1. Getting ready to face your income tax forms, you encounter the statement “All those who reside in New Jersey must fill out form 203.” You do not live in New Jersey. Do you have to fill out form 203? Many individuals who consider themselves logical might answer no to this question. The correct answer is, “We don’t know – maybe. Maybe not. There is not enough information.” If the statement had read “Only those who reside in New Jersey must fill out form 203” and you aren’t a New Jersey resident, then you would be correct to answer no.
2. Various logical “tasks” have been devised by psychologists trying to understand the reasoning process and source of our errors in reasoning. Researchers Peter C. Wason and Philip Johnson-Laird claim that one particular experiment has an almost hypnotic effect on some people who try it, adding that this experiment tempts the majority of subjects into an interesting and deceptively fallacious inference. The subject is shown four colored symbols: a blue diamond, a yellow diamond, a blue circle, and a yellow circle. (See Figure 1.) In one version of the problem, the experimenter gives the following instructions:

I am thinking of one of those colors and one of those shapes. If a symbol has either the color or the shape I am thinking about, or the shape I am thinking about, or both, I *accept* it, but otherwise I *reject* it. I *accept* the blue diamond.

Does anything follow about my acceptance, or rejection, of the other symbols?

**Figure 1. “Blue diamond” experiment.**

A mistaken inference characteristically made is to conclude that the yellow circle will be rejected. However, that can’t be right. The blue diamond would be accepted if the experimenter were thinking of “blue and circle,” in which case the yellow circle would not be rejected. In accepting the blue diamond, the experimenter has told us that he is thinking of (1) blue and diamond, (2) blue and circle, or (3) yellow and diamond, but we don’t know which. Since he accepts all other symbols that have either the color *or* the shape he is thinking about (and otherwise rejects the symbol), in case 1 he accepts all blue shapes and any color diamond. (He rejects only the yellow circle.) In case 2, he accepts all blue shapes and any color circle. (He rejects only the yellow diamond.) In case 3, he accepts any yellow shapes and any color diamonds. (He rejects only the blue circle.) Since we don’t know which of the above three scenarios he is thinking of, we can’t possibly know which of the other three symbols will be rejected. (We do know, however, that *one* of themwill be.) His acceptance of the blue diamond does not provide enough information for us to be certain about his acceptance or rejection of any of the other symbols. All we know is that two of the others will be accepted and one will be rejected. The only inference we can make concerns what the experimenter is thinking – or rather, what he is not thinking. He is not thinking yellow and circle.

1. Given:
   1. All education majors student teach.
   2. Some education majors have double majors.
   3. Some mathematics students are education majors.

Which of the following conclusions necessarily follows from a, b, and c above?

1. Some mathematics students have double majors.
2. Some of those with double majors student teach.
3. All student teachers are education majors.
4. All of those with double majors student teach.
5. Not all mathematics students are education majors.

Text, letter

Description automatically generated

5.

Text, letter

Description automatically generated

6.

Text, letter

Description automatically generated

7. Some values of x are less than 100.

Which of the following is NOT consistent with the sentence above?

1. 5 is not a value of x.
2. 95 is a value of x.
3. Some values of x are greater than 100.
4. All values of x are less than 100.
5. No numbers less than 100 are values of x.

8. All member of Mensa are smart. You are not a member of Mensa.

Therefore?

9.

7

4

D

A

Rule: If a card has a vowel on one side then it has an even number on the other.

Name only those cards that need to be turned over to find out whether the rule is true or false.

10.

Car

Train

Leeds

Manchester

Claim: Every time I go to Manchester I travel by train.

Name only those cards that need to be turned over to find out whether the rule is true or false.

11.

22 years of age

16 years of age

Drinking Coke

Drinking Beer

Rule: If a person is drinking beer, then the person must be over 19.

Name only those cards that need to be turned over to find out whether the rule is true or not.

12.

If a train is traveling from Washington D.C. to Boston, then it stops in New York.

Can I conclude that it will stop in New York?

If I see a train stopped in New York, can I conclude that it is traveling from DC to Boston?

If I see a train stopped in New York on its way to Boston, can I assume the train originated in Washington D.C.?

If I see a train originating from DC stopped in New York, can I infer it is traveling to Boston?

