

SAT Reading

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Sentence Completion

- Although Josephine Tey is arguably as good a mystery writer as Agatha Christie, she is clearly far less _____ than Christie, having written only six books in comparison to Christie's sixty.
A) equivocal
B) pretentious
C) prolific
D) coherent
- To avoid being _____, composer Stephen Sondheim strives for an element of surprise in his songs.
A) erratic
B) predictable
C) informal
D) sporadic
- The situation called for _____ measures; the solution would not be simple and straightforward.
A) unique
B) firsthand
C) complex
D) elementary
- As the pop star left the stage, he was surrounded by _____ of bodyguards who _____ our attempts to approach him.
A) an entourage .. interfered with
B) a debacle .. concurred with
C) a dearth .. intercepted
D) a faction .. pertained to
- Many _____ of the style of painting exemplified by Marcel Duchamp's work focused on Duchamp's *Nude Descending a Staircase* as the _____ of what they detested about modern art.
A) proponents .. realization
B) advocates .. embodiment
C) debunkers .. rejection
D) critics .. epitome
- More _____ than her predecessor, Superintendent Reynolds would, many predicted, have a far less _____ term of office.
A) vigilant .. reputable
B) empathetic .. compassionate
C) conciliatory .. confrontational
D) phlegmatic .. apathetic
- Nutritionists say that when eating it is important to _____ completely in order for proper _____ to occur.
A) inhale .. respiration
B) masticate .. digestion
C) absorb .. rumination
D) repose .. relaxation
- In a revolutionary development in technology, several manufacturers now make biodegradable forms of plastic: some plastic six-pack rings, for example, gradually _____ when exposed to sunlight.
A) decompose
B) stagnate
C) inflate
D) propagate
- Although Adam had been unable to sleep the night before, he seemed remarkably _____ when he gave his presentation.
A) presentable
B) worn
C) alert
D) bred

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10. Anne mentioned John's habitual boasting about his wardrobe as an example of his _____ ways.
- A) flexible
 - B) egocentric
 - C) erratic
 - D) tactful
11. Fundraising is only effective when _____ individuals are available, showing their concern by their readiness to give.
- A) selfless
 - B) popes
 - C) meaningful
 - D) famous
12. Unlike the Shakespearean plays that lit up the English stage, the "closet dramas" of the nineteenth century were meant to be _____ rather than _____.
- A) sophisticated .. urbane
 - B) read .. staged
 - C) quiet .. raucous
 - D) seen .. acted
13. Though it is often exclusively _____ Brazil, the Amazon jungle actually _____ parts of eight other South American countries.
- A) associated with .. covers
 - B) surrounded by .. borders
 - C) located in .. bypasses
 - D) limited to .. touches
14. The _____ bulldozer soon pushed away from the building site the _____ that remained of the bombed-out factory.
- A) flimsy .. impediments
 - B) invincible .. seepage
 - C) indestructible .. fragments
 - D) indefatigable .. rubble
15. Eduardo was _____ to find that the editorial he had written was _____ by several typographical errors.
- A) intrigued .. enveloped
 - B) prepared .. enhanced
 - C) embarrassed .. marred
 - D) overjoyed .. exacerbated
16. The drunken driver was filled with _____ for having caused the _____ injuries to the child.
- A) consternation .. insensible
 - B) remorse .. fatal
 - C) tension .. self-inflicted
 - D) excuses .. sustained
17. When the _____ turned into a downpour, the baseball game had to be _____.
- A) shower .. resumed
 - B) flash flood .. rescheduled
 - C) drizzle .. inaugurated
 - D) sprinkle .. postponed
18. Ability to speak several foreign languages _____ is _____ to success as a diplomat assigned to the United Nations.
- A) haltingly .. equivalent
 - B) occasionally .. unrelated
 - C) briefly .. essential
 - D) fluently .. requisite
19. The visiting head of state admired the costly decoration that set off the _____ feasts given in her honor.
- A) superficial
 - B) length
 - C) substantiated
 - D) sumptuous

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20. As a young physics instructor, Richard Feynman discovered that he had the gift of sharing his _____ his subject and making that excitement _____.
- A) propensity for .. futile
 - B) passion for .. contagious
 - C) knowledge of .. inaudible
 - D) contempt for .. praiseworthy

Reading Comprehension

This passage is adapted from Matthew Edward, "Historical Frameworks." ©2014 by Matthew Edward

Line Professional historians often struggle to understand those distant historical events that Line are "lost in the mist of time." Even those events that were depicted vividly in primary
5 sources must often be reconsidered as new information is uncovered or old information is reinterpreted.

