1

Reading Test

65 MINUTES, 52 QUESTIONS

Turn to Section 1 of your answer sheet to answer the questions in this section.

DIRECTIONS

Each passage or pair of passages below is followed by a number of questions. After reading each passage or pair, choose the best answer to each question based on what is stated or implied in the passage or passages and in any accompanying graphics (such as a table or graph).

Questions 1-10 are based on the following passage.

This passage is adapted from Edith Wharton, "*Mrs. Mansley's View*." Originally published in 1891.

Mrs. Manstey, in the long hours which she spent at her window, was not idle. She read a little, and knitted numberless stockings; but the view surrounded and shaped her life as the sea does a lonely island. When her rare callers came it was difficult for her to detach herself from the contemplation of the opposite window-washing, or the scrutiny of certain green points in a neighboring flower-bed which might, or might not, turn into hyacinths, while she feigned an interest in her visitor's anecdotes about some unknown grandchild. Mrs. Manstey's real friends were the denizens of the yards, the hyacinths, the magnolia, the green parrot, the maid who fed the cats, the doctor who studied late behind his mustard-colored curtains; and the confidant of her tenderer musings was the church-spire floating in the sunset.

One April day, as she sat in her usual place, with knitting cast aside and eyes fixed on the blue sky mottled with round clouds, a knock at the door announced the entrance of her landlady. Mrs. Manstey did not care for her landlady, but she submitted to her visits with ladylike resignation. To-day, however, it seemed harder than usual to turn from the blue sky and the blossoming magnolia to Mrs. Sampson's unsuggestive face, and Mrs.Manstey was conscious of a distinct effort as she did so.

"The magnolia is out earlier than usual this year, Mrs. Sampson," she remarked, yielding to a rare impulse, for she seldom alluded to the absorbing interest of her life. In the first place it was a topic not likely to appeal to her visitors and, besides, she lacked the power of expression and could not have given utterance to her feelings had she wished to.

"The what, Mrs. Manstey?" inquired the landlady, glancing about the room as if to find there the explanation of Mrs. Manstey's statement.

"The magnolia in the next yard -- in Mrs. Black's yard," Mrs. Manstey repeated.

"Is it, indeed? I didn't know there was a magnolia there," said Mrs. Sampson, carelessly. Mrs. Manstey looked at her; she did not know that there was a magnolia in the next yard!

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"By the way," Mrs. Sampson continued, "speaking of Mrs. Black reminds me that the work on the extension is to begin next week."

"The what?" it was Mrs. Manstey's turn to ask.

"The extension," said Mrs. Sampson, nodding her head in the direction of the ignored magnolia. "You an extension to her house? Yes, ma'am. I hear it is to run right back to the end of the yard. How she can afford to build an extension in these hard times I don't see; but she always was crazy about building. She used to keep a boarding-house in Seventeenth Street, and she nearly ruined herself then by sticking out bow-windows and what not. Anyhow, the work is to begin on Monday."

Mrs. Manstey had grown pale. She always spoke slowly, so the landlady did not heed the long pause which followed. At last Mrs. Manstey said: "Do you know how high the extension will be?"

"That's the most absurd part of it. The extension is to be built right up to the roof of the main building; now, did you ever?"

"Mrs. Manstey paused again. "Won't it be a great annoyance to you, Mrs. Sampson?" she asked.

"I should say it would. But there's no help for it; if people have got a mind to build extensions there's no law to prevent 'em, that I'm aware of." Mrs. Manstey, knowing this, was silent. "There is no help for it," Mrs. Sampson repeated, "Well, good-day, Mrs. Manstey; I'm glad to find you so comfortable."

So comfortable -- so comfortable! Left to herself the old woman turned once more to the window. How lovely the view was that day! The blue sky with its round clouds shed a brightness over everything; the ailanthus had put on a tinge of yellow-green, the hyacinths were budding, the magnolia flowers looked more than ever like rosettes carved in alabaster. Soon the wistaria would bloom, then the horse-chestnut; but not for her. Between her eyes and them a barrier of brick and mortar would swiftly rise; presently even the spire would disappear, and all her radiant world be blotted out.

1

As used in line 2, "idle" most nearly means

A) indifferent.

B) unoccupied.

C) superficial.

D) lethargic.

2

At line 18, the focus of the passage shifts from

A) a portrayal of the main character's daily routine to an explanation of why that routine is important to her.

B) a general description of the main character to a sustained narration of an episode in her life.

C) an overview of a dilemma faced by the main character to a portrayal of her reaction to that dilemma.

D) a discussion of the main character's pastimes to a description of her attempts to develop a new one.

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3

The exchange between Mrs. Manstey and Mrs. Sampson regarding the magnolia (lines 28-44) serves primarily to

A) distinguish between the true significance of an event and the significance that Mrs. Manstey assigns to that event.

B) dramatize the contrasting ways in which Mrs. Manstey and Mrs. Sampson address a sensitive issue.

C) illustrate the marked divergence in the attitudes of Mrs. Manstey and Mrs. Sampson toward their immediate surroundings.

D) highlight a realization that Mrs. Manstey has regarding a point of contention between her and Mrs. Sampson.

4

As used in line 31, "absorbing" most nearly means

A) relaxing.

B) amusing.

C) engaging.

D) transforming.

5

In the passage, Mrs. Sampson announces that which change will occur next door?

A) A neighbor will expand her house.

B) A neighbor will tear down a building.

C) A neighbor will sell a portion of her property.

D) A neighbor will begin taking in boarders.

6

In the context of the passage, lines 60-62 ("Mrs. Manstey … followed") serve mainly to

A) compare Mrs. Sampson's receptiveness to a discovery with Mrs. Manstey's aversion to it.

B) indicate the strength of the impression that a piece of news makes on Mrs. Manstey.

C) imply that Mrs. Manstey's misinterpretation of an announcement goes unnoticed by Mrs. Sampson.

D) dramatize Mrs. Manstey's unwillingness to discuss a personal matter.

7

Based on the passage, the attitude of Mrs. Sampson toward Mrs. Black's extension is best described as one of

A) growing anger.

B) willful denial.

C) stoical acceptance.

D) sober satisfaction.

8

Which choice provide the best evidence for the answer to the previous question?

A) Lines 45-47 ("By the … week")

B) Lines 49-52 ("The extension … house")

C) Lines 53-55 ("How she … building")

D) Lines 69-71 ("But there's … aware of")

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9

Based on the passage, which choice best describes Mrs. Manstey's reaction to Mrs. Black's plans?

A) She feels that the life she has constructed for herself is about to come to an end.

B) She takes comfort in the fact that she can still find solace in nature.

C) She regrets that she did not express her opposition to the plans more forcefully.

D) She resolves to address the difficulties that the plans will impose on her.

10

Which choice provides the best evidence for the answer to the previous question?

A) Lines 67-68 ("Mrs. Manstey … asked")

B) Lines 75-77 ("Left … day")

C) Lines 77-81 ("The blue … alabaster")

D) Lines 83-86 ("Between … out")

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Questions 11-21 are based on the following passage.

This passage is adapted from a speech delivered in 1906 by President Theodore Roosevelt, "*The Man with the Muck Rake*."

In [the novel] *Pilgrim's Progress* the Man with the Muck Rake is set forth as the example of him whose vision is fixed on carnal instead of spiritual things. Yet he also typifies the man who in this life consistently refuses to see aught that is lofty, and fixes his eyes with solemn intentness only on that which is vile and debasing. Now, it is very necessary that we should not flinch from seeing what is vile and debasing. There is filth on the floor, and it must be scraped up with the muck rake; and there are times and places where this service is the most needed of all the services that can be performed. But the man who never does anything else, who never thinks or speaks or writes, save of his feats with the muck rake, speedily becomes, not a help ... but one of the most potent forces for evil.

