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QUESTION 1

Paul\\'s average bowling score for a series was 164 and Dave\\'s was 158. If each of them bowled 4 games, how much greater was Paul\\'s total score for the series than Dave\\'s?

A. 24

B. 6

C. 18

D. 12

Correct Answer: A

In this question, we are told that Paul\\'s average bowling score for a series of 4 games was 164 and Dave\\'s was 158. We are asked to determine the total amount that Paul\\'s score was greater than Dave\\'s. Therefore, Paul\\'s score on average exceeded Dave\\'s score by 6 points per game, which means that for all 4 games Paul\\'s total score exceeded Dave\\'s total score by 4 ?6 points or 24 points.

QUESTION 2

The hybridization of the oxygen in CO2 is:

A. s

B. sp

C. sp2

D. sp3

Correct Answer: C

QUESTION 3

Lead ?non-biodegradable, soft, malleable, as well as heat and corrosion resistant ?is environmentally omnipresent. Its known properties make it an ideal metal for automobiles, paint, smelting, ceramics, and plastics. Not many years ago, it was also utilized in the toy industry. Unfortunately, lead is toxic to humans. Humans neither need lead nor derive benefits from it. Although lead toxicity has been a global concern since the industrial revolution in the late 1800s, civilization has been unable to prevent or control it satisfactorily. Overall incidence of lead poisoning among American children has fallen from 4.4% in the early 1990s to 1.4% in 2004. In 2002, around 10 out of every 100,000 of adults had lead toxicity. Venous blood lead levels (BLLs) of 10 mcg/dL and 25 mcg/dL were considered toxic in children and adults, respectively. But, since any level of lead can cause toxicity, the CDC announced a new, lower reference value for children in June 2012: 5 mcg/dL. Infants and children absorb a higher fraction of lead than adults do when exposed, increasing their vulnerability. Approximately 450,000 American children have BLLs >5 mcg/dL. Consequently, lead poisoning is still a problem. Lead exposure can start with prenatal maternal-fetal transmission. Outside the womb, children may inhale (or eat) lead dust, often present in street debris, soil, and most frequently, aged house paint. Lead-based paint was phased out in the 1970s, lowering, but not eliminating, risk of exposure. Old pipes sometimes leach

lead into drinking water. Lead hazards are disproportionately found in low-income housing. Adults rarely develop lead poisoning, but risk is increased for industrial workers who use or manufacture lead-based products. Health care providers use many tests to identify lead poisoning. In addition to the BLL, a blood smear may show basophilic stippling ribosomal clusters. Increased urinary aminolaevulinic acid concentrations are also reliable indicators. Plain film radiographs can reveal visible lead lines in patients\\' long bones. Astute clinicians sometimes diagnose lead poisoning after seeing a blue line along patients\\' gums (Burton\\'s line) that forms when lead reacts with sulfur ions released by oral bacteria. Lead affects every organ system and causes an unpredictable variety of symptoms. The nervous system is most sensitive (centrally in children, peripherally in adults), but lead affects hematopoietic, hepatic, and renal systems, producing serious disorders. Acute lead poisoning\\'s classic symptoms include colic, encephalopathy, anemia, neuropathy, and Fanconi syndrome (abnormal glucose, phosphates, and amino acid excretion). Sometimes, classic signs and symptoms are absent, confusing the clinical picture. The inclusion of what evidence would best support the author\\'s claim in the first paragraph that "civilization has been unable to prevent or control it satisfactorily."

A. A quote from a well-respected doctor.

B. A survey of 10,000 randomly selected people.

C. A collection of statistics stating the number of deaths from lead poisoning.

D. A series of anecdotes describing lead poisoning.

Correct Answer: C

In the absence of any factual evidence, the author\\'s claim stands out; however, if there were concrete details supporting this claim, the author\\'s argument would be stronger. Of the possible choices, a collection of statistics would best support the idea that civilization has been unable to control lead poisoning satisfactorily. While the other answer choices may prove effective in supporting the author\\'s claim, they would not be as effective as inarguable numbers.

QUESTION 4

Which of the following lists the correct taxonomic order from most inclusive to least inclusive?

A. Kingdom, Order, Class, Species

B. Order, Family, Genus, Phylum

C. Order, Family, Genus, Species

D. Phylum, Order, Species, Genus

Correct Answer: C

Kingdom, Phylum, Class, Order, Family, Genus, Species. The mnemonic, "King Philip Came Over For Great Spaghetti," is very useful for remembering the taxonomic order from most inclusive to least inclusive.

QUESTION 5

Which of the following species cannot hydrogen bond with itself?

A. ethanol

B. acetic acid

C. ammonia

D. acetone

Correct Answer: D

Hydrogen bonds occur between hydrogen of one molecule with an electronegative atom (oxygen, nitrogen, or fluorine) of another atom. Consequently, acetone is unable to hydrogen bond with itself. The hydrogen atoms in acetone are covalently bonded to carbon atoms and not a strong electronegative atom like nitrogen, oxygen, of fluorine.

