. Most of these are not confined to one single science, but embrace the whole circle. History, politics, poetry, mathematics, metaphysics, and the philosophy of nature, are all comprised in a manual no larger than that in which our children are taught the letters. If then, we suppose the learned of England to read but an eighth part of the works which daily come from the press and surely non can pretend to learning upon less easy terms), at this rate every scholar will read a thousand books in one year. From such a calculation, you may conjecture what an amazing fund of literature a man must be possessed of, who thus reads three new books every day, not one of which but contains all the good things that ever were said or written.

And yet I know not how it happens, but the English are not, in reality so learned as would seem from this calculation. We meet but few who know all arts and sciences to perfection; whether it is that the generality are incapable of such extensive knowledge, or that the authors of those books are not adequate instructors. In China, the Emperor himself takes cognizance of all the doctors in the kingdom who profess authorship. In England, every man may be an author, that can write; for they have by law a liberty, not only of saying what they please, but of being also as dull as they please.

Yesterday, as I testified to my surprise, to the man in black, where writers could be found in sufficient number to throw off the books I saw daily crowding from the press. I at first imagined that their learned seminaries might take this method of instructing the world. But, to obviate this objection, my companion assured me that the doctors of colleges never wrote, and that some of them had actually forgot their reading. “But if you desire,” continued he, “to see a collection of authors, I fancy I can introduce you to a club, which assembles every Saturday at seven ...” I accepted his invitation; we walked together, and entered the house some time before the usual hour for the company assembling. My friend took this opportunity of letting me into the characters of the principal members of the club...

“The first person,” said he, “of our society is Doctor Nonentity, a metaphysician. Most people think him a profound scholar, but, as he seldom speaks, I cannot be positive in that particular; he generally spreads himself before the fire, sucks his pipe, talks little, drinks much, and is reckoned very good company. I’m told he writes indexes to perfection: he makes essays on the origin of evil, philosophical inquiries upon any subject, and draws up an answer to any book upon 24 hours’ warning ...”

The tone of paragraph 2 may best be described as:

A. self-satisfied

B. awestruck

C. affectionate

D. sardonic

E. solemn

ANSWER: D

Explanation:

The whole tone of the piece is ironic; Goldsmith is making his point through dry, sardonic wit.

QUESTION NO: 7

NOTE: The use of a calculator is not permitted.

If (ax + 2)(bx + 7) = 15x2 + cx + 14, for all values of x, and a + b = 8, what are the two possible values for c?

A. 3 and 5

B. 6 and 35

C. 10 and 21

D. 31 and 41

ANSWER: D

Explanation:

One can find the possible values of a and b in (ax + 2)(bx + 7) by using the given equation a + b = 8 and finding another equation that relates the variables a and b. Since (ax + 2)(bx + 7) = 15x2 + cx + 14, one can expand the left side of the equation to obtain abx2 + 7ax + 2bx + 14 = 15x2 + cx + 14. Since ab is the coefficient of x2 on the left side of the equation and 15 is the coefficient of x2 on the right side of the equation, it must be true that ab = 15. Since a + b = 8, it follows that b = 8 − a. Thus, ab = 15 can be rewritten as a(8 − a) = 15, which in turn can be rewritten as a2 − 8a + 15 = 0. Factoring gives (a − 3)(a − 5) = 0. Thus, either a = 3 and b = 5, or a = 5 and b = 3. If a = 3 and b = 5, then (ax + 2)(bx + 7) = (3x + 2)(5x + 7) = 15x2 + 31x + 14. Thus, one of the possible values of c is 31. If a = 5 and b = 3, then (ax + 2)(bx + 7) = (5x + 2)(3x + 7) = 15x2 + 41x + 14. Thus, another possible value for c is 41. Therefore, the two possible values for c are 31 and 41.

QUESTION NO: 8

If ab is negative, which of the following CANNOT be negative?

A. b − a

B. a − b

C. a2b

D. ab2

E. a2b2

ANSWER: E

Explanation:

Any number squared is positive. Thus, a quick look at the answer choices would tell you that a2b2, will be positive for any nonzero values of a and b.

QUESTION NO: 9

Passage 1 is adapted from Michael Slezak, “Space Mining: the Next Gold Rush?” Copyright 2013 by New Scientist. Passage 2 is from the editors of New Scientist, “Taming the Final Frontier.” Copyright 2013 by New Scientist. Passage 1

Follow the money and you will end up in space. That’s the message from a first of its kind forum on mining beyond Earth.

Convened in Sydney by the Australian Centre for Space Engineering Research, the event brought together mining companies, robotics experts, lunar scientists, and government agencies that are all working to make space mining a reality.

The forum comes hot on the heels of the 2012 unveiling of two private asteroid mining firms. Planetary Resources of Washington says it will launch its first prospecting telescopes in two years, while Deep Space Industries of Virginia hopes to be harvesting metals from asteroids by 2020. Another commercial venture that sprung up in 2012, Golden Spike of Colorado, will be offering trips to the moon, including to potential lunar miners.

Within a few decades, these firms may be meeting earthly demands for precious metals, such as platinum and gold, and the rare earth elements vital for personal electronics, such as yttrium and lanthanum. But like the gold rush pioneers who transformed the western United States, the first space miners won’t just enrich themselves. They also hope to build an off planet economy free of any bonds with Earth, in which the materials extracted and processed from the moon and asteroids are delivered for space based projects.

In this scenario, water mined from other worlds could become the most desired commodity. “In the desert, what’s worth more: a kilogram of gold or a kilogram of water?” asks Kris Zacny of

HoneyBee Robotics in New York. “Gold is useless. Water will let you live.”

Water ice from the moon’s poles could be sent to astronauts on the International Space Station for drinking or as a radiation shield. Splitting water into oxygen and hydrogen makes spacecraft fuel, so ice rich asteroids could become interplanetary refuelling stations.

Companies are eyeing the iron, silicon, and aluminium in lunar soil and asteroids, which could be used in 3 D printers to make spare parts or machinery. Others want to turn space dirt into concrete for landing pads, shelters, and roads.

Passage 2

The motivation for deep space travel is shifting from discovery to economics. The past year has seen a flurry of proposals aimed at bringing celestial riches down to Earth. No doubt this will make a few billionaires even wealthier, but we all stand to gain: the mineral bounty and spin off technologies could enrich us all.