There are in the body politic, economic and social, many and grave evils, and there is urgent necessity for the sternest war upon them. There should be relentless exposure of and attack upon every evil man, whether politician or business man, every evil practice, whether in politics, business, or social life. I hail as a benefactor every writer or speaker, every man who, on the platform or in a book, magazine, or newspaper, with merciless severity makes such attack, provided always that he in his turn remembers that the attack is of use only if it is absolutely truthful. The liar is no whit better than the thief, and if his mendacity takes the form of slander he may be worse than most thieves. It puts a premium upon knavery untruthfully to attack an honest man, or even with hysterical exaggeration to assail a bad man with untruth. An epidemic of indiscriminate assault upon character does no good, but very great harm. The soul of every scoundrel is gladdened whenever an honest man is assailed, or even when a scoundrel is untruthfully assailed.

Now, it is easy to twist out of shape what I have just said, easy to affect to misunderstand it, and if it is slurred over in repetition not difficult really to misunderstand it. Some persons are sincerely incapable of understanding that to denounce mud slinging does not mean the endorsement of whitewashing; and both the interested individuals who need whitewashing and those others who practice mud slinging like to encourage such confusion of ideas. One of the chief counts against those who make indiscriminate assault upon men in business or men in public life is that they invite a reaction which is sure to tell powerfully in favor of the unscrupulous scoundrel who really ought to be attacked, who ought to be exposed, who ought, if possible, to be put in the penitentiary…

Any excess is almost sure to invite a reaction; and, unfortunately, the reactions instead of taking the form of punishment of those guilty of the excess, is very apt to take the form either of punishment of the

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unoffending or of giving immunity, and even strength, to offenders. The effort to make financial or political profit out of the destruction of character can only result in public calamity. Gross and reckless assaults on character, whether on the stump or in newspaper, magazine, or book, create a morbid and vicious public sentiment, and at the same time act as a profound deterrent to able men of normal sensitiveness and tend to prevent them from entering the public service at any price.

As an instance in point, I may mention that one serious difficulty encountered in getting the right type of men to dig the Panama canal is the certainty that they will be exposed, both without, and, I am sorry to say, sometimes within, Congress, to utterly reckless assaults on their character and capacity.

At the risk of repetition let me say again that my plea is not for immunity to, but for the most unsparing exposure of, the politician who betrays his trust, of the big business man who makes or spends his fortune in illegitimate or corrupt ways. There should be a resolute effort to hunt every such man out of the position he has disgraced. Expose the crime, and hunt down the criminal; but remember that even in the case of crime, if it is attacked in sensational, lurid, and untruthful fashion, the attack may do more damage to the public mind than the crime itself.

11

The primary purpose of the passage is to

A) describe and analyze alarming discovery.

B) identify and denounce a harmful practice.

C) solicit support for a political initiative.

D) praise those who seek to reveal social ills.

12

Which choice best states the central claim of the passage?

A) Efforts to expose corruption are valuable only when conducted truthfully and responsibly.

B) Measures to protect those unjustly accused of wrongdoing are urgently needed.

C) Addressing complex social problems is crucial to a successful presidency.

D) Criticizing the manner in which scandals are disclosed serves to protect the guilty.

13

Roosevelt mentions the figure of the Man with the Muck Rake primarily in order to

A) point out that social problems can be difficult to identify.

B) emphasize that spiritual matters are often neglected.

C) describe a fault that he perceives in social criticism.

D) present one pitfall of public service that he believes to be inevitable.

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14

As used in line 11, "service" most nearly means

A) facility.

B) combat.

C) ceremony.

D) work.

15

What main effect does the repetition of the word "every" in lines 21 and 22 have on the presentation of Roosevelt's argument?

A) It emphasizes the point that all wrongdoing should be condemned.

B) It suggests a wish to appeal to the widest possible audience.

C) It reinforces the notion that certain people are more likely than others to be involved in scandals.

D) It conveys the sense that evil deeds have become widespread in the modern world.

16

Based on the passage, Roosevelt would be most likely to object to which of the following approaches to journalistic coverage of a scandal?

A) Including incriminating photographs of the accused

B) Distorting certain details to heighten the effect of the story

C) Presenting technical information that fails to clarify a complex procedure

D) Exposing criminal acts that are committed with good intentions

17

Which choice provides the best evidence for the answer to the previous question?

A) Lines 12-16 ("But the … evil")

B) Lines 17-19 ("There are … them")

C) Lines 19-23 ("There should … life")

D) Lines 23-28 ("I hail … truthful")

18

Based on the passage, Roosevelt believes that his argument about efforts to expose wrongdoing is subject to which risk?

A) Deliberate misrepresentation by corrupt public figures and journalists

B) Unintentional misinterpretation by aspiring government employees

C) Unauthorized publication for financial profit

D) Unwanted endorsement by convicted criminals

19

Which choice provides the best evidence for the answer to the previous question?

A) Lines 30-33 ("It puts … untruth")

B) Lines 33-35 ("An epidemic … harm")

C) Lines 44-47 ("and both … ideas")

D) Lines 55-59 ("and, unfortunately … offenders")

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In the passage, Roosevelt makes which assumption about social critics' relationship to society?

A) They are immune to political pressure.

B) They are capable of using their influence to shape public opinion.

C) They are responsible for ensuring the prosecution of guilty officials.

D) They are unable to investigate rumors of wrongdoing properly.

21

In the context of the passage as a whole, the last paragraph serves mainly to

A) offer an alternative solution to the problems under discussion.

B) introduce a personal note of doubt regarding the the practicality of the argument.

C) restate an important distinction in anticipation of a potential point of confusion.

D) analyze and ultimately dismiss a possible shortcoming of the overall analysis.

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Questions 22-31 are based on the following passages.

Passage 1 is adapted from Tracey Peake, "*Pigment or Bacteria? Researchers Re-examine the Idea of "Color" in Fossil Feathers.*" ©2014 by North Carolina State University.

Passage 2 is adapted from Sarah Fecht. "*The True Colors of Ancient Reptiles Revealed.*" ©2014 by Hearst Communications, Inc.

Passage 1

Paleontologists studying fossilized feathers have proposed that the shapes of certain microscopic structures inside the feathers can tell us the color of ancient birds. But new research demonstrates that it is not yet possible to tell if these structures – thought to be melanosomes – are what they seem, or if they they are merely the remnants of ancient bacteria.

Melanosomes are small, pigment-filled sacs located inside the cells of feathers and other pigmented tissues of vertebrates. They contain melanin, which can give feathers colors ranging from brownish-red to gray to solid black. Melanosomes are either oblong or round in shape, and the identification of these small bodies in preserved feathers has led to speculation about the physiology, habitats, coloration and lifestyles of the extinct animals, including dinosaurs, that once possessed them.

But melanosomes are not the only round and oblong microscopic structures that might show up in fossilized feathers. In fact, the microbes that drove the decomposition of the animal prior to fossilization share the same size and shape as melanosomes, and they would also be present in feathers during decay.

Alison Moyer of North Carolina State University wanted to find out whether these structures could be definitively identified as either melanosome or microbe. Using black and brown chicken feathers – chickens are one of the closest living relatives to both dinosaurs and ancient birds – Moyer grew bacteria over them to replicate what we see in the fossil record. She used three different types of microscopy to examine the patterns of biofilm growth, and then compared those structures to melanosomes inside of chicken feathers that she had sliced open. Finally, she compared both microbes and actual melanosomes to structures in a fossilized feather from *Gansus yumenensis*, an avian dinosaur that lived about 120 million years ago, and to published images of fossil "melanosomes" by others. Her findings led to more questions.

"These structures could be original to the bird, or they could be a biofilm which has grown over and degraded the feather – if the latter, they would also produce round or elongated structures that are not melanosomes," Moyer says. It's impossible to say with certainty what these structures are without more data, including fine scale chemical data."

Passage 2

Lots of fossils are outlined or shellacked with a mysterious dark deposit. For a long time, scientists

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couldn't be sure what the material was or where it came from. Under the microscope, the material housed tiny egg-shaped structures that looked like melanosomes—the cell organelles that secrete pigments into an animal's skin. Other scientists thought the structures might be bacteria.

By studying the molecular composition of the pigments, Johan Lindgren of Lund University and his team not only concluded that the deposits are pigment remains, but also determined what those pigments were. They say that three fossilized marine reptiles they studied—a 190-million-year-old ichthyosaur, an 86-million-year-old mosasaur, and a 55-million-year-old leatherback turtle—probably had blackish skin like the modern-day leatherback turtle.