13.

Horse

Apple

Dog

Apple

Dog

Orange

Cat

Banana

True or False: If there is an apple in the box, then there is a horse.

True or False: If there is an apple in the box, then there has to be a dog.

14.

Rule: In the diagram above there is a particular shape and a particular color, such that any of the four designs which has one, and only one, of these features is called a THOG.

Given: The black diamond is a THOG. What can you say, if anything, about whether each of the three remaining designs is a THOG?

15. A developer is planning to build a housing complex on an empty tract of land. Exactly seven different styles of homes – Q, R, S, T, W, X, and Z – will be built in the complex. The complex will contain several blocks, and the developer plans to put houses of at least three different styles on each block. The developer will build the complex according to the following rules:

\* Any block that has style Z must also have style W on it.

\* Any block adjacent to one that has on it both style S and style X must have on it style T and style Z.

\* No block adjacent to one that has on it both style R and style Z can have on it either style T or style W.

\* No block can have on it both style S an style Q.

Which of the following house styles must be on a block that is adjacent to a block that has on it only styles S, T, W, X, and Z?

1. Q
2. R
3. S
4. W
5. X

16. If p is true, then q is true. Q is true. Conclusion?

17. If p is true, then q is true. Q is not true. Conclusion?

18. Is the following argument valid? Why or why not?

A ham sandwich is better than nothing.

Nothing is better than eternal happiness.

Therefore, a ham sandwich is better than eternal happiness.

19. Is the following argument valid? Why or why not?

Sue is taller than Wendy.

Wendy is taller than Tanisha.

Therefore, Sue is taller than Tanisha.

20.

An abbess observed that an elderly nun was often visited by a young gentleman and asked what relation he was. “A very near relation,” answered the nun; “his mother was my mother’s only child” which answer, as was intended, satisfies that abbess that the visitor must be within the unprohibited degrees, without giving precise information.

Can you figure out the relation of the young gentleman to the nun?

21.

In a game, exactly six inverted cups stand side by side in a straight line, and each has exactly one ball hidden under it. The cups are numbered consecutively 1 through 6. Each of the balls is painted a single solid color. The colors of the balls are green, magenta, orange, purple, red, and yellow. The balls have been hidden under the cups in a manner that conforms to the following conditions:

\* The purple ball must be hidden under a lower numbered cup than the orange ball.

\* The red ball must be hidden under a cup immediately adjacent to the cup under which the magenta ball is hidden.

\* The green ball must be hidden under cup 5.

Question: If the magenta ball is under cup 1, ball of which of the following colors must be under cups immediately adjacent to each other?

1. Green and orange.
2. Green and yellow.
3. Purple and red.
4. Purple and yellow.
5. Red and yellow.

22.

A farmer plans only five different kinds of vegetables – beans, corn, kale, peas, and squash. Every year the farmer plants exactly three kinds of vegetables according to the following restrictions:

\* If the farmer plants corn, the farmer also plants beans that year.

\* If the farmer plants kale one year, the farmer does not plant it the next year.

\* In any year, the farmer plants no more than one of the vegetables the farmer planted in the previous year.

Question: If the farmer plants, beans, corn, and kale in the first year, which of the following combinations must be planted in the third year?

1. Beans, corn, and kale.
2. Beans, corn, and peas.
3. Beans, kale, and peas.
4. Beans, peas, and squash.
5. Kale, peas, and squash.

23.

If stick A is longer than stick B, and shorter than stick C, which stick is the shortest?

If stick A is longer than stick B and stick C is longer than stick A, which stick is the shortest?

If stick B is shorter than stick A, which is shorter than stick C, which stick is shortest?

24.

Suppose, regarding three girls – Anna, Bertha, and Cora – we observe the following rule:

Whenever either Anna or Bertha (or both) remain at home, Cora was at home; and

When Bertha was out, Anna was out; and

When Cora was at home, Anna was at home.

What can we determine about the habits of the girls individually or as a group?

25.

What is the truth value of the following statement?

“The present king of France is bald.”

26.

What is the truth value of the following statements?

Mary is tall.

Mary is smart.

27.