But before the miners start firing up their rockets, we should pause for thought. At first glance, space mining seems to sidestep most environmental concerns: there is (probably!) no life on asteroids, and thus no habitats to trash. But its consequences – both here on Earth and in space – merit careful consideration.

Part of this is about principles. Some will argue that space’s “magnificent desolation” is not ours to despoil, just as they argue that our own planet’s poles should remain pristine. Others will suggest that glutting ourselves on space’s riches is not an acceptable alternative to developing more sustainable ways of earthly life.

History suggests that those will be hard lines to hold, and it may be difficult to persuade the public that such barren environments are worth preserving. After all, they exist in vast abundance, and even fewer people will experience them than have walked through Antarctica’s icy landscapes.

There’s also the emerging off world economy to consider. The resources that are valuable in orbit and beyond may be very different to those we prize on Earth. Questions of their stewardship have barely been broached – and the relevant legal and regulatory framework is fragmentary, to put it mildly.

Space miners, like their earthly counterparts, are often reluctant to engage with such questions. One speaker at last week’s space mining forum in Sydney, Australia, concluded with a plea that regulation should be avoided. But miners have much to gain from a broad agreement on the for profit exploitation of space. Without consensus, claims will be disputed, investments risky, and the gains made insecure. It is in all of our long term interests to seek one out.

Which statement best describes the relationship between the passages?

A. Passage 2 refutes the central claim advanced in Passage 1.

B. Passage 2 illustrates the phenomenon described in more general terms in Passage 1.

C. Passage 2 argues against the practicality of the proposals put forth in Passage 1.

D. Passage 2 expresses reservations about developments discussed in Passage 1.

ANSWER: D

Explanation:

The author of Passage 1 is excited about the possibilities of space mining and how it can yield valuable materials, such as metals and elements (sentence 1 of paragraph 4 and sentence 1 of paragraph 7), water ice (sentence 1 of paragraph 6), and space dirt (sentence 2 of paragraph 7). The author of Passage 2, on the other hand, recognizes the possible benefits of

space mining but also states that space mining should be thoughtfully considered before being implemented. Therefore, the author of Passage 2 expresses some concerns about a concept discussed in Passage 1.

The author of Passage 2 does not refute the central claim of Passage 1; both authors agree there are possible benefits to space mining, he is also not suggesting that the space mining proposals stated in Passage 1 are impractical. The author of Passage 1 does not describe space mining in more general terms than does the author of Passage 2. Choice C is incorrect because the author of Passage 2 the is not suggesting that the space mining proposals stated in Passage 1 are impractical.

QUESTION NO: 10

Passage 1 is adapted from Talleyrand et al., Report on Public Instruction. Originally published in 1791. Passage 2 is adapted from Mary Wollstonecraft, A Vindication of the Rights of Woman. Originally published in 1792. Talleyrand was a French diplomat; the Report was a plan for national education. Wollstonecraft, a British novelist and political writer, wrote Vindication in response to Talleyrand.

Passage 1

That half the human race is excluded by the other half from any participation in government; that they are native by birth but foreign by law in the very land where they were born; and that they are property owners yet have no direct influence or representation: are all political phenomena apparently impossible to explain on abstract principle. But on another level of ideas, the question changes and may be easily resolved. The purpose of all these institutions must be the happiness of the greatest number. Everything that leads us farther from this purpose is in error; everything that brings us closer is truth. If the exclusion from public employments decreed against women leads to a greater sum of mutual happiness for the two sexes, then this becomes a law that all Societies have been compelled to acknowledge and sanction.

Any other ambition would be a reversal of our primary destinies; and it will never be in women's interest to change the assignment they have received.

It seems to us incontestable that our common happiness, above all that of women, requires that they never aspire to the exercise of political rights and functions. Here we must seek their interests in the wishes of nature. Is it not apparent, that their delicate constitutions, their peaceful inclinations, and the many duties of motherhood, set them apart from strenuous habits and onerous duties, and summon them to gentle occupations and the cares of the home? And is it not evident that the great conserving principle of Societies, which makes the division of powers a source of harmony, has been expressed and revealed by nature itself, when it divided the functions of the two sexes in so obviously distinct a manner? This is sufficient; we need not invoke principles that are inapplicable to the question. Let us not make rivals of life's companions. You must, you truly must allow the persistence of a union that no interest, no rivalry, can possibly undo. Understand that the good of all demands this of you.

Passage 2

Contending for the rights of woman, my main argument is built on this simple principle, that if she be not prepared by education to become the companion of man, she will stop the progress of knowledge and virtue; for truth must be common to all, or it will be inefficacious with respect to its influence on general practice. And how can woman be expected to co-operate unless she know why she ought to be virtuous? unless freedom strengthen her reason till she comprehend her duty, and see in what manner it is connected with her real good? If children are to be educated to understand the true principle of patriotism, their mother must be a patriot; and the love of mankind, from which an orderly train of virtues spring, can only be produced by considering the moral and civil interest of mankind; but the education and situation of woman, at present, shuts her out from such investigations...

Consider, sir, dispassionately, these observations – for a glimpse of this truth seemed to open before you when you observed, "that to see one half of the human race excluded by the other from all participation of government, was a political phenomenon that, according to abstract principles, it was impossible to explain." If so, on what does your constitution rest? If the abstract rights of man will bear discussion and explanation, those of woman, by a parity of reasoning, will not shrink from the same test: though a different opinion prevails in this country, built on the very arguments which you use to justify the oppression of woman – prescription.

Consider – I address you as a legislator – whether, when men contend for their freedom, and to be allowed to judge for themselves respecting their own happiness, it be not inconsistent and unjust to subjugate women, even though you firmly believe that you are acting in the manner best calculated to promote their happiness? Who made man the exclusive judge, if woman partake with him the gift of reason?

In this style, argue tyrants of every denomination, from the weak king to the weak father of a family; they are all eager to crush reason; yet always assert that they usurp its throne only to be useful. Do you not act a similar part, when you force all women, by denying them civil and political rights, to remain immured in their families groping in the dark?