Previous studies relied on a visual identification of those egg-shaped melanosomes. Lindgren's team went a step further by analyzing the chemistry of the structures and pigments in the samples. The molecule that causes black coloring, called eumelanin, had degraded over time but remained largely intact. It was enough to provide the first unequivocal evidence of pigmentation in the skin of a fossilized animal, says Maria McNamara of the University of Bristol, who was not involved in the study.

To identify the dark deposits, Lindgren's team fired a beam of ions at samples of the material. The ions broke up the material and sent fragments flying into a detector, which analyzed their chemical composition and confirmed that the dark deposits were eumelanin. Under the microscope, Lindgren's team showed that concentrations of eumelanin peaked in areas with the highest density of the tiny egg-shaped structures—suggesting the structures were indeed melanosomes, not bacterial cells.

Most studies up to now have tried to learn the coloration of ancient organisms by studying fossilized feathers, because feathers are tougher and more resistant to decay and their melanosomes are more densely packed than in skin. Lindgren's study opens the door to reconstruct coloration in a wider range of species, including nonfeathered dinosaurs.

22

As used in line 21, "drove" most nearly means

A) chased.

B) prodded.

C) caused.

D) transported.

23

It can most reasonably be inferred from Passage 1 that Moyer's study involved chicken feathers in part because

A) conclusions drawn from research on chicken feather pigmentation might inform understanding of the pigmentation of avian dinosaurs.

B) chicken feathers are resistant to the growth of the kind of bacteria that hampers research on melanosomes.

C) melanosomes deriving from chicken feathers are more stable and easier to identify than melanosomes present in other kinds of tissue.

D) successful study of the pigmentation of chicken feathers is well documented in various scientific publications.

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24

Which choice provides the best evidence for the answer to the previous question?

A) Lines 1-4 ("Paleontologists … birds")

B) Lines 12-18 ("Melanosomes … them")

C Lines 28-32 ("Using … record")

D) Lines 35-40 ("Finally … others")

25

As used in line 60, "determined" most nearly means

A) restricted.

B) regulated.

C) established.

D) arbitrated.

26

Based on Passage 2, McNamara most likely considers the results of Lindgren's team's study, described in the third paragraph (lines 66-70), to be

A) doubtful and misleading.

B) clear and persuasive.

C) trivial and unreliable.

D) promising and unexpected.

27

As presented in Passage 2, which finding provided the most convincing evidence that the egg-shaped structures found in the fossils of the marine reptiles are probably the remains of melanosomes?

A) The fact that the egg-shaped structures remained largely undamaged

B) The presence of the egg-shaped structures in reptile fossils of various ages

C) The dark appearance of the egg-shaped structures

D) The high concentrations of eumelanin near the egg-shaped structures

28

One of the main purposes of both Passage 1 and Passage 2 is to

A) report on the methods and findings of specific laboratory observations.

B) provide a broad survey of recent developments in micropaleontology.

C) dispute a long-standing assumption about dinosaur anatomy.

D) argue that science benefits from the adoption of new technologies.

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29

Moyer (Passage 1) and Lindgren's team (Passage 2) would most likely agree that dinosaur coloration

A) cannot be reconstructed, since soft tissue degrades over time.

B) could plausibly be deduced from the remains of certain microscopic structures.

C) was limited to certain shades, ranging from black to brown.

D) is unlikely to have left identifiable traces in fossilized skin.

30

Which choice best describes a particular relationship between Moyer's study (Passage 1) and the study by Lindgren's team (Passage 2)?

A) Moyer identifies a need for chemical analysis, which Lindgren's team supplies.

B) The members of Lindgren's team use Moyer's study as the basis for their research.

C) Moyer reaches a preliminary conclusion, which the results of the study by Lindgren's team challenge.

D) Lindgren's team questions the appropriateness of Moyer's methodology for research on the topic of fossil pigmentation.

31

Which statement from Passage 2 best describes an important feature of the research methodology that Moyer (Passage 1) uses?

A) Lines 49-50 ("Lots … deposit")

B) Lines 55-56 ("Other … bacteria")

C) Lines 66-67 ("Previous … melanosomes")

D) Lines 79-82 ("The ions … eumelanin")

1

Questions 32-41 are based on the following passage and supplementary material.

This passage is adapted from Francesca Gino, "*The Surprising Benefits of Sarcasm*."©2016 by Scientific American, a Division of Nature America, Inc.

Sarcasm involves constructing or exposing contradictions between intended meanings. It is the most common form of verbal irony -- that is, allowing people to say exactly what they do not mean. Often we use it to humorously convey disapproval or scorn. "Pat, don't work so hard!" a boss might say, for example, on catching his assistant surfing the Web.

And yet behavioral scientists Li Huang of INSEAD business school, Adam D. Galinsky of Columbia University and I have found that sarcasm may also offer an unexpected psychological payoff: greater creativity. The use of sarcasm, in fact, appears to promote creativity for those on both the giving and receiving end of the exchange. Instead of avoiding snarky remarks completely, our research suggests that, used with care and in moderation, clever quips can trigger creative sparks.

Early research into how people interpret sarcastic statements revealed, as one might expect, that most perceive such comments as critical compared with more direct utterances. In one study, published in 1997, 32 participants read scenarios in which, for instance, one person did something that could be viewed negatively, and a second person commented on the behavior to the first person, either literally or sarcastically. Consistently, participants rated sarcasm to be more condemning than literal statements.

And sarcasm can be easily misinterpreted, particularly when it is communicated electronically, according to a 2005 study by Jason Parker and Zhi-Wen Ng of the University of Illinois at Urbana-Champaign. They gave 30 pairs of university students a list of statements, half of which were sarcastic and half serious. Some students relayed messages via e-mail and others via voice recordings. Participants who received the voice messages accurately gleaned the sarcasm (or lack thereof) 73 percent of the time, but those who received the statement via e-mail did so only 56 percent of the time, hardly better than chance.

The e-mailers had anticipated that 78 percent of the participants would pick up on the sarcasm inherent in their messages. That is, they badly overestimated their ability to communicate the tenor of these statements via e-mail. And the recipients of the sarcastic e-mails were even more overconfident. They guessed they would correctly interpret the tone of the e-mail messages about 90 percent of the time.

In 2015 my colleagues and I discovered an upside to this otherwise negative picture of sarcasm. In one study, we asked 56 participants to choose a script that was sarcastic, sincere or neutral and then engage in simulated conversation with another subject, who was unaware of the script.

Immediately after our participants enacted the dialogue, we presented them with tasks testing their

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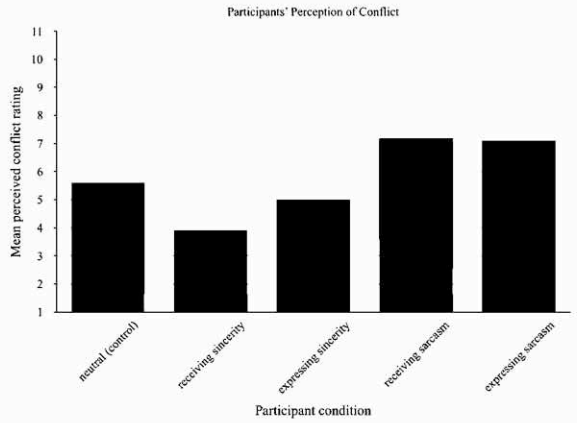
creativity. For instance, they had to think of a word that was logically linked to a set of three provided words (for example, "manners," "round" and "tenns" linked to "table"). We also presented them with a short questionnaire about their perceived sense of conflict during the conversation.

Not surprisingly, the participants exposed to sarcasm reported more interpersonal conflict than those in other groups. More interestingly, those pairs who had engaged in a sarcastic conversation fared better on the creativity tasks. This effect emerged for both the deliverer and recipient in the simulated conversation but only when the recipient had picked up on the sarcasm in the script.