For example, Richard III of England has long
10 been regarded as one of the most vicious and heartless monarchs in history. Yet now the Richard III Society has uncovered facts suggesting that this image was distorted by Shakespeare's famous representation, which in
15 turn was based solely on the Tudor version of Richard's reign. Since the Tudors were eager to vilify Richard and legitimize Henry VII's usurpation of the throne from the Plantagenets, their representations can hardly be regarded as
20 historically objective.

America has its own distortions to contend with. For instance, for a long time most American
25 schoolchildren were taught that Andrew Jackson represented everything good in American democracy. Then, during the Civil Rights Era, evidence came to light regarding the land-lust and latent racism behind his Indian Removal Act.

30 To discern reality through the mist of time, historians must turn to careful analytical methods. These methods can be organized into three predominant approaches, each with its advantages and disadvantages: the "classic
35 narrative" approach, the "quantitative-positivistic" approach, and the "cultural criticism" approach.

The classic narrative approach stresses the

40 historian's skills in writing and discernment. By this method, historians evaluate the validity of evidence by considering diverse sources. For example, when evidence in a personal journal conflicts with that in a newspaper, and both
45 conflict with the information in a government report, the historians must weigh all evidence, using the intuitive skills they have honed from years of training, before arriving at a conclusion. All of this analysis serves not merely accuracy but
50 also narrative cogency. The objective is to construct a story that provides an explanatory framework as well as a compelling tale.

The second approach, the quantitative-
55 positivistic approach, applies methods from fields like statistics and information analysis to the study of history. Historians who gravitate toward this approach adopt a paradigm very much like the scientific method, by which they
60 construct clear historical theories and apply quantitative methods such as Bayesian logic and multivariate regression in order to assess those hypotheses. Here, the key elements are the clearly defined variable and the testable hypothesis. For
65 example, Brazil in the 19th century saw pronounced economic growth as well as increased foreign investment in railroads. Whereas historians in the past might have assumed a causal relationship between the two, quantitative-positivistic historians now have the
70 means to scrutinize this connection. Using multivariate regression, they can compare one statistic gauging economic growth, such as real wages or per capita gross domestic product, to
75 multiple other variables like trade deficits or foreign investment levels, to determine any correlations among those data.

The third approach, the cultural criticism
80 approach, takes a skeptical view of hierarchies, hegemonies, and institutions and the way such power structures can misrepresent historical accounts. An essential postulate of this approach is that history is written by the powerful, the
85 victorious, and the literate. Since the vast majority of people in history were none of these

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- things, historians must read between the lines of historical documents, which may distort, or merely hint at, the lives of the less privileged classes.
- 90
- These documents include written laws, merchant ledgers, personal journals, government decrees, and court decisions. One notable example is the documentation of the "tribute system" established by Christopher Columbus on the isle of Hispaniola in the early 16th century, by which natives were required to bring him gold and cotton or risk having their hands amputated or being sold into slavery. By analyzing the documents of the empowered, historians can begin to assemble the lives of the downtrodden.
- 100
- Each of these approaches represents a set of skills for dealing with the fundamental problems of history: distortion and deficiency. None is a perfect method for determining truth, but all seek to peer more clearly through the mist of time.
- 05
21. The passage as a whole is best regarded as
- A) an argument for adopting a particular historical method over the alternatives.
 - B) a discussion of several obstacles to impartial historical analysis.
 - C) an introduction to various methodological systems for examining history.
 - D) an illustration of some of the technical debates among modern academic historians.
22. Compared to each of the other approaches discussed in the passage, the quantitative-positivistic approach is more
- A) objective.
 - B) embellished.
 - C) skeptical.
 - D) popular.
23. The second paragraph mentions Shakespeare primarily as an example of
- A) a famous figure whose identity and background are in dispute.
 - B) an exemplary author of riveting historical plays.
 - C) an early pioneer of the classic narrative approach.
 - D) an abettor to an act of historical misrepresentation.
24. The passage implies that reliable historical analysis is most significantly hindered by
- A) a lack of appropriate analytical methods.
 - B) biased and incomplete documentation.
 - C) technical disputes among historians who use different methodologies.
 - D) political and philosophical differences among academic historians.
25. Which choice provides the best evidence for the answer to the previous question?
- A) [line] ("America...with")
 - B) [32-37] ("These...approach")
 - C) [83-85] ("An essential...literate")
 - D) [104-106] ("Each...deficiency")
26. The passage suggests that historians using the classic narrative approach are most concerned with producing
- A) persuasive prose.
 - B) even-handed portrayals.
 - C) imaginative stories.
 - D) verifiable data.
27. Which choice provides the best evidence for the answer to the previous question?
- A) [39-40] ("The...discernment")
 - B) [40-42] ("By...sources")
 - C) [42-48] ("For...conclusion")
 - D) [49-52] ("All of...tale")