It can be inferred that the authors of Passage 1 believe that running a household and raising children:

A. are rewarding for men as well as for women.

B. yield less value for society than do the roles performed by men.

C. entail very few activities that are difficult or unpleasant.

D. require skills similar to those needed to run a country or a business.

ANSWER: C

Explanation:

Choice [entail very few activities that are...] is the best answer. In sentence 3 of paragraph 3, the authors of Passage 1 state that women should seek “gentle occupations and the cares of the home” so they can avoid performing difficult, or “strenuous,” and unpleasant, or “onerous,” tasks.

Other choices are incorrect because the authors of Passage 1 do not suggest that running a household and raising children are rewarding for both sexes, yield less value for society, or require professional or political skills.

QUESTION NO: 11

This passage is adapted from Taras Grescoe, Straphanger: Saving Our Cities and Ourselves from the Automobile. ©2012 by Taras Grescoe.

Though there are 600 million cars on the planet, and counting, there are also seven billion people, which means that for the vast majority of us getting around involves taking buses, ferryboats, commuter trains, streetcars, and subways. In other words, traveling to work, school, or the market means being a straphanger: somebody who, by choice or necessity, relies on public transport, rather than a privately owned automobile.

Half the population of New York, Toronto, and London do not own cars. Public transport is how most of the people of Asia and Africa, the world’s most populous continents, travel. Every day, subway systems carry 155 million passengers, thirty four times the number carried by all the world’s airplanes, and the global public transport market is now valued at $428 billion annually. A century and a half after the invention of the internal combustion engine, private car ownership is still an anomaly.

And yet public transportation, in many minds, is the opposite of glamour – a squalid last resort for those with one too many impaired driving charges, too poor to afford insurance, or too decrepit to get behind the wheel of a car. In much of North America, they are right: taking transit is a depressing experience. Anybody who has waited far too long on a street corner for the privilege of boarding a lurching, overcrowded bus, or wrestled luggage onto subways and shuttles to get to a big city airport, knows that transit on this continent tends to be underfunded, ill maintained, and ill planned. Given the opportunity, who wouldn’t drive? Hopping in a car almost always gets you to your destination more quickly.

It doesn’t have to be like this. Done right, public transport can be faster, more comfortable, and cheaper than the private automobile. In Shanghai, German made magnetic levitation trains skim over elevated tracks at 266 miles an hour, whisking

people to the airport at a third of the speed of sound. In provincial French towns, electric powered streetcars run silently on rubber tires, sliding through narrow streets along a single guide rail set into cobblestones. From Spain to Sweden, Wi Fi equipped high-speed trains seamlessly connect with highly ramified metro networks, allowing commuters to work on laptops as they prepare for same day meetings in once distant capital cities. In Latin America, China, and India, working people board fast loading buses that move like subway trains along dedicated busways, leaving the sedans and S U V s of the rich mired in dawn to dusk traffic jams. And some cities have transformed their streets into cycle path freeways, making giant strides in public health and safety and the sheer livability of their neighborhoods – in the process turning the workaday bicycle into a viable form of mass transit.

If you credit the demographers, this transit trend has legs. The “Millennials,” who reached adulthood around the turn of the century and now outnumber baby boomers, tend to favor cities over suburbs, and are far more willing than their parents to ride buses and subways. Part of the reason is their ease with iPads, MP3 players, Kindles, and smartphones: you can get some serious texting done when you’re not driving, and earbuds offer effective insulation from all but the most extreme commuting annoyances. Even though there are more teenagers in the country than ever, only ten million have a driver’s license (versus twelve million a generation ago). Baby boomers may have been raised in Leave It to Beaver suburbs, but as they retire, a significant contingent is favoring older cities and compact towns where they have the option of walking and riding bikes. Seniors, too, are more likely to use transit, and by 2025, there will be 64 million Americans over the age of sixty five. Already, dwellings in older neighborhoods in Washington, D.C., Atlanta, and Denver, especially those near light-rail or subway stations, are commanding enormous price premiums over suburban homes. The experience of European and Asian cities shows that if you make buses, subways, and trains convenient, comfortable, fast, and safe, a surprisingly large percentage of citizens will opt to ride rather than drive.

As used in sentence 1 of paragraph 5, “credit” most nearly means:

A. endow.

B. attribute.

C. believe.

D. honor.

ANSWER: C

Explanation:

Choice “believe” is the best answer. In the last paragraph, the author explains the trend that people who became adults around the end of the twentieth century are more willing to use public transportation than people from older generations. The author notes, “If you credit the demographers, this transit trend has legs” (sentence 1 of paragraph 5). In this context, “credit” means to believe the demographers’ claims about the trend.

Other choices are incorrect because in this context, “credit” does not mean endow, attribute, or honor.

QUESTION NO: 12

A business is owned by 9 women and 1 man, each of whom owns an equal share. If one of the women sells 1/2 of her share to the man, and another woman keeps 1/5 of her share and sells the rest to the man, what fraction of the business will the man own?

A. 1/2

B. 1/3

C. 11/32

D. 7/8

E. 23/100

ANSWER: E

Explanation:

Picking numbers makes this problem easier to work with. Rather than dealing with fractions of the business, say that there are 100 total shares. At the beginning of the problem, the 9 women each own 10 shares and the man owns 10 shares. One woman sells 1/2 of her part of the business, 5 shares, to the man, and another woman sells 1 − 1/5 = 4/5 other part of the business, 20 (4/5) = 8 shares to the man. Now the man owns 10 + 5 + 8 = 23 shares out of the total 100 shares in the business or 23/100.

QUESTION NO: 13

He was a un-common small man, he really was. Certainly not so small as he was made out to be, but where IS your Dwarf as is? He was a most uncommon small man, with a most uncommon large Ed; and what he had inside that Ed, nobody ever knowed but himself: even supposin himself to have ever took stock of it, which it would have been a stiff job for even him to do.

The kindest little man as never growed! Spirited, but not proud. When he travelled with the Spotted Baby though he knowed himself to be a nat'ral Dwarf, and knowed the Baby's spots to be put upon him artificial, he nursed that Baby like a mother. You never heerd him give a ill-name to a Giant. He DID allow himself to break out into strong language respectin the Fat Lady from Norfolk; but that was an affair of the 'art; and when a man's 'art has been trifled with by a lady, and the preference giv to a Indian, he ain't master of his actions.

He was always in love, of course; every human nat'ral phenomenon is. And he was always in love with a large woman; I never knowed the Dwarf as could be got to love a small one. Which helps to keep 'em the Curiosities they are.