Why might verbal irony enhance creativity? Sarcasm's challenge is that the message sounds serious but should not be taken literally. One way to over come this is through tone -- as when exaggerated speech indicates the facetiousness of a message. We need to think outside the box to generate and decipher ironic comments.



Adapted from Li Huang, Francesca Gino, and Adam D. Galinsky "The highest Form of Intelligence: Sarcasm Increases Creativity For Both expressers and Recipients." ©2015 by Elsevier Inc.

32

According to the passage, a common use of sarcasm is to

A) provide amusing anecdotes.

B) support alternative viewpoints.

C) express uncomfortable emotions.

D) communicate negative feedback.

33

As used in the passage, which word is most similar in meaning to "serious" (line 34)?

A) "unexpected" (line 11)

B) "creative" (line 17)

C) "direct" (line 21)

D) "overconfident" (line 47)

34

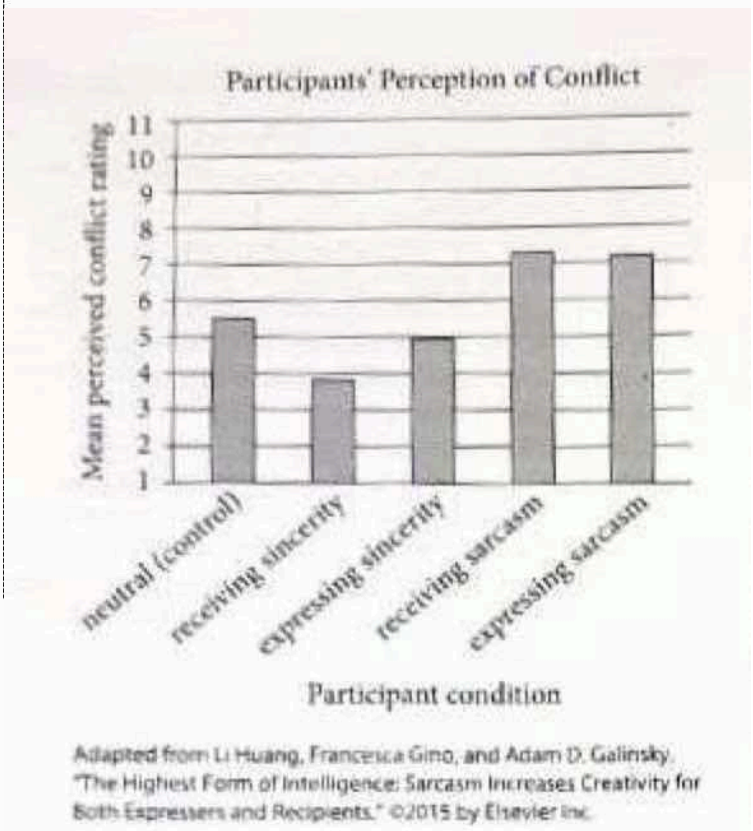
As used in line 43, "badly" most nearly means

A) severely.

B) inadequately.

C) unfavorably.

D) regretfully.



Adapted from Li Huang, Francesca Gino, and Adam D. Galinsky. "The Highest Form of Intelligence: Sarcasm Increases Creativity for Both Expressers and Recipients." ©2015 by Elsevier Inc.

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35

The passage suggests that before the author's research, the "negative picture of sarcasm" (line 51) emerged because sarcasm can

A) emphasize people's differences rather than their similarities.

B) obscure the actual intention of a communication

C) appear more prevalent in some cultures than it does in others

D) introduce humor inappropriately at otherwise solemn occasions.

36

Which choice best supports the claim made by the author in lines 64-66 that a particular result of her research was not surprising?

A) Lines 1-2 ("Sarcasm … meanings")

B) Lines 12-14 ("The use … exchange")

C) Lines 21-26 ("In one … sarcastically")

D) Lines 26-27 ("Consistently … statements")

37

Based on the passage, which choice presents a possible interpretation arising from the results of the 2015 study conducted by the author and her colleagues?

A) People who perceive sarcasm well tend to be creative.

B) People who frequently employ sarcasm tend to be logical.

C) People who enjoy creative activities tend to be combative.

D) People who seek logical connections tend to be conversationa.

38

Which choice provides the best evidence for the answer to the previous question?

A) Lines 58-61 ("For … table")

B) Lines 61-63 ("We also … conversation")

C) Lines 64-66 ("Not … groups")

D) Lines 68-71 ("This … script")

39

The main purpose of the last paragraph is to

A) provide a practical application of the theories explained in the passage.

B) address a possible challenge to the research explored in the passage.

C) put forth a potential explanation for results discussed in the passage.

D) offer a compromise position between two interpretations considered in the passage.

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40

According to the figure, which choice represents the approximate mean perceived conflict rating of those participants expressing sincerity?

A) 3.5

B) 5

C) 6.5

D) 7

41

Which statement is best supported by the data presented in the figure?

A) Participants receiving sarcasm had approximately the same perceived conflict rating as those expressing sarcasm did.

B) Participants receiving sincerity had approximately the same perceived conflict rating as those expressing sincerity did.

C) Participants expressing sarcasm had a lower mean perceived conflict rating than those expressing sincerity did.

D) Participants receiving sincerity had a higher mean perceived conflict rating than those receiving sarcasm did.

1

Questions 42-52 are based on the following passage and supplementary material.

This passage is from Elizabeth Preston, "*City Rabbits, Like Humans, Live in Smaller Homes*." ©2015 by Kalmbach Publishing co.

Imagine you're on a particularly boring leg of a road trip and you start counting houses. You pass through long stretches of country without counting anything. When you do see houses, they're clustered into towns, and may have spacious yards with tire swings. As you approach a city (finally!), rows of houses appear at regular intervals instead of clumping. And in the heart of the city they shrink into little apartments that go by too fast for you to count. European rabbits, it turns out, build their homes in a similar way—and since these animals are disappearing in the countryside, understanding their urban planning strategy matters to humans trying to conserve them.

Hunting, habitat loss, and disease have driven down populations of European rabbits (*Oryctolagus cuniculus*) in the countrysides of western Europe. Yet rabbit populations in some German cities are, well, hopping. Madlen Ziege, a graduate student at the University of Frankfurt, and her coauthors wanted to know how rabbits are taking advantage of urban areas. They chose the city of Frankfurt, where European rabbits have lived alongside humans since at least 1930.

The researchers scoured nine city parks in rankfurt for rabbit burrows, along with four more suburban parks and three nearby rural sites. In all, they found 191 burrows. Then they rated each site for its "urbanity," a measure that included three variables: How many people live within half a kilometer of the burrow site? How many pedestrians, bikers, or dogs pass by at dawn and dusk, when rabbits are most active? And how much of the ground is covered by something artificial, such as pavement or playground turf?

Like census-takers, albeit with a serious language barrier, the researchers tried to count how many rabbits lived in each burrow. For a few dozen burrows, they did this by tagging along with a regular hunting group that flushed the rabbits from their holes with trained ferrets. At other sites, the researchers staked out burrows at dawn and dusk and tallied how many rabbits came and went. They also counted burrow entrances to estimate how big each home was.

As "urbanity" increased—as sites became less rural and more city-like—rabbit burrows became more common. Urban burrows were smaller and simpler, like studio apartments compared to country estates. And while rural burrows were spread out and clumped, like the rural houses on our imaginary road trip, urban burrows were spaced out more evenly.

Ziege writes that the results could easily have been the opposite. Since cities cover up more ground with pavement and buildings, breaking potential habitat into fragments, city rabbits might end up clustered into big burrows like they do in the countryside.