28. According to the passage, the "documentation" mentioned in [line] is notable because it
- A) confirms the validity of a well-established belief.
 - B) contradicts the evidence provided by other sources.
 - C) contributes reliable data for quantitative analysis.
 - D) provides insight into an often unacknowledged aspect of history.
29. In [62], "regression" refers to an act of
- A) political subjugation.
 - B) scientific conjecture.
 - C) mathematical calculation.
 - D) social deterioration.
30. The passage discusses the economy of Brazil in the 19th century primarily to make the point that
- A) some countries can see dramatic economic growth over a matter of decades.
 - B) some historical theories should not be taken for granted.
 - C) some political leaders are inclined to suppress historical facts.
 - D) some historians find it difficult to frame historical phenomena in mathematical terms.
31. As used in [102], "assemble" most nearly means
- A) represent as a coherent whole.
 - B) forge from rudimentary materials.
 - C) gather for a cultural event.
 - D) categorize as a social group.

Reading Comprehension

The following passage is taken from Franklin Delano Roosevelt's Third Inaugural Address, made on January 20, 1941, nearly a year before the bombing of Pearl Harbor triggered America's entry into the Second World War.

Line A nation, like a person, has something deeper,
something more permanent, something larger
than the sum of all its parts. It is that something
which matters most to its future—which calls
5 forth the most sacred guarding of its present.

It is a thing for which we find it is difficult—
even impossible—to hit upon a single, simple
word.

10 And yet we all understand what it is—the
spirit—the faith of America. It is the product of
centuries. It was born in the multitudes of those
who came from many lands—some of high
15 degree, but mostly plain people, who sought
here, early and late, to find freedom more freely.

The democratic aspiration is no mere recent
phase in human history. It is human history. It
20 permeated the ancient life of early peoples. It
blazed anew in the middle ages. It was written in
the Magna Carta.

In the Americas its impact has been irresistible. 70
25 America has been the New World in all tongues,
to all peoples, not because this continent was a
new-found land, but because all those who came
here believed they could create upon this
continent a new life—a life that should be new in 75
30 freedom.

Its vitality was written in our own Mayflower
Compact, into the Declaration of Independence,
into the Constitution of the United States, into 80
35 the Gettysburg Address.

Those who first came here to carry out the

40 longings of their spirit, and the millions who
followed, and the stock that sprang from them—
all have moved forward constantly and
consistently toward an ideal which in itself has
gained stature and clarity with each generation.

45 The hopes of the Republic cannot forever
tolerate either undeserved poverty or self-serving
wealth.

We know that we still have far to go; that we
must more greatly build the security and the
50 opportunity and the knowledge of every citizen,
in the measure justified by the resources and the
capacity of the land.

55 But it is not enough to achieve these purposes
alone. It is not enough to clothe and feed the
body of this Nation, and instruct and inform its
mind. For there is also the spirit. And of the
three, the greatest is the spirit.

60 Without the body and the mind, as all men know,
the Nation could not live.

65 But if the spirit of America were killed, even
though the Nation's body and mind, constricted
in an alien world, lived on, the America we know
would have perished.

70 That spirit—that faith—speaks to us in our daily
lives in ways often unnoticed, because they seem
so obvious. It speaks to us here in the Capital of
the Nation. It speaks to us through the processes
of governing in the sovereignties of 48 States. It
speaks to us in our counties, in our cities, in our
towns, and in our villages. It speaks to us from
the other nations of the hemisphere, and from
those across the seas—the enslaved, as well as
the free. Sometimes we fail to hear or heed the
voices of freedom because to us the privilege of
our freedom is such an old, old story.