One sing'ler idea he had in that Ed of his, which must have meant something, or it wouldn't have been there. It was always his opinion that he was entitled to property. He never would put his name to anything. He had been taught to write, by the young man without arms, who got his living with his toes (quite a writing master HE was, and taught scores in the line), but Chops would have starved to death, afore he'd have gained a bit of bread by putting his hand to a paper. This is the more curious to bear in mind, because HE had no property, nor hope of property, except his house and a sarser. When I say his house, I mean the box, painted and got up outside like a reg'lar six-roomer, that he used to creep into, with a diamond ring (or quite as good to look at) on his forefinger, and ring a little bell out of what the Public believed to be the Drawing-room winder. And when I say a sarser, I mean a Chaney sarser in which he made a collection for himself at the end of every Entertainment. His cue for that, he took from me: "Ladies and gentlemen, the little man will now walk three times round the Cairawan, and retire behind the curtain." When he said anything important, in private life, he mostly wound it up with this form of words, and they was generally the last thing he said to me at night afore he went to bed.

He had what I consider a fine mind – a poetic mind. His ideas respectin his property never come upon him so strong as when he sat upon a barrel-organ and had the handle turned. Arter the wibration had run through him a little time, he would screech out, "Toby, I feel my property coming – grind away! I'm counting my guineas by thousands, Toby – grind away! Toby, I shall be a man of fortun! I feel the Mint a jingling in me, Toby, and I'm swelling out into the Bank of England!" Such is the influence of music on a poetic mind. Not that he was partial to any other music but a barrel-organ; on the contrary, hated it.

He had a kind of a everlasting grudge agin the Public: which is a thing you may notice in many phenomenons that get their living out of it. What riled him most in the nater of his occupation was, that it kep him out of Society. He was continiwally saying, "Toby, my ambition is, to go into Society. The curse of my position towards the Public is, that it keeps me hout of

Society. This don't signify to a low beast of a Indian; he an't formed for Society. This don't signify to a Spotted Baby; HE an't formed for Society. I am."

Which of the selections would make the best alternative title for this work?

A. Society Bound

B. The Unworthy Society

C. The Journey into Society

D. The Preoccupation with Society

E. Property and Society

ANSWER: B

Explanation:

As the overall theme is the negative commentary on society and the virtues of the Dwarf, "The Unworthy Society" appropriately encapsulates this representation.

QUESTION NO: 14 - (HOTSPOT)

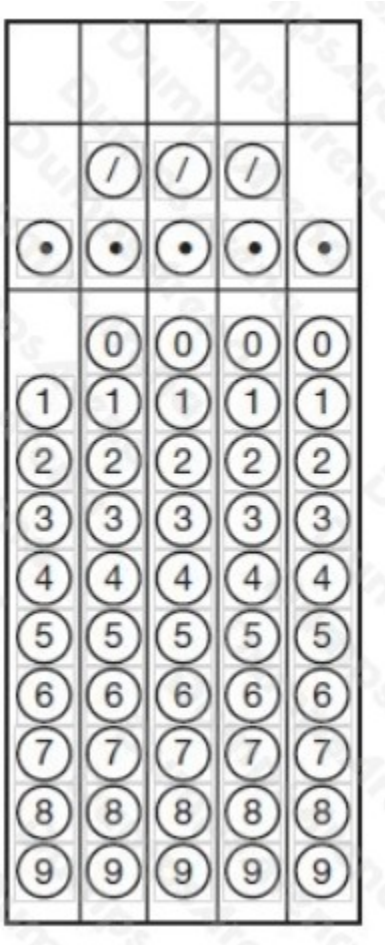
HOTSPOT

NOTE: The use of a calculator is permitted.

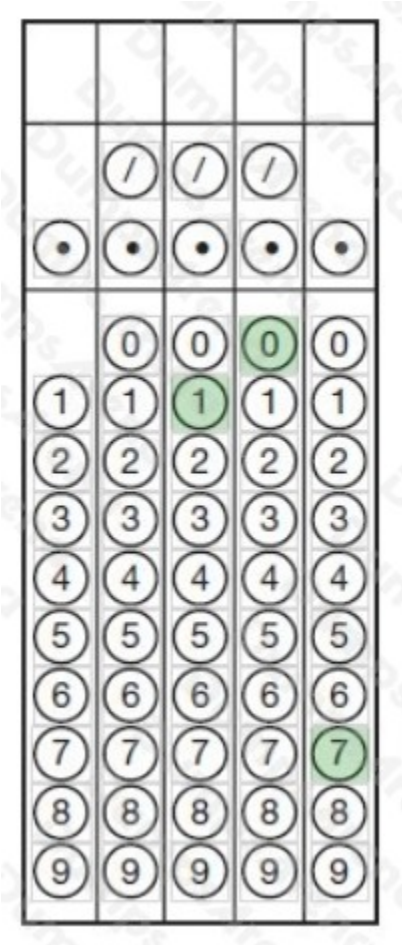
Directions: solve the problem and enter your answer in the grid.

The posted weight limit for a covered wooden bridge in Pennsylvania is 6000 pounds. A delivery truck that is carrying x identical boxes each weighing 14 pounds will pass over the bridge. If the combined weight of the empty delivery truck and its driver is 4500 pounds, what is the maximum possible value for x that will keep the combined weight of the truck, driver, and boxes below the bridge's posted weight limit?

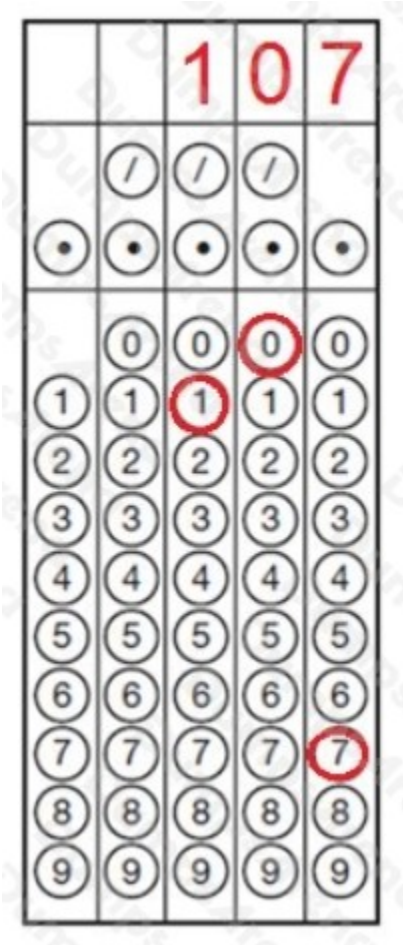
Hot Area:



ANSWER:



Explanation:



Since the weight of the empty truck and its driver is 4500 pounds and each box weighs 14 pounds, the weight, in pounds, of the delivery truck, its driver, and x boxes is 4500 + 14x. This weight is below the bridge's posted weight limit of 6000 pounds if 4500 + 14x < 6000. That inequality is equivalent to 14x ≤ 1500 or

$$x < \frac{1500}{14} = 107\frac{1}{7}.$$

Since the number of packages must be an integer, the maximum possible value for x that will keep the combined weight of the truck, its driver, and the x identical boxes below the bridge's posted weight limit is 107.

