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Nursing Entrance Exam (Math, Science and Verbal)

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Topic Break Down

Topic	No. of Questions
Topic 1, Verbal	69
Topic 2, Math	55
Topic 3, Science	59
Total	183

QUESTION NO: 1

Which of the following describes hyperextension of a body part at a joint?

- A. The lateral movement away from the middle of the body (midline) in the frontal plane.
- B. The posterior movement away from the anatomical position in the sagittal plane.
- C. The anterior movement away from the anatomical position in the sagittal plane.
- D. The posterior movement back to the anatomical position in the sagittal plane.

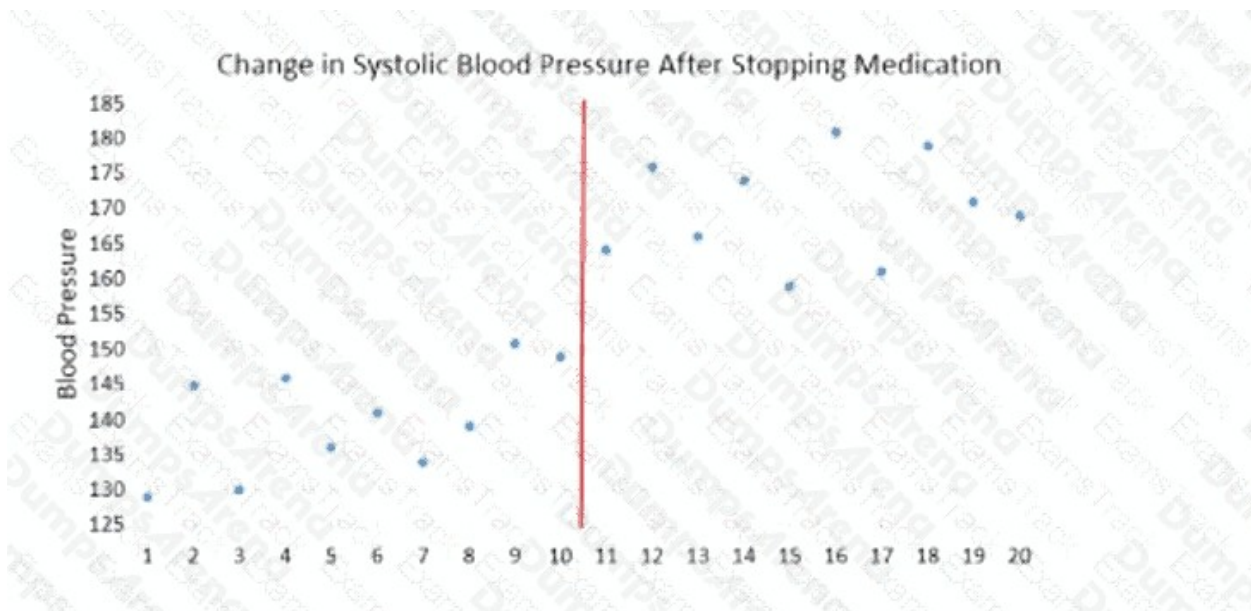
ANSWER: B

Explanation:

“The posterior movement away from the anatomical position in the sagittal plane.” correctly describes hyperextension. In standard anatomical terminology, extension is a movement in the sagittal plane that increases the angle between articulating body parts. Hyperextension occurs when that extension continues beyond the usual anatomical position or normal resting alignment. Thus, when a body part moves posteriorly past anatomical position—such as tipping the head backward beyond upright alignment—the movement is hyperextension. This wording appropriately identifies both the relevant plane and the defining relationship to anatomical position. The sagittal plane divides the body into right and left portions and is the plane in which flexion and extension movements are conventionally described. Because normal ranges of motion differ among joints, whether a movement is considered hyperextension depends on the joint and the extent to which it moves beyond its standard anatomical position. Understanding this distinction is important in nursing science because hyperextension can occur during patient positioning, injury assessment, and evaluation of joint movement. OpenStax describes hyperextension as extension of a joint beyond its anatomical position and identifies flexion and extension as sagittal-plane movements: [OpenStax Anatomy and Physiology](#). A clinical anatomy overview is also available from [NCBI Bookshelf](#).

QUESTION NO: 2

Twenty daily systolic blood pressure measurements are shown in the graph. The red line indicates when a patient stopped taking their blood pressure medication.



Estimate the patient's average increase in blood pressure from the first set of 10 measurements to the second set of 10 measurements.