80 The destiny of America was proclaimed in words
of prophecy spoken by our first President in his
first inaugural in 1789—words almost directed, it
would seem, to this year of 1941: "The

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- 85 preservation of the sacred fire of liberty and the destiny of the republican model of government are justly considered...deeply, ...finally, staked on the experiment entrusted to the hands of the American people."
- 90 If we lose that sacred fire—if we let it be smothered with doubt and fear—then we shall reject the destiny which Washington strove so valiantly and so triumphantly to establish. The
- 95 preservation of the spirit and faith of the Nation does, and will, furnish the highest justification for every sacrifice that we may make in the cause of national defense.
- 100 In the face of great perils never before encountered, our strong purpose is to protect and to perpetuate the integrity of democracy.
- For this we muster the spirit of America, and the
- 05 faith of America.
- We do not retreat. We are not content to stand still. As Americans, we go forward, in the service of our country, by the will of God.
- 10
32. As used in [15], "plain" most nearly means
- A) candid
B) ordinary
C) homely
D) intelligible.
33. The author indicates which of the following about the American belief in freedom?
- A) It lacked any supporters who belonged to the upper classes.
B) It had its origins at the time of the American Revolution.
C) It is an ideal that has lost its hold on the public.
D) It has deep-seated historical roots.
34. Which choice provides the best evidence for the answer to the previous question?
- A) [1-3] ("A nation... its parts")
B) [18-22] ("The democratic...Magna Carta")
C) [25-30] ("America has been...new in freedom")
D) [37-42] ("Those who first...each generation")
35. The author uses the Mayflower Compact, Declaration of Independence, Constitution, and Gettysburg Address as examples of
- A) subjects of previous inaugural addresses.
B) expressions of the democratic aspiration.
C) documents of historical interest.
D) writings with ongoing legal implication.
36. The author recognizes counterarguments to the position he takes in [37-42] "(Those who first came here... with each generation)" by
- A) acknowledging that economic injustices must be addressed before democracy can prevail.
B) admitting that the native-born descendants of our immigrant forebears have lost faith in democracy.
C) conceding the lack of resources and capacity that hinder the fulfillment of the American dream.
D) likening the Nation to a human body with physical, mental, and spiritual needs.
37. As used in [83], "directed" most nearly means
- A) addressed
B) ordered
C) supervised
D) guided

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38. What main effect does the repetition of the phrase "It speaks to us" in [68-77] ["That spirit...as well as the free"] have on the tone of the passage?
- A) It creates a whimsical tone, endowing an abstract quality with a physical voice.
 - B) It creates a colloquial tone, describing commonplace activities in ordinary words.
 - C) It creates a dramatic tone, emphasizing the point being made and adding to its emotional impact.
 - D) It creates a menacing tone, reminding us of our failure to heed the voices of freedom crying for our aid.
39. It can most reasonably be inferred that the experiment to which Washington refers in [87-89] ["finally, staked on the experiment entrusted to the hands of the American people"] is
- A) a scientific investigation.
 - B) a presidential inauguration.
 - C) a democratic government.
 - D) a national defense.
40. Which choice provides the best evidence for the answer to the previous question?
- A) [63-66] ("But if the spirit... have perished")
 - B) [68-70] ("That spirit... seem so obvious")
 - C) [91-94] ("If we lose... to establish")
 - D) [100-102] ("In the face...of democracy")
41. It is reasonable to conclude that a major goal of Roosevelt in making this speech was to
- A) inform American citizens of changes of policy in the new administration.
 - B) impress his European counterparts with the soundness of America's foreign policy.
 - C) encourage American voters to avoid the divisiveness inherent in partisan politics.
 - D) inspire the American people to defend the cause of freedom in dangerous times.

Sentence Completion

Select the best match to complete each of the following sentences.