QUESTION NO: 15

NOTE: The use of a calculator is permitted.

A square field measures 10 meters by 10 meters. Ten students each mark off a randomly selected region of the field; each region is square and has side lengths of 1 meter, and no two regions overlap. The students count the earthworms contained in the soil to a depth of 5 centimeters beneath the ground's surface in each region. The results are shown in the table below.

Region	Number of earthworms	Region	Number of earthworms
A	107	F	141
B	147	G	150
C	146	H	154
D	135	I	176
E	149	J	166

Which of the following is a reasonable approximation of the number of earthworms to a depth of 5 centimeters beneath the ground's surface in the entire field?

A. 150

B. 1,500

C. 15,000

D. 150,000

ANSWER: C

Explanation:

The area of the field is 100 square meters. Each 1-meter-by-1-meter square has an area of 1 square meter. Thus, on average, the earth-worm counts to a depth of 5 centimeters for each of the regions investigated by the students should be about one hundredth of the total number of earthworms to a depth of 5 centimeters in the entire field. Since the counts for the smaller regions are from 107 to 176, the estimate for the entire field should be between 10,700 and 17,600. Therefore, of the given choices, 15,000 is a reasonable estimate for the number of earthworms to a depth of 5 centimeters in the entire field.

QUESTION NO: 16

The prime factors of 96 are:

A. 2 and 3

B. 6 and 8

C. 2, 3 and 4

D. 8 and 12

E. 3 and 9

ANSWER: A

QUESTION NO: 17

DIRECTIONS: Each passage below is accompanied by a number of questions. For some questions, you will consider how the passage might be revised to improve the expression of ideas. For other questions, you will consider how the passage might be edited to correct errors in sentence structure, usage, or punctuation. A passage or a question may be accompanied by one or more graphics (such as a table or graph) that you will consider as you make revising and editing decisions.

Some questions will direct you to an underlined portion of a passage. Other questions will direct you to a location in a passage or ask you to think about the passage as a whole.

After reading each passage, choose the answer to each question that most effectively improves the quality of writing in the passage or that makes the passage conform to the conventions of standard written English. Many questions include a “NO CHANGE” option. Choose that option if you think the best choice is to leave the relevant portion of the passage as it is.

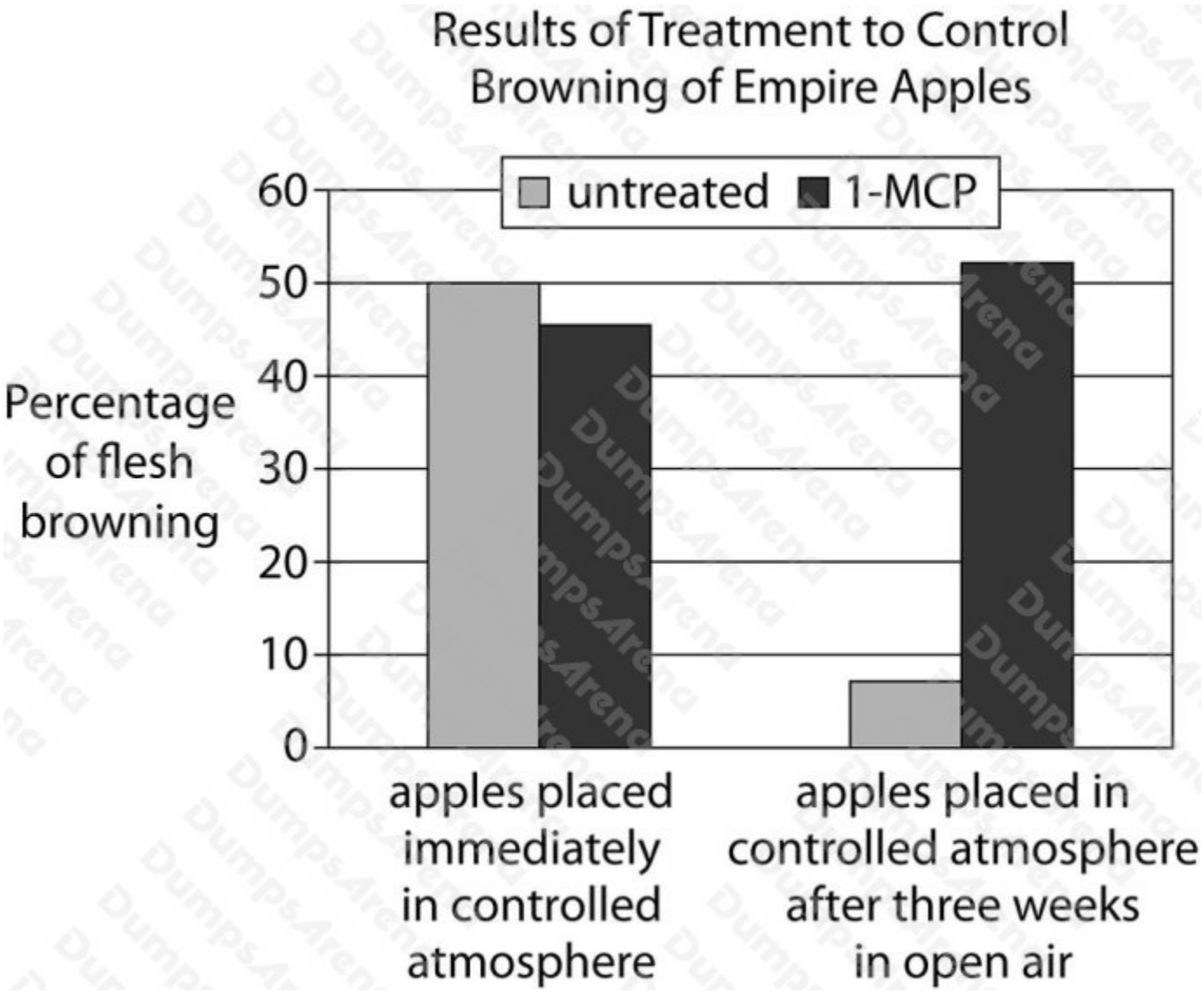
Read the passage and answer question (11).

