

USTET Mental Ability Practice Test (Sample)

Study Guide



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SAMPLE

Questions

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- 1. Precept is to guidance as which of the following is related?**
 - A. Alibi : defense**
 - B. Footnote : connotation**
 - C. Epilogue : introduction**
 - D. Chord : music**
- 2. How many sides does a hexagon have?**
 - A. 4**
 - B. 5**
 - C. 6**
 - D. 7**
- 3. What does the term "hypothesis" refer to in problem-solving?**
 - A. A conclusive statement about a problem**
 - B. An educated guess or prediction that can be tested**
 - C. A random assumption without basis**
 - D. A summary of known facts**
- 4. Which reasoning approach involves using specific observations to form a general conclusion?**
 - A. Inductive reasoning**
 - B. Deductive reasoning**
 - C. Lateral thinking**
 - D. Critical thinking**
- 5. If the sum of three consecutive odd numbers is 39, what is the smallest of these numbers?**
 - A. 11**
 - B. 13**
 - C. 15**
 - D. 17**

- 6. If a number multiplied by 3 gives you 12, what is the number?**
- A. 2**
 - B. 3**
 - C. 4**
 - D. 5**
- 7. What is the square of the sum of 4 and 3?**
- A. 25**
 - B. 49**
 - C. 64**
 - D. 81**
- 8. If all cats are animals and some animals are dogs, can we conclude that some cats are dogs?**
- A. Yes, it logically follows**
 - B. No, the conclusion does not logically follow**
 - C. Only if all animals are pets**
 - D. It depends on the context**
- 9. Which of the following words is most similar in meaning to "expedite"?**
- A. Beckon**
 - B. Exterminate**
 - C. Disrespect**
 - D. Facilitate**
- 10. What is true about the ratio of two numbers if one is 60 when their sum is 100?**
- A. It is 1:5**
 - B. It is 2:3**
 - C. It is 3:2**
 - D. It is 4:1**

Answers

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1. A
2. C
3. B
4. A
5. B
6. C
7. B
8. B
9. D
10. B

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Explanations

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1. Precept is to guidance as which of the following is related?

A. Alibi : defense

B. Footnote : connotation

C. Epilogue : introduction

D. Chord : music

The relationship between the words in the question involves a connection where one term provides a form of support or direction for the other. A precept serves as a guiding principle or rule that informs behavior or thought processes. In the case of the chosen relationship, an alibi serves as a defense. Just as a precept guides decisions and actions, an alibi serves to support a defense in a legal context, providing justification or reasoning for someone's actions or presence at a particular time. This parallel of supportive roles establishes a clear and logical relationship. Looking at the other options, they do not reflect the same kind of relationship. A footnote might offer additional information but does not serve as a guidance mechanism in the same way. An epilogue concludes a narrative, contrasting with an introduction that begins it, showing a difference rather than continuity. Lastly, while a chord is related to music, it does not imply guidance, but rather is simply a component of that broader category. Therefore, the correct relationship is seen in the connection between precept and guidance, mirrored by the relationship of alibi and defense.

2. How many sides does a hexagon have?

A. 4

B. 5

C. 6

D. 7

A hexagon is defined as a polygon with six sides. The prefix "hex-" comes from the Greek word for six, which directly indicates the number of sides. Each side is connected to two other sides at its endpoints, forming the characteristic six-sided shape of a hexagon. This shape can also be identified by its angles, with a regular hexagon having all sides and angles equal, further solidifying its distinctive properties. Recognizing the structure of a hexagon is essential in various mathematical contexts, such as geometry and tessellations.

3. What does the term "hypothesis" refer to in problem-solving?

- A. A conclusive statement about a problem**
- B. An educated guess or prediction that can be tested**
- C. A random assumption without basis**
- D. A summary of known facts**

The term "hypothesis" refers specifically to an educated guess or prediction that can be tested, making it a foundational concept in problem-solving and scientific inquiry. When formulating a hypothesis, an individual proposes an explanation or prediction that seeks to address a particular problem or question. This prediction is not merely an assumption; it is grounded in existing knowledge and observations, allowing for empirical testing through experimentation or further investigation. A good hypothesis also establishes a basis for deriving expectations about the outcomes of tests or experiments, which can lead to validation or refinement of the original hypothesis. By providing a structured way to explore potential solutions, the hypothesis serves as a critical step in the problem-solving process, promoting both inquiry and critical thinking. This definition and understanding of a hypothesis are essential in disciplines ranging from science to social studies, guiding researchers in their exploration of questions and the relationship between variables.

4. Which reasoning approach involves using specific observations to form a general conclusion?

- A. Inductive reasoning**
- B. Deductive reasoning**
- C. Lateral thinking**
- D. Critical thinking**

Inductive reasoning involves taking specific observations or examples and using them to draw broader generalizations or conclusions. This approach typically starts with particular instances and builds up to a general rule or theory. For example, if you observe that the sun has risen in the east every day you've experienced, you might conclude that the sun always rises in the east. Inductive reasoning is powerful in forming hypotheses and theories, especially in science, where researchers compile observations to create general principles. The key element here is moving from specific data to a more abstract conclusion, which distinguishes it from other reasoning methods that might not follow this pattern. In contrast, deductive reasoning works in the opposite direction, starting with a general premise and applying it to specific cases, while lateral thinking encourages creative problem-solving through unconventional approaches. Critical thinking encompasses analyzing and evaluating information thoughtfully rather than following a structured path of reaching a conclusion.