- A. 155 points
- B. 50 points
- C. 30 points

ANSWER: C**Explanation:**

30 points is correct because the task asks for the change in the average systolic measurement between the two groups of ten readings, rather than for either group's average by itself. From the graph, the readings before the red line are centered at roughly 140 mmHg. The readings after the red line are centered at roughly 170 mmHg. Estimating the average change therefore requires subtracting the earlier center from the later center: approximately 170 mmHg minus approximately 140 mmHg, which equals approximately 30 mmHg (described in the answer choices as points). This is an estimate based on the visual clustering of the plotted measurements; an exact calculation of all twenty values is not necessary. Using the center of each collection of observations is the appropriate graphical approach for comparing average levels across two time periods. Systolic blood pressure is the pressure measured when the heart contracts, and it is conventionally reported in millimeters of mercury. For background on interpreting blood-pressure measurements, see the [American Heart Association's blood-pressure guide](#). For the statistical basis of calculating and interpreting a mean, see the [NIST Engineering Statistics Handbook](#).

QUESTION NO: 3

Five samples were taken of a population of four-year-old children.

The table shows the sample sizes and mean heights (cm):

Sample #	Sample Size	Mean Height (cm)
1	20	95
2	20	100
3	25	100
4	70	110
5	20	105

Based on these samples, what is the mean height of the population of four-year-old children?

- A. 104.5
- B. 20
- C. 102
- D. 31

ANSWER: A**Explanation:**

104.5 cm is the appropriate estimate of the population mean because the five samples must be combined using their sample sizes. A sample mean represents every child within that particular sample, so a sample containing more children must contribute proportionally more to the overall result than a smaller sample. Multiply each sample's mean height by its sample size to obtain that sample's total represented height, add the five totals, and then divide by the total number of children across all five samples. This weighted-mean calculation gives 104.5 cm. The resulting value is an estimate of the population mean, since the heights of every four-year-old child in the full population were not measured. Using a weighted mean is especially important when group sizes differ; it combines group averages while preserving each group's proper influence on the total. This is the same principle used to calculate a mean from grouped data or to combine several subgroup means. For background on weighted means, see [NIST's weighted mean reference](#) and [OpenStax's discussion of sample means](#).

QUESTION NO: 4

Word Knowledge

In the sentence below, the word “**mitigate**” most nearly means:

Wearing protective equipment can mitigate the risk of injury during some activities.

- A. Increase
- B. Predict
- C. Reduce
- D. Measure

ANSWER: C

Explanation:

Reduce is correct because mitigate means to make something less severe, harmful, or serious. In the sentence, protective equipment lowers the risk of injury but does not necessarily eliminate it entirely. “Increase” is the opposite meaning, while “predict” and “measure” do not describe reducing risk.

QUESTION NO: 5

Word Knowledge

The word “**monitor**” most nearly means:

- A. Supervise or observe
- B. Repair
- C. Replace
- D. Ignore

ANSWER: A

Explanation:

Supervise or observe is correct because to monitor means to watch, check, or observe something over time, especially in order to detect changes, assess progress, or ensure that a condition remains safe or satisfactory. In health care, for example, a nurse may monitor a patient's blood pressure, breathing, pain level, or response to treatment. This involves regular observation and attention to relevant information, not a one-time glance. The same meaning applies outside health care: a person might monitor weather conditions, a budget, an infant, or the status of a computer system. Merriam-Webster defines *monitor* as watching, observing, or checking something, particularly for a special purpose, while Cambridge Dictionary similarly describes monitoring as watching and checking a situation carefully over a period of time. Therefore, “Supervise or observe” most directly captures the intended meaning of “monitor” in this word-knowledge question. See the definitions from [Merriam-Webster](#) and [Cambridge Dictionary](#).

QUESTION NO: 6

Reading Comprehension

Passage:

Healthcare professionals must communicate clearly with patients to ensure understanding of diagnoses and treatment plans. Miscommunication can lead to medication errors, missed appointments, and poor health outcomes.

Which statement best expresses the main idea of the passage?

- A. Patients are responsible for understanding medical information
- B. Communication in healthcare affects patient outcomes
- C. Appointments are often missed due to poor planning
- D. Medication errors are unavoidable

ANSWER: B

Explanation:

“Communication in healthcare affects patient outcomes” is the best statement of the passage’s main idea because it captures both the passage’s central subject—clear communication between healthcare professionals and patients—and its overall consequence for care. The passage explains that clinicians need to communicate diagnoses and treatment plans clearly so patients can understand them. It then connects failed communication to several important outcomes, including medication errors, missed appointments, and poorer health. Those examples support the broader point that communication is not merely an administrative task; it is a key factor influencing whether patients can follow care plans safely and effectively.