How Do You Like Those Apples?

Marketed as SmartFresh, the chemical 1-MCP (1 methylcyclopropene) has been used by fruit growers since 2002 in the United States and elsewhere to preserve the crispness and lengthen the storage life of apples and other fruit, which often must travel long distances before being eaten by consumers. (1) 1-MCP lengthens storage life by three to four times when applied to apples. This extended life allows producers to sell their apples in the off season, months after the apples have been harvested. And at a cost of about one cent per pound of apples, 1-MCP is a highly cost effective treatment. However, 1-MCP is not a panacea for fruit producers or sellers: there are problems and limitations associated with its use.

[1] 1-MCP works by limiting a fruit’s production of ethylene, (2) it is a chemical that causes fruit to ripen and eventually rot. [2] While 1-MCP keeps apples (3) tight and crisp for months, it also limits (4) their scent production. [3] This may not be much of a problem with certain kinds of apples that are not naturally very fragrant, such as Granny Smith, but for apples that are prized for their fruity fragrance, such as McIntosh, this can be a problem with consumers, (5) that will reject apples lacking the expected aroma. [4] But some fruits do not respond as well to 1-MCP as others (6) did, and some even respond adversely. [5] Furthermore, some fruits, particularly those that naturally produce a large amount of ethylene, do not respond as well to 1-MCP treatment. [6] Take Bartlett (7) pears, for instance, unless they are treated with exactly the right amount of 1-MCP at exactly the right time, they will remain hard and green until they rot, and consumers who experience this will be unlikely to purchase them again. (8)

Finally, researchers have found that 1-MCP actually increases susceptibility to some pathologies in certain apple varieties. For example, Empire apples are prone to a condition that causes the flesh of the apple to turn brown. Traditionally, apple producers have dealt with this problem by leaving the apples in the open air for three weeks before storing them in a controlled atmosphere with tightly regulated temperature, humidity, and carbon dioxide levels. As the graph shows, the flesh of untreated Empire apples that are first stored in the open air undergoes (9) roughly five percent less browning than the flesh of untreated Empire apples that are immediately put into storage in a controlled environment. However, when Empire apples are treated with 1-MCP, (10) their flesh turns brown when the apples are first stored in the open air, though not under other conditions. Although researchers continue to search for the right combination of factors that will keep fruits fresh and attractive, (11) the problem may be that consumers are overly concerned with superficial qualities rather than the actual freshness of the fruit.



Adapted from Hannah J. James, Jacqueline

F. Nock, and Chris

B. Watkins, “The Failure of Postharvest Treatments to Control Firm Flesh Browning in Empire Apples.” Copyright 2010 by The New York State Horticultural Society.

The writer wants a conclusion that conveys how the shortcomings of 1-MCP presented in the passage affect the actions of people in the fruit industry. Which choice best accomplishes this goal?

A. NO CHANGE (the problem may be that consumers are overly concerned with superficial qualities rather than the actual freshness of the fruit.)

B. Watkins, “The Failure of Postharvest Treatments to Control Firm Flesh Browning in Empire Apples.” Copyright 2010 by The New York State Horticultural Society.
The writer wants a conclusion that conveys how the shortcomings of 1-MCP presented in the passage affect the actions of people in the fruit industry. Which choice best accomplishes this goal?
many of the improvements to fruit quality they have discovered so far have required trade offs in other properties of the fruit.

C. for now many fruit sellers must weigh the relative values of aroma, color, and freshness when deciding whether to use 1-MCP.

D. it must be acknowledged that 1-MCP, despite some inadequacies, has enabled the fruit industry to ship and store fruit in ways that were impossible before.

E. Nock, and Chris

ANSWER: C

Explanation:

Choice [for now many fruit sellers must...] is the best answer because it describes an action, weighing the relative values, that fruit sellers must take as a result of 1-MCP's limitations.

Other choices are incorrect because none specifically connects the shortcomings of 1-MCP with any action on the part of fruit sellers.

QUESTION NO: 18

This passage is adapted from Bryan Walsh, "Whole Food Blues: Why Organic Agriculture May Not Be So Sustainable." ©2012 by Time Incorporated.

When it comes to energy, everyone loves efficiency. Cutting energy waste is one of those goals that both sides of the political divide can agree on, even if they sometimes diverge on how best to get there. Energy efficiency allows us to get more out of our given resources, which is good for the economy and (mostly) good for the environment as well. In an increasingly hot and crowded world, the only sustainable way to live is to get more out of less. Every environmentalist would agree.

But change the conversation to food, and suddenly efficiency doesn't look so good. Conventional industrial agriculture has become incredibly efficient on a simple land to food basis. Thanks to fertilizers, mechanization and irrigation, each American farmer feeds over 155 people worldwide. Conventional farming gets more and more crop per square foot of cultivated land – over 170 bushels of corn per acre in Iowa, for example – which can mean less territory needs to be converted from wilderness to farmland. And since a third of the planet is already used for agriculture – destroying forests and other wild habitats along the way – anything that could help us produce more food on less land would seem to be good for the environment.

Of course, that's not how most environmentalists regard their arugula [a leafy green]. They have embraced organic food as better for the planet – and healthier and tastier, too – than the stuff produced by agricultural corporations. Environmentalists disdain the enormous amounts of energy needed and waste created by conventional farming, while organic practices – forgoing artificial fertilizers and chemical pesticides – are considered far more sustainable. Sales of organic food rose 7.7% in 2010, up to $26.7 billion – and people are making those purchases for their consciences as much as their taste buds.