5. If the sum of three consecutive odd numbers is 39, what is the smallest of these numbers?

- A. 11
- B. 13**
- C. 15
- D. 17

To solve for the smallest of three consecutive odd numbers that sum up to 39, start by defining the numbers algebraically. If we denote the smallest of these three consecutive odd numbers as x , then the next two odd numbers can be expressed as $x + 2$ and $x + 4$. The equation representing the sum of these three numbers will be: $x + (x + 2) + (x + 4) = 39$. Simplifying this gives you: $3x + 6 = 39$. Next, subtract 6 from both sides: $3x = 33$. Now, divide both sides by 3: $x = 11$. Therefore, the smallest of the three consecutive odd numbers is 11, confirming that the sum of 11, 13, and 15 equals 39. This is consistent with the properties of consecutive odd numbers, demonstrating that they increment by 2 and seamlessly create odd sequences. In this case, 11 is indeed the smallest number, while the other options (13, 15, and 17) represent values greater than the smallest number identified in the sequence, thus not fitting the

6. If a number multiplied by 3 gives you 12, what is the number?

- A. 2
- B. 3
- C. 4**
- D. 5

To find the number that, when multiplied by 3, equals 12, you can set up the equation: $3x = 12$. To solve for x , divide both sides of the equation by 3: $x = 12 / 3$. Calculating that gives: $x = 4$. Thus, the number is 4, which aligns with the provided answer. This approach clearly demonstrates that performing the inverse operation of multiplication (which is division) helps you isolate the variable and determine its value. Hence, the conclusion reaches that the number we are looking for is indeed 4.

7. What is the square of the sum of 4 and 3?

- A. 25
- B. 49**
- C. 64
- D. 81

To determine the square of the sum of 4 and 3, you first need to calculate the sum itself. Adding 4 and 3 gives you 7. Next, you need to find the square of this sum, which means multiplying 7 by itself: $7 \times 7 = 49$. Thus, the correct answer is 49. This step-by-step approach reveals how combining both the addition and squaring processes leads you to the answer, verifying the calculation is accurate and aligns properly with the mathematical operation described.

8. If all cats are animals and some animals are dogs, can we conclude that some cats are dogs?

A. Yes, it logically follows

B. No, the conclusion does not logically follow

C. Only if all animals are pets

D. It depends on the context

The conclusion that "some cats are dogs" does not logically follow from the premises provided. To understand why, let's analyze the statements: 1. The first assertion is that all cats belong to the category of animals. This establishes that cats are a subset of animals. 2. The second statement claims that some animals are dogs, which indicates that there is a portion of the animal category that includes dogs. However, these premises do not create a direct link between cats and dogs. While it is true that both cats and some animals are classified within the larger category of animals, the information does not support the idea that any overlap exists between the two specific categories of cats and dogs. It's possible that the animals that are dogs do not include any cats at all. In conclusion, the premises allow for the possibility that cats and dogs exist as separate subsets within the animal category without any intersection. Therefore, it is accurate to state that the conclusion does not logically follow from the given statements.

9. Which of the following words is most similar in meaning to "expedite"?

A. Beckon

B. Exterminate

C. Disrespect

D. Facilitate

"Expedite" means to make a process happen more quickly or to accomplish a task with efficiency. The word "facilitate" closely aligns with this definition, as it refers to making a process easier or helping it progress more smoothly and swiftly. Both terms imply a sense of assistance and efficiency in the completion of tasks or processes. The other options do not convey this meaning: "beckon" suggests a gesture to call someone over, "exterminate" refers to completely destroying or eradicating something, and "disrespect" involves showing a lack of respect or consideration. Therefore, the most fitting word that conveys the idea of accelerating a process is "facilitate."

10. What is true about the ratio of two numbers if one is 60 when their sum is 100?

- A. It is 1:5**
- B. It is 2:3**
- C. It is 3:2**
- D. It is 4:1**

When considering the relationship between the two numbers in question, we know that one of the numbers is 60 and their overall sum equals 100. This allows us to deduce the second number by subtracting the first number from the total sum: $\text{Second number} = \text{Total sum} - \text{First number} = 100 - 60 = 40$. Now, we have identified the two numbers as 60 and 40. To find the ratio of these two numbers, we need to express them in a simplified form. The ratio of the first number to the second number can be determined as follows: $\text{Ratio} = 60:40$. Next, to simplify this ratio, we can divide both terms by their greatest common divisor, which is 20. When we do this, we get: $\text{Ratio} = (60 \div 20):(40 \div 20) = 3:2$. Thus, when the sum of the two numbers is 100, and one of the numbers is 60, the ratio of the two numbers is 3:2. This accurately reflects the relationship between the two numbers given the total sum.