42. Like foolish people who continue to live near an active volcano, many of us are _____ about the _____ of atomic warfare and its attendant destruction.
 A) irritated .. news
 B) unconcerned .. threat
 C) cheered .. possession
 D) worried .. possibility
43. Ms. Ono _____ gives interviews because she believes the news media have _____ her and treated her badly.
 A) seldom .. eulogized
 B) rarely .. misrepresented
 C) frequently .. publicized
 D) reluctantly .. acclaimed
44. The audience failed to warm to the candidate, whose speech contained nothing but empty promises, _____, and clichés.
 A) platitudes
 B) nuances
 C) candor
 D) ingenuity
45. One critic asserts that modern urban architecture causes sensory deprivation because it fails to provide visual and tactile _____.
 A) stimulation
 B) latency
 C) complacency
 D) extension
46. Unlike Shakespeare, who earned a living with his pen, John Donne was _____ poet.
 A) a popular
 B) a talented
 C) a renowned
 D) an amateur
47. Rachel Carson's book "Silent Spring," which described a world made lifeless by the accumulation of hazardous pesticides, _____ a grass-roots campaign to _____ the indiscriminate use of such substances.
 A) allowed .. recommend
 B) inspired .. control
 C) catalyzed .. propagate
 D) protested .. limit
48. When Harvard astronomer Cecilia Payne was _____ professor in 1956, it marked an important step in the reduction of _____ practices within the scientific establishment.
 A) promoted to .. discriminatory
 B) considered for .. hierarchical
 C) accepted for .. disciplinary
 D) honored as .. unbiased
49. You may wonder how the expert on fossil remains is able to trace descent through teeth, which seem _____ pegs upon which to hang whole ancestries.
 A) reliable
 B) academic
 C) specious
 D) inadequate
50. British _____ contemporary art has been an obstacle even for modern artists now revered as great, such as Francis Bacon and Lucian Freud, who were _____ for years before winning acceptance.
 A) indifference to .. dismissed
 B) veneration of .. eulogized
 C) disdain for .. lauded
 D) intolerance of .. vindicated

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51. Many young people and adults, uncomfortable with math, feel it is a subject best _____ engineers, scientists, and that small, elite group endowed at birth with a talent for the _____ world of numbers.
A) suited to .. accessible
B) left to .. esoteric
C) studied by .. interminable
D) ignored by .. abstract
52. Despite the _____ of the materials with which Tiffany worked, many of his glass masterpieces have survived for more than seventy years.
A) majesty
B) fragility
C) beauty
D) translucence
53. During the 1990's, Shanghai benefited from an architectural _____, the result of a dramatic increase in innovative and artistic building.
A) intransigence
B) stagnation
C) renaissance
D) desecration
54. Wenunick, the soul of kindness in private, is obliged in _____ to be uncompassionate and even _____ on behalf of his employer, the harsh lawyer Jagers.
A) principle .. contradictory
B) conclusion .. careless
C) theory .. esoteric
D) public .. ruthless
55. In a survey, many parents who wish to _____ virtues such as family togetherness reported that they prefer television shows about the daily lives of closely knit families to those _____ violent conflicts and adventures.
A) foster .. rejecting
B) dispute .. satirizing
C) identify .. criticizing
D) promote .. depicting
56. The unexpected _____ of this movie by an obscure Mexican filmmaker illustrates the _____ of success in the motion picture industry.
A) failure .. potential
B) release .. vagaries
C) profitability .. ease
D) popularity .. unpredictability
57. The two sisters selflessly dedicated their lives to the nursing profession; their _____ made them _____, ones whose ways are worthy of imitation.
A) aptitude .. eccentrics
B) erudition .. enigmas
C) devotion .. egotists
D) altruism .. exemplars
58. The spotted bowerbird has a _____ for amassing the bright shiny objects it needs for decorating its bower: it will enter houses to _____ cutlery, coins, thimbles, nails, screws, even car keys.
A) knack .. assess
B) purpose .. dispense
C) remedy .. raid
D) penchant .. pilfer

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59. The incompetent judge conducted the hearing in so _____ a manner that the entire proceeding was considered a _____, an insult to the standards of the judicial system.
- A) surreptitious .. triumph
 - B) negligent .. travesty
 - C) exacting .. spectacle
 - D) astute .. debacle
60. The officers threatened to take _____ if the lives of their men were _____ by the conquered natives.
- A) reprisals .. endangered
 - B) affront .. enervated
 - C) measures .. enhanced
 - D) pains .. destroyed
61. Andrew's hunch that Ms. Smith would lose the election was _____ when her opponent won in a landslide, proving Andrew's _____ to be correct.
- A) belied .. retraction
 - B) confirmed .. intuition
 - C) rejected .. insolence
 - D) substantiated .. endorsement

Reading Comprehension

Isadora Duncan, from My Life So Far, 1927

Line I confess that when it was first proposed to me I
had a terror of writing this book. Not that my life
has not been more interesting than any novel and
more adventurous than any cinema and, if really
5 well written, would not be an epoch-making
recital, but there's the rub—the writing of it!