QUESTION 6

Since 1997, the American Heart Association (AHA) has attempted to increase awareness about cardiovascular disease (CVD) among women. Fortunately, great progress has been made to educate individuals about CVD and its consequences. According to the AHA\\'s 2011 Guidelines for Prevention of Cardiovascular Disease in Women, the misconception that CVD is a "man\\'s disease" has been somewhat disproved, as awareness among the general public increased from 30% in 1997 to 54% in 2009. Unfortunately, CVD continues to be the leading cause of death in the United States for both men and women. Since 1984, the number of deaths related to CVD in women exceeded those in men. In the United States, CVD death rates among women aged 35 to 54 years appear to be increasing by 1% annually, which is most likely attributable to the escalating obesity epidemic. According to the AHA, even though CVD is the number 1 cause of death among women, only 13% of women perceive CVD as a health threat. CVD is responsible for more deaths among women than the next 3 leading causes of death combined, including all forms of cancer. Due to the ongoing prevalence of CVD, increasing awareness and understanding of CVD, especially among the female population, is still a top priority for many health care professionals. As one of the most accessible health care professionals, pharmacists are in a pivotal position to educate and inform their patients of the risks associated with CVD, possible drug therapies, and preventive measures. The AHA has set a goal for 2020 to improve cardiovascular health in all Americans by 20%, while reducing deaths from CVD and stroke by 20%. According to the American Heart Association, in the United States a woman dies of some form of CVD every minute and more than 1 in 3 females have some form of CVD. Studies have demonstrated that gender differences may play an important role in the diagnosis, treatment, and prevention of CVD. Unfortunately, many women may not always recognize the warning signs and symptoms of a heart attack because they sometimes appear more subtle when compared with those typically experienced by men. Results from a study of 515 women who had heart attacks report that 43% did not experience any type of chest pain or pressure during the heart attack. Although the classic symptoms include chest pain, tingling in the left arm, sweating, and shortness of breath, women may also experience some "atypical" symptoms, such as extreme fatigue, nausea, dizziness, indigestion, vomiting, and pain in the neck or back. By learning and recognizing the warning signs, women can take a proactive approach to their cardiovascular health and get treatment earlier to prevent further complications.

Which of the following is NOT a symptom most men experience during a heart attack?

A. perspiration

B. chest pain

C. left arm tingling

D. nausea

Correct Answer: D

The final paragraph of the passage described the "classic symptoms" including "chest pain, tingling in the left arm, sweating, and shortness of breath," and then goes on to describe "some `atypical\\' symptoms, such as extreme fatigue, nausea, dizziness, indigestion, vomiting, and pain in the neck or back," which usually occur only in women.

QUESTION 7

In a certain genetically stable population, the frequency of a recessive allele (for a trait with two alleles) is

0.6. What is the frequency of individuals expressing the dominant trait?

A. 0.64

B. 0.36

C. 0.24

D. 0.16

Correct Answer: A

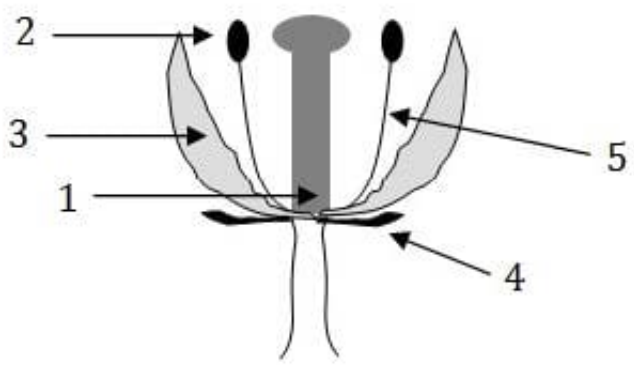
The question stem asks you to determine the frequency of individuals expressing the dominant trait in a genetically stable population. However, before you do that, you need to determine the allelic frequencies in the population. This question involves a practical application of the Hardy-Weinberg equation. The Hardy-Weinberg equilibrium states that within a genetically stable population, the gene frequencies of dominant and recessive alleles will not change over time. Two mathematical expressions are associated with the Hardy-Weinberg equilibrium. The first relationship, p + q = 1, describes the relative allelic frequencies in a population. p is defined as the frequency of the dominant allele and q is defined as the frequency of the recessive allele, and the sum of both those frequencies adds up to 1, or 100%. The second relationship, p2

+ 2pq+ q2 = 1, describes the relative genotypic frequencies in the population. p2 represents homozygous, or dominant pp genotypes; q2 represents homozygous, or frequency of the dominant allele, p, by the mathematical relationship p + q = 1. Therefore, the frequency of p is 0.4 because 0.6 + 0.4 = 1. Next, you need to determine the frequency of individuals expressing the dominant trait by recessive qq genotypes; and 2pq represents the frequency of heterozygotes, or hybrids.applying the second relationship, p2 + 2pq+ q2 = 1. The individuals expressing the dominant trait are those that have the pp and pq genotypes, so to find the total frequency of individuals expressing the dominant trait, you add p2 and 2pq. Thus, p2 = 0.4 ? 0.4, or 0.16 and 2pq = 2 ?0.6 ?0.4, or 0.48. If you add the two together, you get 0.16 + 0.48, or 0.64. Thus,

0.64 is the correct frequency of individuals expressing the dominant trait.