This interpretation also reflects widely accepted health-literacy and patient-safety guidance. The U.S. Agency for Healthcare Research and Quality identifies clear communication as essential to improving patient understanding and helping patients participate in their care. The Centers for Disease Control and Prevention similarly notes that clear health communication supports informed decisions and appropriate health actions. Because the statement summarizes the shared relationship among understanding, communication, and health consequences rather than focusing on only one detail, it accurately expresses the passage’s main idea. See [AHRQ’s Health Literacy Universal Precautions Toolkit](#) and [CDC Health Literacy](#).

QUESTION NO: 7

An employee receives notification that their job is being eliminated. Upon hearing the news, the employee bangs a fist on the worktable and shouts loud curses and insults about management.

This reaction corresponds to which stage of the stress response pathway?

- A. Exhaustion
- B. Alarm
- C. Failure
- D. Resistance

ANSWER: B

Explanation:

Alarm is correct because it is the immediate, acute phase of the body’s general adaptation response to a perceived threat or major stressor. Learning that one’s job is being eliminated is an abrupt threat to financial security, identity, and stability. The employee’s fist-banging, shouting, and hostile outburst reflect an activated fight-or-flight response—specifically, the “fight” expression of acute arousal. During the alarm stage, the sympathetic nervous system rapidly prepares a person to respond to danger, often producing heightened emotional intensity, increased muscle tension, and impulsive protective or confrontational behavior. This response occurs at the moment the stressor is recognized, before the person has moved into

longer-term adaptation or depletion. The general adaptation syndrome describes alarm as the initial mobilization of physiological and psychological resources in response to stress. See the discussion of the general adaptation syndrome in [OpenStax Psychology 2e](#) and the overview of the body's stress response from the [National Institute of Child Health and Human Development](#).

QUESTION NO: 8

Where does saltatory conduction occur?

- A. Unmyelinated axons
- B. Dendrites
- C. Myelinated axons
- D. Muscle cells

ANSWER: C

Explanation:

Saltatory conduction occurs in **myelinated axons**. Myelin is a lipid-rich insulating sheath wrapped around portions of an axon by glial cells. Rather than allowing the action potential to be regenerated continuously across every part of the axonal membrane, myelin concentrates ion channels at the exposed gaps between myelin segments, called nodes of Ranvier. The action potential is regenerated at each node, so the signal appears to “jump” from node to node. This arrangement substantially increases the speed and efficiency of impulse transmission, especially in long nerve fibers. In the peripheral nervous system, Schwann cells form myelin; in the central nervous system, oligodendrocytes form it. Understanding the relationship among myelin, nodes of Ranvier, and rapid nerve signaling is fundamental nervous-system physiology. See the [NCBI Bookshelf overview of nerve conduction](#) and the [OpenStax discussion of action potentials and saltatory conduction](#).

QUESTION NO: 9

Which of these responses is an example of a simple negative feedback response in the body?

- A. When the pituitary function increases, fluid retention occurs.
- B. When thyroxine levels increase, the metabolism slows down.
- C. When glucose levels rise, increased insulin is secreted.
- D. When hypothalamic function increases, gastric hormones decrease.

ANSWER: C

Explanation:

When glucose levels rise, increased insulin is secreted. This is a classic negative-feedback response because the initial change—an elevated concentration of glucose in the blood—stimulates pancreatic beta cells to release insulin. Insulin promotes glucose uptake by insulin-sensitive tissues, particularly skeletal muscle and adipose tissue, and supports storage of glucose as glycogen in the liver. These actions lower blood glucose toward its normal range. As blood glucose returns toward the set point, the stimulus for further insulin secretion diminishes, helping prevent an excessive response. This self-limiting pattern is the defining feature of negative feedback: a physiologic system detects a deviation from normal and activates mechanisms that oppose the deviation, preserving internal stability (homeostasis). Blood-glucose regulation is therefore an especially clear example of a simple endocrine negative-feedback loop. The National Institute of Diabetes and Digestive and Kidney Diseases describes insulin as a hormone that helps blood glucose enter cells for use as energy, while OpenStax explains that insulin secretion rises in response to elevated blood glucose and contributes to restoring homeostasis. See [NIDDK: What Is Diabetes?](#) and [OpenStax: The Endocrine Pancreas](#).

QUESTION NO: 10

Which action is an example of inequity in healthcare?