It has taken me years of struggle, hard work and
research to learn to make one simple gesture, and
10 I know enough about the Art of writing to realize
that it would take me again just so many years of
concentrated effort to write one simple, beautiful
sentence. How often have I contended that
although one man might toil to the Equator and
15 have tremendous exploits with lions and tigers,
and try to write about it, yet fail, whereas
another, who never left his verandah, might write
of the killing of tigers in their jungles in a way to
make his readers feel that he was actually there,
20 until they can suffer his agony and apprehension,
smell lions and hear the fearful approach of the
rattle-snake. Nothing seems to exist save in the
imagination, and all the marvelous things that
have happened to me may lose their savor
25 because I do not possess the pen of a Cervantes
or even of a Casanova.

Then another thing. How can we write the truth
about ourselves? Do we even know it? There is
30 the vision our friends have of us; the vision we
have of ourselves, and the vision our lover has of
us. Also the vision our enemies have of us—and
all these visions are different. I have good reason
to know this, because I have had served to me
35 with my morning coffee newspaper criticisms
that declared I was beautiful as a goddess, and
that I was a genius, and hardly had I finished
smiling contentedly over this, than I picked up
the next paper and read that I was without any
40 talent, badly shaped and a perfect harpy.

45 I soon gave up reading criticisms of my work. I
could not stipulate that I should only be given
the good ones, and the bad were too depressing
and provocatively homicidal. There was a critic in
Berlin who pursued me with insults. Among
other things he said that I was profoundly
unmusical. One day I wrote imploring him to
come and see me and I would convince him of
his errors. He came and as he sat there, across
the tea-table, I harangued him for an hour and a
half about my theories of visional movement
created from music. I noticed that he seemed
most prosaic and stolid, but what was my
uproarious dismay when he produced from his
pocket a deafaphone and informed me he was
quite deaf and even with his instrument could
hardly hear the orchestra; although he sat in the
first row of the stalls! This was the man whose
views on myself had kept me awake at night!

So, if at each point of view others see in us a
different person how are we to find in ourselves
yet another personality of whom to write in this
book? Is it to be the Chaste Madonna, or the
Messalina, or the Magdalen, or the Blue
Stocking? Where can I find the woman of all
these adventures? It seems to me there was not
one, but hundreds—and my soul soaring aloft,
not really affected by any of them.

62. In the second paragraph, Duncan expresses
the anxiety that:

- A) Her writing will not be engaging
- B) Her writing will not do her experiences justice
- C) She will not be able to convey truth through her writing
- D) Her fear that writing beautifully will take too long

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63. The lines which best support the correct answer to the previous question are:
- A) [8-13] "It has...sentence"
 - B) [13-22] "How often...rattle-snake"
 - C) [22-26] "Nothing seems...Casanova"
 - D) [28-29] "How can...it?"
64. Duncan's purpose in describing different "visions" of herself in the third paragraph is to:
- A) Question the idea that there is a correct vision of oneself
 - B) Describe the pain of reading criticisms of her work
 - C) Demonstrate that she is confused about who she is
 - D) Contrast the opinion of her lover with that of her critics
65. "Uproarious" in [55] most nearly means:
- A) Furious
 - B) Riotous
 - C) Spiteful
 - D) Despondent
66. Duncan included the story about the critic from Berlin to:
- A) Lend her autobiography comedic relief
 - B) Shame the critic for his rash judgements
 - C) Explain her foolish need to be universally admired
 - D) Explain why she no longer reads her critics
67. Based on the passage, which of the following would Duncan be most likely to agree with?
- A) Because there are such a variety of opinions and perceptions, writing can never convey real truth
 - B) Writers, unlike other people, have many personalities
 - C) The self is a static and consistent entity
 - D) The self is a constantly changing and shifting entity

Reading Comprehension

"The Unreasonable Effectiveness of Mathematics in the Natural Sciences," by Eugene Wigner (1960).

Line The physicist is interested in discovering the laws of inanimate nature. In order to understand this statement, it is necessary to analyze the concept, "law of nature."

5 The world around us is of baffling complexity and the most obvious fact about it is that we cannot predict the future. Although the joke attributes only to the optimist the view that the

10 future is uncertain, the optimist is right in this case: the future is unpredictable. It is, as Schrodinger has remarked, a miracle that in spite of the baffling complexity of the world, certain regularities in the events could be discovered.