Yet a new meta-analysis in Nature does the math and comes to a hard conclusion: organic farming yields 25% fewer crops on average than conventional agriculture. More land is therefore needed to produce fewer crops – and that means organic farming may not be as good for the planet as we think.

In the Nature analysis, scientists from McGill University in Montreal and the University of Minnesota performed an analysis of 66 studies comparing conventional and organic methods across 34 different crop species, from fruits to grains to legumes. They found that organic farming delivered a lower yield for every crop type, though the disparity varied widely. For rain watered legume crops like beans or perennial crops like fruit trees, organic trailed conventional agriculture by just 5%. Yet for major cereal crops like corn or wheat, as well as most vegetables – all of which provide the bulk of the world's calories – conventional agriculture outperformed organics by more than 25%.

The main difference is nitrogen, the chemical key to plant growth. Conventional agriculture makes use of 171 million metric tons of synthetic fertilizer each year, and all that nitrogen enables much faster plant growth than the slower release of nitrogen from the compost or cover crops used in organic farming. When we talk about a Green Revolution, we really mean a nitrogen revolution – along with a lot of water.

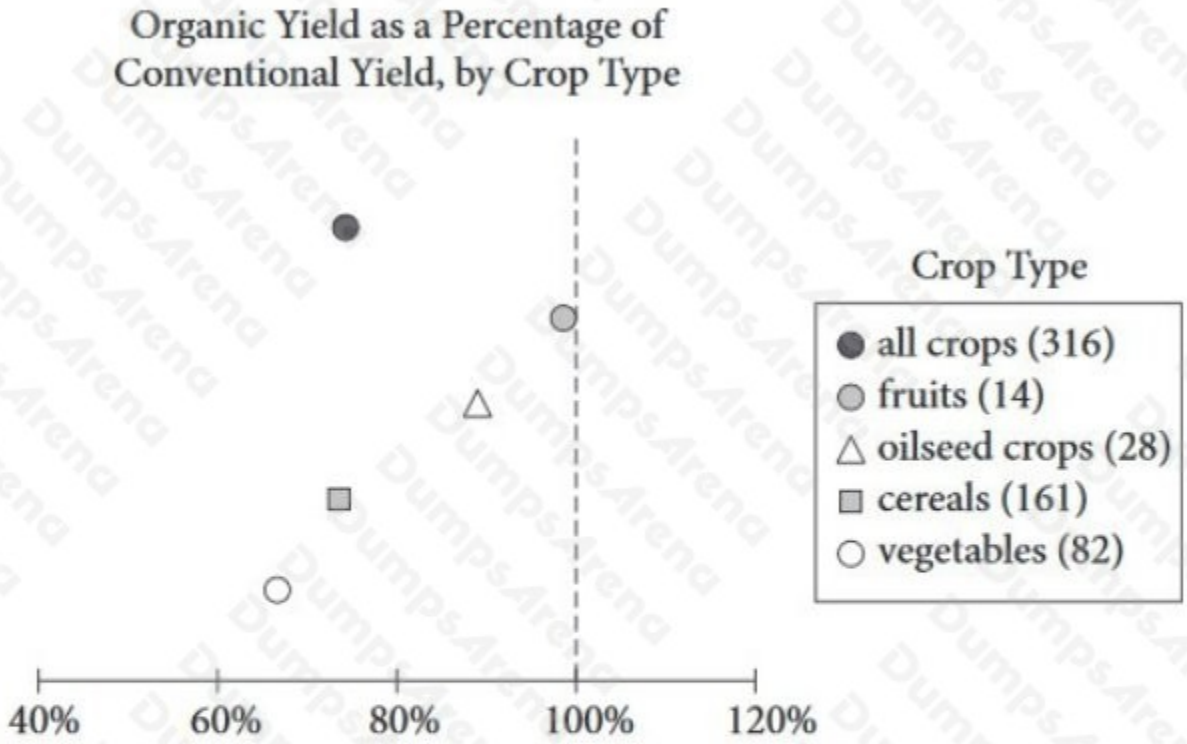
But not all the nitrogen used in conventional fertilizer ends up in crops – much of it ends up running off the soil and into the oceans, creating vast polluted dead zones. We're already putting more nitrogen into the soil than the planet can stand over the long term. And conventional agriculture also depends heavily on chemical pesticides, which can have unintended side effects.

What that means is that while conventional agriculture is more efficient – sometimes much more efficient – than organic farming, there are trade-offs with each. So an ideal global agriculture system, in the views of the study's authors, may borrow the best from both systems, as Jonathan Foley of the University of Minnesota explained:

"The bottom line? Today's organic farming practices are probably best deployed in fruit and vegetable farms, where growing nutrition (not just bulk calories) is the primary goal. But for delivering sheer calories, especially in our staple crops of wheat, rice, maize, soybeans and so on, conventional farms have the advantage right now.

Looking forward, I think we will need to deploy different kinds of practices (especially new, mixed approaches that take the best of organic and conventional farming systems) where they are best suited – geographically, economically, socially, etc."