Figure 1

Correlation between Urbanity Rating and Burrow Density for 16 Rabbit Burrow Sites

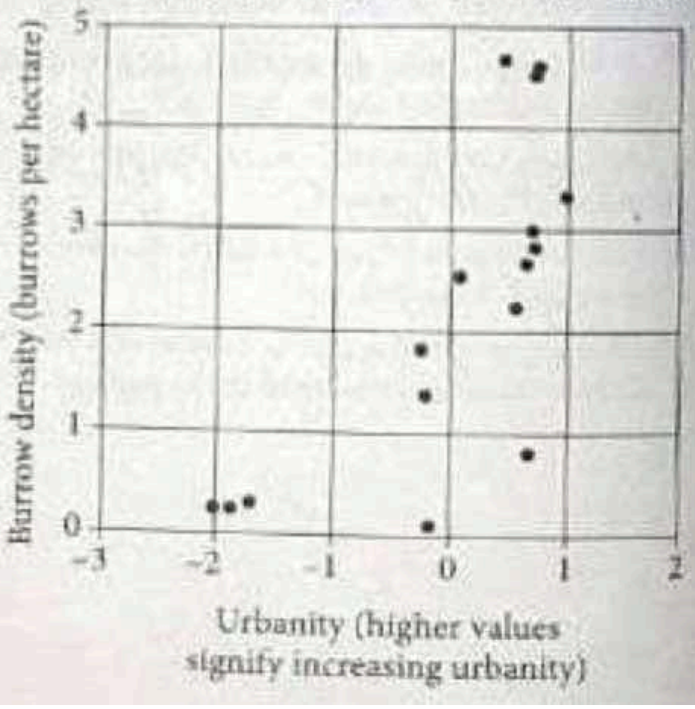
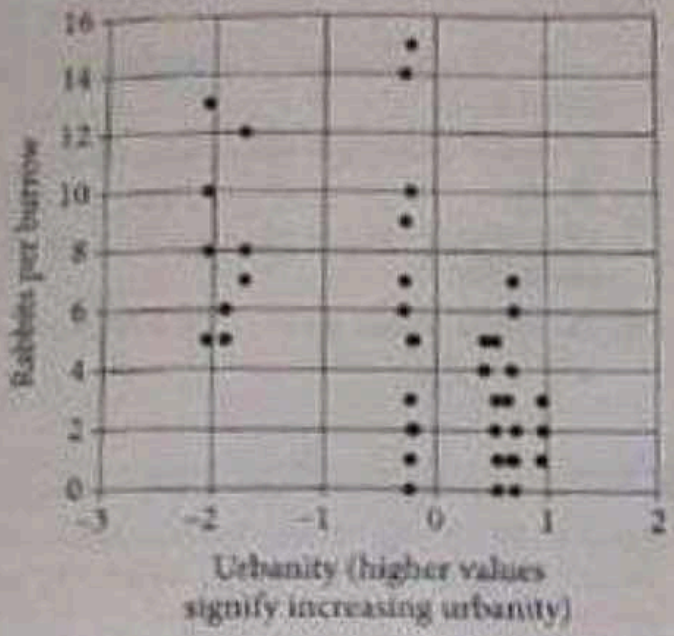


Figure 2

Correlation between Urbanity Rating and Burrow Population for 69 Rabbit Burrow Sites



Figures adapted from M. Ziege et al., "From Multifamily Residences to Studio Apartments: Shifts in Burrow Structures of European Rabbits along a Rural-to-Urban Gradient." ©2015 by The Zoological Society of London.

Fewer than 69 distinct data points appear in figure 2 because certain points share identical values and thus occupy the same position in the figure.

1

Instead, they're spread out into small homes.

One reason might be heat. Big groups of rabbits keep their burrows toastier in the winter—but cities are a little warmer to begin with, so living with a lot of warm bodies might not be as important. In the countryside, large burrows with many entrances and escape routes also help protect rabbits from predators. But in the city, there are fewer predators.

Figure 1
Correlation between Urbanity Rating and Burrow Density for 16 Rabbit Burrow sites

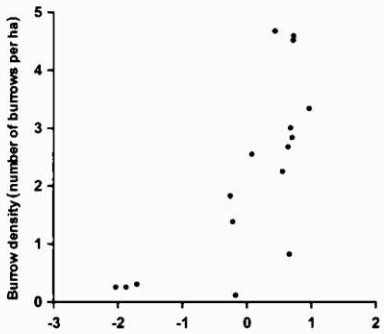
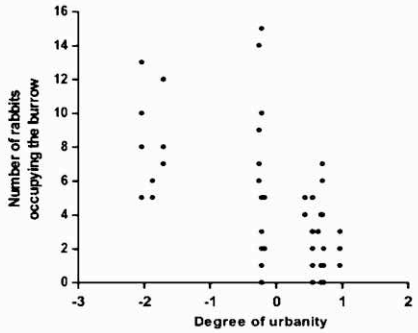


Figure 2
Correlation between Urbanity Rating and Burrow Population for 69 Rabbit Burrow sites



Figures adapted from M. Ziege et al., "From Multifamily Residences to Studio Apartments: Shifts in Burrow Structures of European Rabbits along a Rural-to-Urban gradient." ©2015 by The Zoological Society of London

Fewer than 69 distinct data points appear in figure 2 because certain points share identical values and thus occupy the same Position in the figure.

Finally, rabbits tend to live in large groups when their resources are limited. In German cities, they may be spreading out because there's no shortage of food or burrowing space. Country life may mean hunger and hunting ferrets, but for urban rabbits, life is (so far) good.

42

The primary purpose of the first paragraph is to

A) depict an imaginary journey that transports the reader to an exotic setting

B) use an analogy to help the reader visualize a pattern of rabbit habituation.

C) evoke for the reader the tediousness of automotive travel between cities.

D) persuade the reader that rural areas offer a more suitable habitat for rabbits than cities do.

43

As used in line 7, "regular" most nearly means

A) usual.

B) traditional.

C) habitual.

D) consistent.

44

According to the passage, information about rabbits' burrowing patterns could aid in

A) preserving rabbit populations.

B) constructing burrows for rabbits.

C) transferring rural rabbit populations to cities.

D) urbanizing rabbit's natural habitat.

1

45

Which choice best supports the idea that it is easier to predict the relative positions of burrows in areas with a high urbanity rating than it is in areas with a low urbanity rating?

A) Lines 15-17 ("Hunting … Europe")

B) Lines 28-30 ("Then … variables")

C) Lines 46-48 ("As 'urbanity' … common")

D) Lines 50-52 ("And while … evenly")

46

As used in line 34, "artificial" most nearly means

A) alternate.

B) counterfeit.

C) affected.

D) synthetic.

47

It can reasonably be inferred from the passage that the researchers' data-collection methods depended on an assumption that

A) the size of a burrow can be estimated by certain aspects of the burrow's outward appearance.

B) experimental settings produce different behaviors in rabbits than natural settings do.

C) the activities rabbits engage in at dawn are identical to those they engage in at dusk.

D) rabbit populations in park spaces are equivalent to those in the countryside.

48

Which choice provides the best evidence for the answer to the previous question?

A) Lines 25-27 ("The researchers … sites")

B) Lines 38-41 ("For a … ferrets")

C) Lines 41-43 ("At other … went")

D) Lines 44-45 ("They … was")

49

The passage suggests that the comparatively lower temperatures in rural areas influence European rabbits to

A) cluster in densely populated burrows for warmth.

B) avoid going aboveground during cold periods of the day.

C) adopt winter-specific strategies for avoiding predation.

D) delay their breeding season until the warm spring months arrive.

50

Based on the passage, which inverse relationship is demonstrated by the burrowing patterns of European rabbits?

A) The genetic diversity of rabbits in a given burrow declines as the burrow expands in total land area.

B) A burrow's design tends toward greater complexity as the predation threat faced by the burrow lessens.

C) An abundance of food in a given area correlates with a low average population per burrow.

D) Widespread availability of uncovered ground influences rabbits to limit the size of their burrows.

1

51

According to figure 1, the site with an urbanity rating closest to 1 was found to have how many burrows per hectare?

A) Between 1 and 2

B) Between 2 and 3

C) Between 3 and 4

D) Between 4 and 5

52

Figure 2 best supports which statement regarding the sampling of burrow sites used in the study?

A) Only one site had a burrow population less than 4.

B) A majority of sites had a burrow population over 16.

C) None of the sites had an urbanity rating greater than 1.

D) The most common urbanity rating among sites was -1.

2

Writing and Language Test

35 MINUTES, 44 QUESTIONS

Turn to Section 2 of your answer sheet to answer the questions in this section.