15 One such regularity, discovered by Galileo, is that two rocks, dropped at the same time from the same height, reach the ground at the same time. The laws of nature are concerned with such regularities. Galileo's regularity is a prototype of a

20 large class of regularities. It is a surprising regularity for three reasons.

The first reason that it is surprising is that it is true not only in Pisa, and in Galileo's time, it is

25 true everywhere on the Earth, was always true, and will always be true. This property of the regularity is a recognized invariance property and, as I had occasion to point out some time ago, without invariance principles similar to those

30 implied in the preceding generalization of Galileo's observation, physics would not be possible. The second surprising feature is that the regularity which we are discussing is independent

35 of so many conditions which could have an effect on it. It is valid no matter whether it rains or not, whether the experiment is carried out in a room or from the Leaning Tower, no matter whether the person who drops the rocks is a man

40 or a woman. It is valid even if the two rocks are dropped, simultaneously and from the same

height, by two different people. There are, obviously, innumerable other conditions which are all immaterial from the point of view of the validity of Galileo's regularity. The irrelevancy of so many circumstances which could play a role in the phenomenon observed has also been called an invariance. However, this invariance is of a different character from the preceding one since it cannot be formulated as a general principle.

45 The exploration of the conditions which do, and which do not, influence a phenomenon is part of the early experimental exploration of a field. It is the skill and ingenuity of the experimenter which show him phenomena which depend on a relatively narrow set of relatively easily realizable and reproducible conditions. In the present case, Galileo's restriction of his observations to relatively heavy bodies was the most important step in this regard. Again, it is true that if there were no phenomena which are independent of all but a manageably small set of conditions, physics would be impossible.

The preceding two points, though highly significant from the point of view of the philosopher, are not the ones which surprised Galileo most, nor do they contain a specific law of nature. The law of nature is contained in the statement that the length of time which it takes for a heavy object to fall from a given height is independent of the size, material, and shape of the body which drops. In the framework of Newton's second "law," this amounts to the statement that the gravitational force which acts on the falling body is proportional to its mass but independent of the size, material, and shape of the body which falls.

The preceding discussion is intended to remind us, first, that it is not at all natural that "laws of nature" exist, much less that man is able to discover them. The present writer had occasion, some time ago, to call attention to the succession of layers of "laws of nature," each layer containing more general and more encompassing laws than the previous one and its discovery constituting a deeper penetration into the

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- structure of the universe than the layers recognized before. However, the point which is most significant in the present context is that all these laws of nature contain, in even their remotest consequences, only a small part of our knowledge of the inanimate world. All the laws of nature are conditional statements which permit a prediction of some future events on the basis of the knowledge of the present, except that some aspects of the present state of the world, in practice the overwhelming majority of the determinants of the present state of the world, are irrelevant from the point of view of the prediction. The irrelevancy is meant in the sense of the second point in the discussion of Galileo's theorem.
- As regards the present state of the world, such as the existence of the earth on which we live and on which Galileo's experiments were performed, the existence of the sun and of all our surroundings, the laws of nature are entirely silent. It is in consonance with this, first, that the laws of nature can be used to predict future events only under exceptional circumstances when all the relevant determinants of the present state of the world are known. It is also in consonance with this that the construction of machines, the functioning of which he can foresee, constitutes the most spectacular accomplishment of the physicist. In these machines, the physicist creates a situation in which all the relevant coordinates are known so that the behavior of the machine can be predicted. Radars and nuclear reactors are examples of such machines.
- The principal purpose of the preceding discussion is to point out that the laws of nature are all conditional statements and they relate only to a very small part of our knowledge of the world. Thus, classical mechanics, which is the best known prototype of a physical theory, gives the second derivatives of the positional coordinates of all bodies, on the basis of the knowledge of the positions, etc., of these bodies. It gives no information on the existence, the present positions, or velocities of these bodies. It should be mentioned, for the sake of accuracy, that we discovered about thirty years ago that even the conditional statements cannot be entirely precise: that the conditional statements are probability laws which enable us only to place intelligent bets on future properties of the inanimate world, based on the knowledge of the present state. They do not allow us to make categorical statements, not even categorical statements conditional on the present state of the world. The probabilistic nature of the "laws of nature" manifests itself in the case of machines also, and can be verified, at least in the case of nuclear reactors, if one runs them at very low power. However, the additional limitation of the scope of the laws of nature which follows from their probabilistic nature will play no role in the rest of the discussion.
68. According to the author, natural laws pertain to:
- A) laws that have never been legislated
 - B) unpredictable events
 - C) extraordinary manifestations
 - D) universal regularities in nature
69. What does Wigner mean by "conditional statements" [94]?
- A) Propositions that may be influenced by an unlimited variety of external circumstances
 - B) Theories which express in mathematical terms the probabilistic outcome of a specified set of interacting forces, ignoring all irrelevant variables
 - C) Lengthy chains of reasoning
 - D) Simple (i.e. binary) representations of physical reality which actually embrace all possible outcomes of a particular scenario