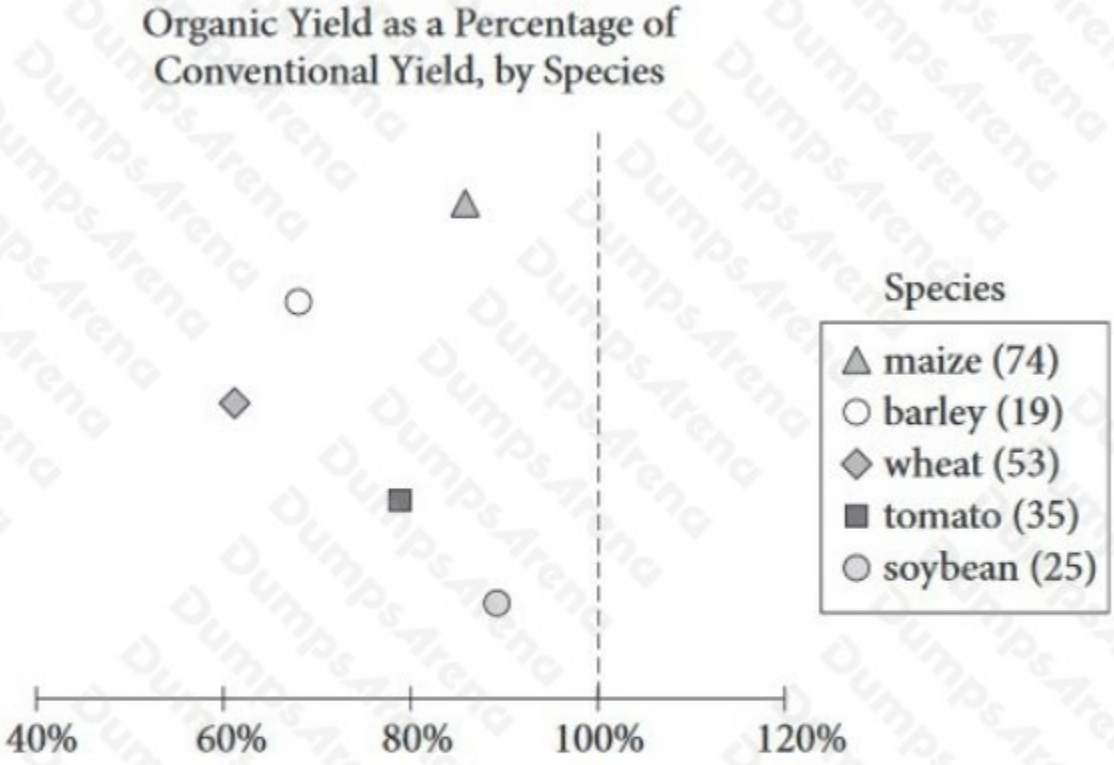
Figure 1



At 100%, the organic yield is the same as the conventional yield. The number of observations for each crop type is shown in parentheses.

Figure adapted from Verena Seufert, Navin Ramankutty, and Jonathan A. Foley, "Comparing the Yields of Organic and Conventional Agriculture." ©2012 by Nature Publishing Group.

Figure 2



At 100%, the organic yield is the same as the conventional yield. The number of observations for each species is shown in parentheses.

Figure adapted from Verena Seufert, Navin Ramankutty, and Jonathan A. Foley, "Comparing the Yields of Organic and Conventional Agriculture." ©2012 by Nature Publishing Group.

According to Foley, an "ideal global agriculture system" (sentence 2 of paragraph 8):

A. focuses primarily on yield percentages and global markets.

B. considers multiple factors in the selection of farming techniques.

C. weighs the economic interests of farmers against the needs of consumers.

D. puts the nutritional value of produce first and foremost.

ANSWER: B

Explanation:

Choice [considers multiple factors in the selection of farming techniques.] is the best answer. The passage states that the authors of the study comparing conventional and organic farming have come to the conclusion that an “ideal global agriculture system” would “borrow the best from both systems” (sentence 2 of paragraph 8). The quote from Jonathan Foley in paragraphs 9 and 10 indicates that this ideal system would take into consideration many different factors, including the nutrition and calories offered by specific types of foods as well as different geographic, economic, and social needs.

Choices [focuses primarily on yield percentages and global markets.] and [puts the nutritional value of produce first and foremost.] are incorrect because the passage makes it clear that the “ideal global agriculture system” would give consideration to multiple factors, not that it would focus mainly on productivity or nutritional value. Choice [weighs the economic interests of farmers against the needs of consumers.] is incorrect because Foley states that the ideal system would take economics into consideration but does not indicate that farmers’ economic interests would be weighed against consumers’ needs.

QUESTION NO: 19

The _____ behavior of the demonstrators became even more apparent when they all chained themselves together when the authorities came on scene.

A. indolent

B. spurious

C. individual

D. recalcitrant

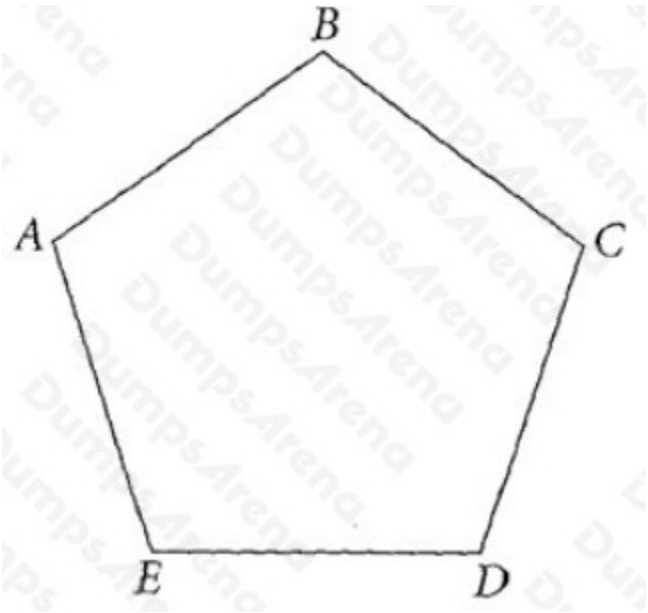
E. cohesive

ANSWER: D

Explanation:

Choices “indolent” and “spurious” indicate lazy or not genuine, respectively, which is not the case, or they wouldn’t be there demonstrating. Choice “individual” grammatically fits, but the individuality of the act becomes lost when chaining them together. Choice “cohesive,” or sticking together certainly fits and is correct; however, this is not the best choice. Choice “recalcitrant,” is the best choice as it includes “stubbornly resisting authority,” which further matches the action following the arrival of the authorities.

QUESTION NO: 20



In pentagon ABCDE shown above, each side is 1 centimeter. If a particle starts at point A and travels clockwise 183 centimeters along ABCDE, the particle will stop on which point?

A. A
The number 183 is 3 more than a multiple of 5. If the particle had gone 180 centimeters it would be at point A; since it has gone 3 more centimeters it must be at point D.

B. B

C. C

D. D

E. E

ANSWER: D

Explanation:

If the particle travels from A to B to C to D to E and then back to A it has traveled 5 centimeters, since each side of the pentagon measures centimeter. If it goes all the way around the pentagon again it's traveled another 5 centimeters, for a total of 10 centimeters. In fact, every time the particle makes a complete revolution around the pentagon (from point A back to point A again) it travels an additional 5 centimeters. So if the number of centimeters the particle has traveled is a multiple of 5, the particle must be at point

A. The number 183 is 3 more than a multiple of 5. If the particle had gone 180 centimeters it would be at point A; since it has gone 3 more centimeters it must be at point D.