- A. Providing flexible or extended healthcare appointment times
- B. Administering medication to all patients who report pain
- C. Filtering water for one segment of the community, but not another
- D. Distributing free school lunches to all students

ANSWER: C

Explanation:

“Filtering water for one segment of the community, but not another” is an example of healthcare inequity because it creates an avoidable and unfair difference in access to a fundamental condition for health: safe drinking water. Clean water supports hydration, sanitation, food preparation, and prevention of waterborne illness. When one part of a community receives water treatment while another part does not, residents who are excluded face greater exposure to preventable health risks solely because resources have not been distributed fairly.

Health equity involves ensuring that everyone has a fair and just opportunity to attain their best possible health. This requires addressing differences in the social and environmental conditions that shape health, including reliable access to safe water. Selectively providing a protective public-health resource can compound existing disadvantages and lead to unequal health outcomes among community groups. The U.S. Department of Health and Human Services identifies health equity as the attainment of the highest level of health for all people, while the World Health Organization recognizes safe water as a key determinant of health. See [Healthy People 2030: Health Equity](#) and [WHO: Drinking-water](#).

QUESTION NO: 11

A rectangle’s length and width are 4 centimeters (cm) and 6 cm. What is

- 1
- 2
- 2
- 1

the

the area of this rectangle?

(Given Area = length $\times$ width.)

- A. 10 cm²
- B. 12 cm²
- C. 24 cm²
- D. 20 cm²

ANSWER: B

Explanation:

12 cm² is correct because the displayed fraction indicates that the question asks for one-half of the rectangle’s area. First, apply the stated area formula: area equals length multiplied by width. With a length of 4 cm and a width of 6 cm, the full rectangular area is $4 \times 6 = 24$ square centimeters. Area is expressed in square units because it measures the two-dimensional space inside the rectangle.

Next, find one-half of the full area. Dividing 24 cm^2 by 2 gives 12 cm^2 . Thus, one-half of the rectangle's area is 12 cm^2 . This uses the same relationship as multiplying the total area by $1/2$: $(1/2) \times 24 \text{ cm}^2 = 12 \text{ cm}^2$. Keeping the calculation in this order—find the whole area, then take the requested fraction—helps ensure that both the rectangle formula and the fraction are applied correctly. For additional instruction on calculating areas of rectangles, see [Khan Academy's area of rectangles practice](#) and [Math is Fun's area overview](#).

QUESTION NO: 12

Reading Comprehension

Passage:

Sleep deprivation can impair immune function, making individuals more susceptible to illness. Over time, chronic lack of sleep may increase the risk of serious health conditions.

Which statement is best supported by the passage?

- A. Sleep has no effect on immunity
- B. Illness always results from lack of sleep
- C. Adequate sleep supports immune health
- D. Immune function improves with stress

ANSWER: C

Explanation:

Adequate sleep supports immune health is best supported because the passage establishes a direct relationship between insufficient sleep and reduced immune function. It states that sleep deprivation can impair immunity and make a person more susceptible to illness. From that information, the reasonable inverse conclusion is that obtaining adequate sleep helps support normal immune health. The wording is appropriately cautious: "supports" does not claim that sleep alone prevents every illness or guarantees perfect immunity. It accurately reflects the passage's focus on sleep as an important factor in maintaining health and reducing vulnerability associated with impaired immune function. The additional statement that chronic lack of sleep may raise the risk of serious health conditions further reinforces that sleep is relevant to long-term well-being. This interpretation is consistent with public-health guidance describing sufficient sleep as important for immune function and overall health. The Centers for Disease Control and Prevention notes that getting enough sleep supports health and helps the body's immune system function effectively: [CDC: About Sleep](#). The National Heart, Lung, and Blood Institute likewise explains that sleep deficiency can affect immune-system functioning: [NHLBI: Sleep Deprivation and Deficiency](#).

QUESTION NO: 13

A patient is supposed to receive 5.6 centimeters (cm) of ointment. Given that 1 inch (in) = 2.54 cm, how many inches long will the application of ointment be?

Round to the nearest tenth.

- A. 1.4 in
- B. 22.0 in
- C. 2.2 in
- D. 14.2 in

ANSWER: C

Explanation:

The correct answer is **2.2 in**. Convert centimeters to inches using the stated equivalence, 1 inch = 2.54 centimeters. Because the known length is expressed in centimeters and the desired result is inches, divide the centimeter measurement by the number of centimeters per inch: $5.6 \text{ cm} \div 2.54 \text{ cm/in} = 2.2047\ldots \text{ in}$. The centimeter units cancel, leaving a measurement in inches. Rounding 2.2047... to the nearest tenth gives 2.2 inches, since the hundredths digit is 0. This conversion is appropriate for calculating the length of topical medication such as ointment when an order specifies a linear measurement. Keeping the full calculator result until the final step avoids rounding error and ensures the reported application length follows the instruction to round to one decimal place. Unit-conversion practice, including dimensional analysis, is a core medication-math skill because it verifies that the final unit matches what the question requests. For general guidance on using dimensional analysis in medication calculations, see [OpenStax Pharmacology: Medication Administration](#). The exact inch-to-centimeter relationship is also listed by the [National Institute of Standards and Technology](#).