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70. One may reasonably infer from this passage that "laws of nature":
- A) are only artificial mental constructs
 - B) can easily be deduced by careful observation of natural phenomena
 - C) are not applicable to "Black Swan" events
 - D) have a surprisingly limited range of application
71. What does the author regard as the greatest achievement of physicists?
- A) The understanding and formulation of "laws of nature"
 - B) The massive public funding of such massive enterprises as the Manhattan Project
 - C) The design and building of machines which can reliably perform certain kinds of work
 - D) The prediction and discovery of such phenomena as black holes and dark energy
72. The purpose of the second paragraph [6-21] is to:
- A) Make a joke about optimists.
 - B) Claim that Galileo's theory can be disproved.
 - C) Introduce one of Galileo's theories and claim that it is a surprising discovery.
 - D) Assert the idea that most things in the world happen by chance.
73. Two reasons Wigner offers in the third paragraph [23-62] to support his claims are:
- A) Galileo's theory is only true under certain circumstances; external forces can change the outcome.
 - B) There are no exceptions to Galileo's laws of nature; external forces are irrelevant.
 - C) Invariances in the theory can be generalized; Galileo limited his observations to heavy objects.
 - D) Invariance principles are irrelevant to physics; Galileo's theory is the same in every country.
74. In [110] and [115], "consonance" means:
- A) Agreement
 - B) Discord
 - C) Incompatibility
 - D) Congeniality
75. What reasons does Wigner give to support his assertion about the greatest achievement of physicists?
- A) Physicists use all known laws of nature to design and predict the consistent behavior of machines.
 - B) Physicists base their achievements on Galileo's theories.
 - C) Because of the predictable nature of Galileo's theories, physicists are able to build complex machines.
 - D) Physicists build machines that are unconditionally predictable.
76. The best evidence for the answer to the previous question can be found in:
- A) [105-110] "As regards...silent."
 - B) [114-118] "It is...physicist."
 - C) [118-122] "In these...predicted."
 - D) [129-133] "Thus, classical...bodies."
77. [79-82] ("The preceding...them.") is an example of:
- A) Allegory
 - B) Metaphor
 - C) Euphemism
 - D) Oxymoron
78. Wigner suggests that scientists like Galileo would not share the same point of view as:
- A) Physicists
 - B) Mathematicians
 - C) Authors
 - D) Philosophers

Answer Key

Sentence Completion

- 1. C
- 2. B
- 3. C
- 4. A
- 5. D
- 6. C
- 7. B
masticate: chew
- 8. A
- 9. C
- 10. B
egocentric: boastful;
self-centered
- 11. A
- 12. B
- 13. A
- 14. D
- 15. C
- 16. B
- 17. D
- 18. D
- 19. D
- 20. B

Reading Comprehension

- 21. C
 - 22. A
 - 23. D
 - 24. B
 - 25. D
 - 26. A
 - 27. D
 - 28. D
 - 29. C
 - 30. B
 - 31. A
- Reading Comprehension**
- 32. B
 - 33. D
 - 34. B
 - 35. B
 - 36. A

- 37. A
- 38. C
- 39. C
- 40. D
- 41. D

Sentence Completion

- 42. B
- 43. B
- 44. A
- 45. A
- 46. D
- 47. B
- 48. A
- 49. D
- 50. A
- 51. B
- 52. B
- 53. C
- 54. D
- 55. D
- 56. D
- 57. D
- 58. D
- 59. B

Reading Comprehension

- 60. A
- 61. B
- 62. B
- 63. C
- 64. A
- 65. B
- 66. D
- 67. D

Reading Comprehension

- 68. D
- 69. B
- 70. D
- 71. C
- 72. C
- 73. B
- 74. A
- 75. A

- 76. C
- 77. D
- 78. D