DIRECTIONS

Each passage below is accompanied by a number of questions. For some questions, you will consider how the passage might be revised to improve the expression of ideas. For other questions, you will consider how the passage might be edited to correct errors in sentence structure, usage, or punctuation. A passage or a question may be accompanied by one or more graphics (such as a table or graph) that you will consider as you make revising and editing decisions.

Some questions will direct you to an underlined portion of a passage. Other questions will direct you to a location in a passage or ask you to think about the passage as a whole.

After reading each passage, choose the answer to each question that most effectively improves the quality of writing in the passage or that makes the passage conform to the conventions of standard written English. Many questions include a "NO CHANGE" option. Choose that option if you think the best choice is to leave the relevant portion of the passage as it is.

Questions 1-11 are based on the following passage.

Movable books: The precursors to Pop-Ups

1 Toward the end of the Middle Ages, Europe saw the advent of numerous inventions that revolutionized the technology of the day. As early as the fifteenth century, books were designed with ingenious devices that allowed a reader to discover more on a page than what

1

Which choice most clearly introduces the main topic of the passage?

A) NO CHANGE

B) Throughout the ages, artists have expressed themselves through various types of media.

C) Bookmakers have long imagined ways to challenge the concept of books as static objects.

D) Books have seemingly endless interpretations that vary from reader to reader.

2

first met the eye. Some pages contained flaps that could be peeled back to reveal hidden 2 illustrations, others incorporated discs that rotated, showing information through windows cut into the page. At the height of their popularity, books with moving pieces contained elements such as tabs that linked dynamic parts on a page, interconnected slats of paper that morphed one illustration into another as they were pulled, and 3 illustrations indicative of skilled artisanship.

2

A) NO CHANGE

B) illustrations, while others

C) illustrations others

D) illustrations with others

3

Which choice gives a supporting example that is most similar to the two examples already in the sentence?

A) NO CHANGE

B) elaborate foldout displays

C) themes that appealed to children

D) clever poetry alongside the illustrations

2

One of the early masters of the movable book 4 were German artist and illustrator Lothar Meggendorfer (1847-1925). Meggendorfer invented a way of connecting individual pieces of an illustration with tiny hidden rivets and springs so they could all be moved together. 5 For example, when a reader pulls one tab in Meggendorfer's book *Always Jolly*, a 6 naturalists' arm swings a butterfly net downward just as the butterfly takes off from a 7 flower. This causes the would-be lepidopterist's mouth to drop open and his eyes to look up in dismay.

4

A) NO CHANGE

B) was

C) are

D) has been

5

At this point, the writer is considering adding the following sentence

Printing techniques similar to those used for the illustrations in movable books were used by late-nineteenth-century European textile artisans to produce printed fabrics.

Should the writer make this addition here?

A) Yes, because it sets up the example of the butterfly net in the next sentence.

B) Yes, because it provides an additional example of the hidden parts in movable books.

C) No, because it diverges from the paragraph's focus on Meggendorfer's books.

D) No, because it contradicts a description of pop-up books earlier in the passage

6

A) NO CHANGE

B) naturalists' arm swing's

C) naturalists arm swings

D) naturalist' s arm swings

7

Which choice most effectively combines the sentences at the underlined portion?

A) flower, causing

B) flower; it causes

C) flower, something that causes

D) flower; as a result, this causes

2

The book starts with a warning to children to be gentle when pulling the tabs because they are made of only paper: "And therefore, I advise, / That care and caution should be paid, / Lest woe and grief arise." The rest of the book consists of eight poems 8 in agreement with eight movable figures, including a lion who reiterates the warning to handle the book carefully. With his mouth opening and closing, displaying his 9 fangs. The line assures any children reading the book that he intends them no harm; rather, it is the reader who "May tear the Lion in your play, / By being rough to him one day."

Movable books were works of art, made largely by hand and assembled from specialized materials by skilled artisans. Meggendorfer created a model of each book in its entirety. Once he was satisfied with the arrangement of the moving pieces and other details, he 10 is providing the artisans with elaborately detailed instructions for how to assemble each page. The illustrations were produced through a refined printing process that resulted in beautiful colors and great detail; however, the labor-intensive production kept the price of the books too high for any but the wealthiest patrons. Fortunately, these incredible feats of engineering and artistry can still be seen–moving–in videos on the Internet. 11 The Internet is an excellent tool for learning about and sharing important feats from history.

8

A) NO CHANGE
B) instantaneous with
C) accompanied by
D) in step with

9

A) NO CHANGE
B) fangs, the
C) fangs; the
D) fangs–the

10

A) NO CHANGE
B) had provided
C) provided
D) provides

11

Which choice provides the most effective conclusion to the paragraph and the passage as a whole?

A) NO CHANGE
B) Much historical footage, such as the 1969 Moon landing, is also preserved on the Internet.
C) Through modern technology, the ingenuity of an inventor who used almost nothing but paper and imagination has been preserved.
D) Modern engineers continue to draw inspiration from Meggendorfer's movable books.

2

Questions 12-22 are based on the following passage.

Monopolizing "The Landlord's Game"

Monopoly is one of the best known board games in the world, having been licensed in at least 114 countries and produced in more than 47 languages since its introduction by Parker Brothers in 1935. Monopoly players use colorful play 12 money, to buy and develop properties on a game board. Other players who land on the properties are charged rent, 13 uplifting the property owner, who can then buy and develop more properties. 14 Initially, one player bankrupts all the others and wins the game. By rewarding players who are successful in 15 taking money from the other players and using that money to make even more, Monopoly seems to celebrate the cutthroat, winner-take-all competition that many associate with modern capitalism. However, Elizabeth Magie, the creator of the game on which Monopoly was based, 16 wanted to change the world.

12

A) NO CHANGE
B) money to buy and develop properties
C) money to buy and develop properties,
D) money, to buy and develop properties,

13

A) NO CHANGE
B) glorifying
C) improving
D) enriching

14

A) NO CHANGE
B) Meanwhile,
C) Moreover,
D) Eventually,

15

Which choice best sets up the claim that is made later in the sentence?

A) NO CHANGE
B) acquiring both of the game's "Get Out of Jail Free" cards and using them strategically,
C) rolling "doubles" and moving around the board rapidly,
D) avoiding the other players' developed properties and landing on the underdeveloped ones.

16

Which choice provides the most logical transition from the information in this paragraph to the description of Magie in the next paragraph?

A) NO CHANGE
B) had something very different in mind.
C) espoused certain beliefs about capitalism.
D) shared her game with friends and acquaintances.

2

Magie was a follower of Henry George, an economist who taught that private ownership of resources common to all, such as land, is both unjust and detrimental: such a system enables a lucky few (the landlords) to prosper, while all others (the tenants) are exploited and impoverished. The purpose of "The landlord's Game," which Magic patented in 1904, was to spread George's ideas: as she explained, the game was a "practical demonstration of the present system of land-grabbing with all its usual outcomes and consequences." Although George and Magie were dismissed by many as anticapitalist radicals, 17 however a look at the history of Monopoly suggests that she may have had a point–one that still resonates today.

17

A) NO CHANGE

B) but

C) nonetheless

D) DELETE the portion

2

In addition to the "winner-take-all" concept familiar to Monopoly players, Magie's original game featured a second set of rules allowing players to share the 18 game's property's, bringing equal benefits to all.

19 Players also created alternate versions of the game, modifying game boards to suit their own interests. But all this variety came to an end in the 1930s. An unemployed salesman named Charles 20 Darrow sensed a moneymaking opportunity, designing a game board of his own, penned a single set of standard rules, and enlisted the help of a printer to have boards made quickly. In 1935 Parker Brothers purchased the rights to Darrow's Monopoly and paid off the holders of patents

18

A) NO CHANGE
B) game's properties
C) games' properties
D) games property's

19

The writer is considering deleting the underlined sentence. Should the sentence be kept or deleted?

A) Kept, because it provides an additional example of the variety associated with the game.
B) Kept, because it supports a claim about Magie made in a previous sentence.
C) Deleted, because it repeats information about the game's history from earlier in the passage.
D) Deleted, because it distracts from the paragraph's focus on the standardization of the game.