Dear Editor: I feel obliged to comment on the unfair review you published last week written by Robert Duxbury. Your readers should know that Mr. Duxbury recently published his own book that covered the same topic as my book, which you asked him to review. It is regrettable that Mr. Duxbury should feel the need to belittle a competing work in the hope of elevating his own book.

The author of the letter above makes her point by employing which method of argument?

1. Attacking the motives of the author of the unfavorable review.
2. Attacking the book on the same topic written by the author of the review.
3. Contrasting her own book with that written by the author of the review.
4. Questioning the judgment of the author of the unfavorable review.
5. Stating that her book should not have been reviewed by the author of the competing work.

28.

All football players are strong. All oak trees have acorns.

This man is strong. This tree has acorns.

Is he a football player? Is it an oak tree?

29.

Lou observes that if flight 409 is cancelled, then the manager could not possibly arrive in time for the meeting. But the flight was not cancelled. Therefore, Lou concludes, the manager will certainly be on time. Evelyn replies that even if Lou’s premises are true, his argument is fallacious. And therefore, she adds, the manager will not arrive on time after all.

Which of the following is the strongest thing that we can properly say about this discussion?

1. Evelyn is mistaken in thinking Lou’s argument is fallacious, so her own conclusion is unwarranted.
2. Evelyn is right about Lou’s argument, but nevertheless her own conclusion is unwarranted.
3. Since Evelyn is right about Lou’s argument, her own conclusion is well supported.
4. Since Evelyn is mistaken about Lou’s argument, her own conclusion must be false.
5. Evelyn is right about Lou’s argument, but nevertheless her own conclusion is false.

30.

Resolve the following paradoxes:

* You say you know your brother; but the man who came in now with the hoodie is your brother, and you did not know him.
* What you have not lost you still have; but you have not lost horns; so you still have horns.
* A crocodile snatched a baby from its mother sitting beside the Nile. The crocodile promised to return the baby if the mother will answer one question truthfully: “Did the crocodile intend to return the baby?”
* One grain does not make a heap. If one grain does not make a heap, certainly the addition of another grain does not make a heap. Therefore two grains do not make a heap. If two do not, then three do not…. Therefore, 10,000 grains do not make a heap.
* Is a man with one hair on his head a bald man? Yes, then what about two hairs? At some point we will be forced to declare that he is not bald, but where do we draw the line?
* Epimenides the Cretan exclaimed: “All Cretans are liars.” Can he be telling the truth?
* In a certain village, there is a man who is a barber; this barber shaves all and only those men who do not shave themselves. Does the barber shave himself?

31.

Each group of questions in this section is based on a set of conditions. In answering some of the questions, it may be useful to draw a rough diagram. Choose the best response that most accurately and completely answers each question.

A university library budget committee must reduce exactly give of eight areas of expenditure – G, L, M, N, P, R, S, and W – in accordance with the following conditions:

* If both G and S are reduced, W is also reduced.
* If N is reduced, neither R nor S is reduced.
* If P is reduced, L is not reduced.
* Of the three areas, L, M, and R, exactly two are reduced.

If W is reduced, which one of the following could be a complete and accurate list of the four areas of expenditure to be reduced?

1. G. M, P, S
2. L, M, N, R
3. L, M, P, S
4. M, N, P, S
5. M, P, R, S

32.

Directions: The questions in this section are based on the reasoning contained in brief statements or passages. For some questions, more than one of the choices could conceivably answer the question. However, you are to choose the best answer; that is, the response that most accurately and completely answers the question. You should not make assumptions that are by commonsense standards implausible, superfluous, or incompatible with the passage.

The crux of creativity resides in the ability to manufacture variations on a theme. If we look at the history of science, for instance, we see that every idea is built upon a thousand related ideas. Careful analysis leads us to understand that what we choose to call a new theme or a new discovery is itself always and without exception some sort of variation, on a deep level, of previous themes.

If all of the statements in the passage are true, each of the following must also be true EXCEPT:

1. A lack of ability to manufacture a variation on a previous theme connotes a lack of creativity.
2. No scientific idea is entirely independent of all other ideas.
3. Careful analysis of a specific variation can reveal previous themes of which it is a variation.
4. All great scientific discoverers have been able to manufacture a variation on a theme.
5. Some new scientific discoveries do not represent, on a deep level, a variation on previous themes.