QUESTION NO: 14

Word Knowledge

The word “initial” most nearly means:

- A. Final
- B. First
- C. Lasting
- D. Delayed

ANSWER: B

Explanation:

The correct answer is “**First**” because *initial* describes something that occurs at the beginning of a process, sequence, period, or event. For example, an “initial assessment” is the first assessment performed, and an “initial reaction” is the reaction that happens at the outset. In this question, “first” is the closest one-word synonym because it preserves the central meaning of occurring before subsequent stages or items. The word can also be used as a noun for the first letter of a name, such as the initial in “J. Smith,” but its underlying association with “first” remains the same. Standard dictionary definitions describe *initial* as existing or occurring at the beginning. See the [Merriam-Webster definition of initial](#) and the [Cambridge Dictionary definition of initial](#).

QUESTION NO: 15

In which biochemical family do starch and glycogen belong?

- A. Carbohydrates
- B. Nucleic acids
- C. Proteins
- D. Lipids

ANSWER: A

Explanation:

Carbohydrates is correct because starch and glycogen are polysaccharides, meaning they are large carbohydrate molecules built from many monosaccharide units, primarily glucose. Their glycosidic bonds allow organisms to store glucose in a compact form that can later be broken down to support cellular energy needs. Starch is the principal glucose-storage polysaccharide in plants. It includes amylose and amylopectin and is found in foods such as grains, potatoes, and legumes. Glycogen performs the comparable storage role in animals; it is stored mainly in liver and skeletal muscle cells and has a highly branched structure that supports rapid glucose release when needed. Therefore, both substances belong to the carbohydrate biochemical family, rather than being separate families based on the organism in which they occur. This

classification is based on molecular composition and structure: repeated sugar units identify polysaccharides as carbohydrates. The National Library of Medicine's [Biochemistry text](#) describes glycogen as the principal storage form of glucose in animal cells, while Encyclopaedia Britannica identifies [starch](#) as a polysaccharide and major carbohydrate reserve of plants.

QUESTION NO: 16

A clinic ordered 48 sterile dressings. During the first week, $\frac{3}{8}$ of the dressings were used. During the second week, 25% of the original supply was used.

How many sterile dressings remained after the two weeks?

- A. 12 dressings
- B. 18 dressings
- C. 22 dressings
- D. 30 dressings

ANSWER: B

Explanation:

18 dressings is correct. During the first week, $\frac{3}{8}$ of 48 dressings were used: $48 \times \frac{3}{8} = 18$. During the second week, 25% of the original 48 dressings were used: $0.25 \times 48 = 12$. A total of 30 dressings were used, so $48 - 30 = 18$ dressings remained. The 25% must be calculated from the original supply, as stated, rather than from the number left after the first week.

QUESTION NO: 17

Word Knowledge

The word “**reluctant**” most nearly means:

- A. Willing
- B. Eager
- C. Hesitant
- D. Prepared

ANSWER: C

Explanation:

“Hesitant” is the best answer because *reluctant* means unwilling, disinclined, or slow to act because of doubt, reservation, or lack of desire. A reluctant person may eventually do something, but does not do so readily or enthusiastically. For example, someone who is reluctant to speak in front of a group may pause or resist participating because they feel uncertain. “Hesitant” captures this sense of holding back or being unsure about taking an action, making it the closest synonym in this word-knowledge item. Standard dictionary definitions likewise describe *reluctant* as feeling or showing aversion, hesitation, or unwillingness. Building recognition of these related meanings helps with vocabulary questions that ask for the nearest synonym rather than an identical word. See the [Merriam-Webster definition of reluctant](#) and the [Cambridge Dictionary definition of reluctant](#).

QUESTION NO: 18

A student earned the following scores on five quizzes:

82, 76, 91, 85, and 66

What score must the student earn on a sixth quiz to have a mean score of 80 for all six quizzes?

- A. 76
- B. 78
- C. 80
- D. 84

ANSWER: C

Explanation:

80 is correct. A mean of 80 for six quizzes requires a total of $6 \times 80 = 480$ points. The five listed quiz scores total $82 + 76 + 91 + 85 + 66 = 400$ points. The student therefore needs $480 - 400 = 80$ points on the sixth quiz. A score of 76 would repeat one existing score but would not produce the required total.