20

A) NO CHANGE
B) Darrow, sensing a moneymaking opportunity, designed a game board of his own, penned
C) Darrow, sensing a moneymaking opportunity, designed a game board of his own, penning
D) Darrow, sensing a moneymaking opportunity, designed a game board of his own, penned

2

for any similar games. The deal made millions for Parker Brothers and Darrow and about $500 for 21 Magie effectively illustrating the very point her game was attempting to teach. It is a lesson worth reflecting on as the global economy continues to produce 22 ridiculous remuneration for a few, and for most everyone else, the "usual outcomes and consequences."

21

A) NO CHANGE

B) Magie–effectively

C) Magie; effectively

D) Magie. Effectively

22

A) NO CHANGE

B) big money

C) great wealth

D) stacks of cash

2

Questions 23-33 are based on the following passage and supplementary material.

Insulation Work Is Heating Up

The goal of reducing energy costs has brought fresh attention to a feature of buildings that usually goes unseen: insulation, the layer of material inside 23 walls; under floors and around pipes that helps prevent heat loss. According to the Environmental Protection Agency, updating a building's insulation and adjusting the amount used can lower energy costs by about 15 percent. Homeowners, business owners, and 24 in municipalities they are not only upgrading the insulation of existing buildings but also installing new types of insulation in new eco-friendly buildings. Their efforts are creating opportunities for insulation workers.

23

A) NO CHANGE
B) walls under floors
C) walls, under floors,
D) walls, under floors;

24

A) NO CHANGE
B) also municipalities
C) those of municipalities
D) municipalities

2

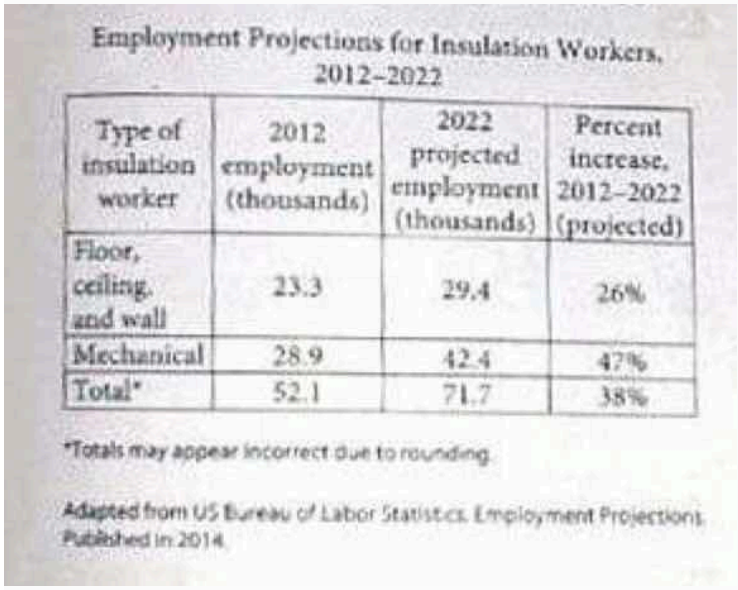
There are two main types of insulation workers: floor, ceiling, and wall insulators, who install insulation in private residences, and mechanical insulators, who work primarily in commercial buildings. The US Bureau of Labor Statistics expects both types to see 25 lots of jobs happening in the coming years. The number of floor, ceiling, and wall insulator jobs is anticipated to 26 rise from 23,300 to 29,400 bet ween 2012 and 2022–a gain of 26 percent. Mechanical insulator jobs should see even greater gains, with a 47 percent increase in jobs by 2022. The expected growth rate of 27 insulation jobs as a whole, at 38 percent, is more than triple the 10.8 percent by which all other occupations are projected to grow.

Employment Projections for Insulation Workers, 2012-2022

Type of insulation worker	2012 employment (thousands)	2022 projected employment (thousands)	Percent increase, 2012-2022 (projected)
Floor, ceiling, and wall	23.3	29.4	26%
Mechanical	28.9	42.4	47%
Total*	52.1	71.7	38%

*Totals may appear incorrect due to rounding

Adapted from US Bureau of Labor Statistics, Employment Projections. Published in 2014



25

Which choice is most consistent with the tone and style of the passage?

A) NO CHANGE

B) all these jobs

C) job growth

D) the burgeoning of employment

26

Which choice provides accurate information from the table to support the passage's argument?

A) NO CHANGE

B) decline from 42,400 to 29,400

C) climb to a total of 42,400

D) increase by 23,300

27

Which choice provides information from the table accurately?

A) NO CHANGE

B) some other insulation jobs,

C) insulation jobs in commercial buildings,

D) insulation jobs in homes,

2

Indeed, the number of jobs for insulation workers may ultimately increase even more than projected because the field is changing in ways that provide additional opportunities. For example, many customers, especially those working on new building projects, are requesting nontoxic insulation materials made from renewable resources. For years, workers have used a sprayable polyurethane foam that is relatively inexpensive and easy to apply. 28 Meanwhile, this foam is made from a nonrenewable resource, petroleum, and has been deemed 29 unsuitable for use by environmentally conscious building groups. These groups are instead recommending cotton denim insulation, which 30 is made from industrial 31 scraps; or cellulose insulation, composed of recycled paper and natural fibers. Both of these materials are safe, low in toxins, and sustainable 32 They are less difficult to remove from homes than polyurethane foam, requiring specialized equipment and additional workers to mix and apply the materials.

28

Which choice creates the clearest transition from the previous sentence?

A) NO CHANGE

B) Therefore,

C) However,

D) DELETE the underlined portion, adjusting the capitalization as needed.

29

A) NO CHANGE

B) unseasonable

C) incoherent

D) inauspicious

30

A) NO CHANGE

B) are

C) were

D) was

31

A) NO CHANGE

B) scraps, or

C) scraps;

D) scraps,

32

Which choice most effectively sets up the information that follows in the sentence?

A) NO CHANGE

B) Cellulose insulation can be installed with a spray

C) They are not necessarily as energy efficient as polyurethane foam,

D) They are also more labor-intensive to install,

2

It seems likely that workers who are skilled in installing these new materials will be in great demand in the coming years. Devin O'Brien, owner of a New York insulation 33 company—says bio-based insulation materials and eco-friendly buildings are "the future of the industry." It's a future that looks very bright for insulation workers

33

A) NO CHANGE

B) company,

C) company;

D) company

Questions 34-44 are based on the following passage

Neither Wind nor Ice nor Gloom of Night

On April 11,1934, the staff at Mount Washington Observatory in New Hampshire began to experience meteorological conditions that were extraordinary, even in a place that bills itself as the "home of the world's worst weather." Rising high above the other peaks in the Presidential Range at the nexus of several storm paths, Mount Washington routinely experiences hurricane-force winds, below-zero 34 temperatures: and year-round snow. Still, as two intense systems–a high-pressure system over the Atlantic Ocean and a low-pressure system over the Great Lakes—converged near the summit, the observers knew that 35 he or she might witness a unique weather event.

34

A) NO CHANGE
B) temperatures;
C) temperature,
D) temperature—

35

A) NO CHANGE
B) one
C) those
D) they

2

The observatory workers woke up on April 11 to clear skies, 36 facing the first day since crew member Robert Stone had been taken down the mountain for medical attention for his bruised hip. A steep pressure difference developed over a very short 37 distance; driving winds to extreme speeds and contributing to the formation of a foot-thick layer of rime (a type of ice). 38 The staff members waited to see if conditions would continue to deteriorate, and the observatory's anemometer, a pinwheel-like apparatus used for measuring wind speed, had previously 39 malfunctioned because of excessive winds and accumulations of ice. With a new anemometer that was electrically heated and tightly anchored to the roof, the scientists now had a device that could withstand an extreme storm.

36

Which choice best sets up the information that follows in the paragraph?

A) NO CHANGE

B) but conditions worsened later in the day as the two weather systems collided and encountered a formidable barrier in the Presidential Range.