QUESTION 8

The structure in which microspores are produced: A. 3



B. 1

C. 5

D. 4

E. 2

Correct Answer: E

Anthers produce microspores (the male gametophytes of flowering plants), which undergo meiosis to produce pollen grains.

QUESTION 9

Which of the following is NOT made by the pituitary gland?

A. ACTH

B. ADH

C. FSH

D. LH

Correct Answer: B

The list of hormones made by the pituitary gland can be recalled with the mnemonic FLATPOG, signifying: FSH, LH, ACTH, TSH, GH, MSH (melanocyte stimulating hormone), and prolactin. ADH is made by the hypothalamus and is only secreted by the posterior pituitary.

QUESTION 10

Which set contains the solutions for 6x2 = -5x - 1?

A. $\{\frac{1}{2}, 1, 3\}$

B. $\{-\frac{1}{2}, -\frac{1}{3}\}$

C. $\{\frac{1}{2}, 0\}$

D. $\{-\frac{1}{3}, 0\}$

A. Option A

B. Option B

C. Option C

D. Option D

Correct Answer: B

QUESTION 11

In photosynthesis, high-energy electrons move through electron transport chains to produce ATP and NADPH. Which of the following provides the energy to create high energy electrons?

A. O2

B. Light

C. Water

D. NADP+

E. NADH

Correct Answer: B

Electrons trapped by the chlorophyll P680 molecule in photosystem II are energized by light. They are then transferred to electron acceptors in an electron transport chain.

QUESTION 12

If a population\\'s growth rate is zero, it has likely reached its

A. Carrying capacity

B. Full range

C. Mature age structure

D. Minimal viable population size E. Intrinsic growth rate

Correct Answer: A

The carrying capacity is the maximum number of individuals a habitat can sustain, so when the population size reaches this number, growth will stop.

QUESTION 13

$\int_{\pi}^{2\pi} \sin x \, dx =$

A. $2\int_{0}^{\pi/2} \cos x \, dx$

B. $\int_{\pi}^{2\pi} \cos x \, dx$

C. $-2\int_{0}^{\pi/2} \cos x \, dx$

D. $\int_{0}^{\pi} \cos x \, dx$

=

A. Option A

B. Option B

C. Option C

D. Option D

Correct Answer: C

QUESTION 14

255 feet of fencing is needed to enclose a rectangular-shaped back yard. If the yard is 32 feet wide, what is the length?

A. 121 ft

B. 36.56 ft

C. 95.5 ft

D. 0.521 ft

Correct Answer: C

The perimeter of a rectangle can be calculated by using the following equation:

P = 2L + 2W, where P = perimeter, L = length, W = width

P = 2L + 2W 255 = 2L + 2 ?32 255 - 64 = 2L 191 = 2L L = 95.5 ft

QUESTION 15

On a bad day, have you ever been irritable? Have you ever used a harsh tone or even been verbally disrespectful to your parents or teachers? Everyone has a short temper from time to time, but current statistics indicate that between 16% and 20% of a school population suffer from a psychological condition known as Oppositional Defiance Disorder, or

ODD.

ODD symptoms include difficulty complying with adult requests, excessive arguments with adults, temper tantrums, difficulty accepting responsibility for actions, low frustration tolerance, and behaviors intended to annoy or upset adults. Parents of children with ODD can often feel as though their whole relationship is based on conflict after conflict.

Unfortunately, ODD can be caused by a number of factors. Some students affected by ODD suffer abuse, neglect, and severe or unpredictable discipline at home. Others have parents with mood disorders or have experienced family violence. Various types of therapy are helpful in treating ODD, and some drugs can treat particular symptoms. However, no single cure exists.

The best advice from professionals is directed toward parents. Therapists encourage parents to avoid situations that usually end in power struggles, to try not to feed into oppositional behavior by reacting emotionally, to praise positive behaviors, and to discourage negative behaviors with timeouts instead of harsh discipline.

Which of the following best describes the main idea of this passage?

A. Parents with ODD should seek support.

B. ODD is a complex condition.

C. ODD has no cause.

D. Parents are the cause of ODD.

Correct Answer: B