C) and the finding they would make that day would lead to the recognition that a permanent weather station should be housed on Mount Washington

D) the same conditions they had observed the day before, something relatively unusual for Mount Washington in April.

37

A) NO CHANGE

B) distance: driving

C) distance, driving

D) distance. Driving

38

Which choice provides the most effective transition from the previous sentence to the information that follows in this sentence?

A) NO CHANGE

B) Such conditions had interfered with weather observations in the past:

C) The safety of the staff members was of the utmost concern at the time, as

D) Throughout the day, the pressure fell and the wind speed began to increase:

39

A) NO CHANGE

B) malfunctioned before

C) malfunctioned, failing to operate correctly,

D) malfunctioned at another point in time

[1] As the wind speed rose to 136 miles per hour (mph). the researchers wondered whether the intensifying winds would reach record speeds [2] At 4:00 a.m. on April 12, one researcher, Wendell Stephenson, woke from a short nap to find that the anemometer reading had fallen to 105 mph [3] Stephenson could tell from the noise outside that the wind had gotten stronger while he was asleep, and he reasoned that the anemometer, despite its improved design, was not working properly. [4] He put on his winter gear, picked up a club used for dislodging ice, and 40 has opened the door to go outside. [5] Back inside, 41 his efforts, he learned, had been successful; the readings now showed that the wind speed was approaching the previous site record of 16 4 mph. [6] In fact, that record was shattered: at 1:21 p.m., the station recorded a new world-record wind speed of 231 mph. 42

40

A) NO CHANGE

B) opening

C) opened

D) to open

41

A) NO CHANGE

B) his efforts had been successful, which he learned;

C) success, he learned, had been the outcome of his efforts;

D) he learned that his efforts had been successful:

42

To improve the cohesion and flow of this paragraph the writer wants to add the following sentence

The wind knocked him to ground, but he was able to regain his footing and make his way to the anemometer to remove the accumulated ice.

The sentence would most logically be placed

A) after sentence1.

B) after sentence3.

C) after sentence4.

D) after sentence5.

2

Though automated instruments have since recorded higher speeds in cyclones, the 1934 record stands to this 43 day. It stands as the highest wind speed measured by human observers. 44 However, Mount Washington Observatory continues to operate as the staff carries on the work of recording and studying weather data using newer equipment but remaining inspired by the past–those scientists who came before.

43

Which choice most effectively combines the sentences at the underlined portion?

A) day

B) day, and it is known

C) day, still standing

D) day; it holds the record

44

A) NO CHANGE

B) Likewise,

C) In other words,

D) DELETE the underlined portion.

Math Test – No Calculator

25 MINUTES, 20 QUESTIONS

Turn to Section 3 of your answer sheet to answer the questions in this section.

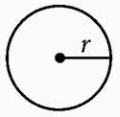
DIRECTIONS

For questions 1-15, solve each problem, choose the best answer from the choices provided, and fill in the corresponding circle on your answer sheet. **For questions 16-20**, solve the problem and enter your answer in the grid on the answer sheet. Please refer to the directions before question 16 on how to enter your answers in the grid. You may use any available space in your test booklet for scratch work.

NOTES

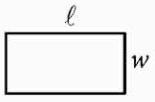
1. The use of a calculator **is not permitted**.
2. All variables and expressions used represent real numbers unless otherwise indicated.
3. Figures provided in this test are drawn to scale unless otherwise indicated.
4. All figures lie in a plane unless otherwise indicated.
5. Unless otherwise indicated, the domain of a given function f is the set of all real numbers x for which $f(x)$ is a real number.

REFERENCE

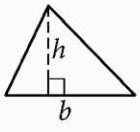


$A = \pi r^2$

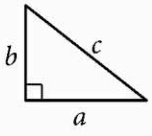
$C = 2\pi r$



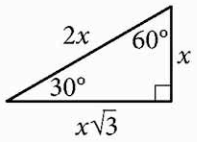
$A = \ell w$

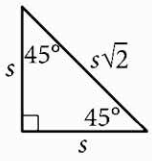


$A = \frac{1}{2}bh$

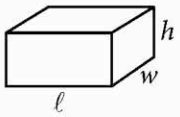


$c^2 = a^2 + b^2$

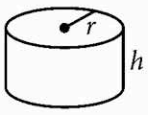




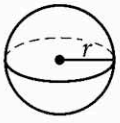
Special Right Triangles



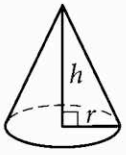
$V = \ell wh$



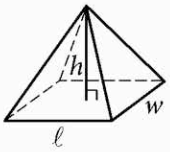
$V = \pi r^2 h$



$V = \frac{4}{3}\pi r^3$



$V = \frac{1}{3}\pi r^2 h$

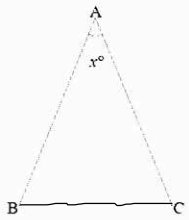


$V = \frac{1}{3}\ell wh$

The number of degrees of arc in a circle is 360.
The number of radians of arc in a circle is 2π.
The sum of the measures in degrees of the angles of a triangle is 180.

3

1



In the given triangle, $AB = AC$ and $\angle ABC$ has a measure of 67°. What is the value of x?

A) 36

B) 46

C) 58

D) 70

2

A petting zoo sells two types of tickets. The standard ticket, for admission only, costs $5. The premium ticket, which includes admission and food to give to the animals, costs $12. One Saturday, the petting zoo sold a total of 250 tickets and collected a total of $2,300 from ticket sales Which of the following systems of equations can be used to find the number of standard tickets, s, and premium tickets, p, sold on that Saturday?

A) $s + p = 250$
$5s + 12p = 2{,}300$

B) $s + p = 250$
$12s + 5p = 2{,}300$

C) $5s + 12p = 250$
$s + p = 2{,}300$

D) $12s + 5p = 250$
$s + p = 2{,}300$

3

Which of the following is equivalent to $(x^2 + 7) - 2(x^2 + 3)$?

A) $-x^2 + 10$

B) $-x^2 + 1$

C) $-3x^2 + 10$

D) $-3x^2 + 1$

4

$$S = 4\pi r^2$$

The formula above gives the surface, S, of a sphere in terms of the length of its radius, r. Which of the following gives the radius of the sphere in terms of its surface area?

A) $r = \sqrt{\frac{S}{4\pi}}$

B) $r = \sqrt{\frac{4\pi}{S}}$

C) $r = \frac{\sqrt{S}}{4\pi}$

D) $r = \frac{\sqrt{4\pi}}{S}$

5

$$(2x + 3) - (x - 7)$$

Which of the following is equivalent to the given expression?

A) $x - 4$

B) $3x - 4$

C) $x + 10$

D) $2x^2 + 21$

6

In the xy-plane, the points $(-2, 3)$ and $(4, -5)$ lie on the graph of which of the following linear functions?

A) $f(x) = x + 5$

B) $f(x) = \frac{1}{2}x + 5$

C) $f(x) = -\frac{4}{3}x + \frac{1}{3}$

D) $f(x) = -\frac{3}{2}x + 1$

7

A rectangular volleyball court has an area of 162 square meters. If the length of the court is twice the width. what is the width of the court, in meters?

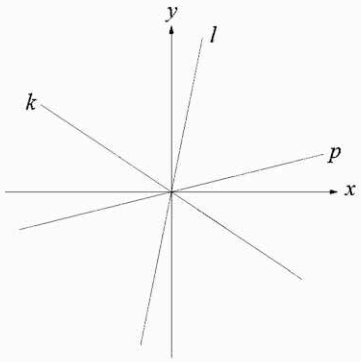
A) 9

B) 18

C) 27

D) 54

8



In the xy-plane above, lines k, l, and p are shown. Which of the following lists the slopes of the lines from least to greatest?

A) The slope of l, the slope of k, the slope of p

B) The slope of p, the slope of k, the slope of l

C) The slope of k, the slope of l, the slope of p

D) The slope of k, the slope of p, the slope of l

9

A cube has a surface area of 54 square meters. What is the volume, in cubic meters, of the cube?

A) 18

B) 27

C) 36

D) 81

10

A line in the xy-plane has a slope of 0. Which of the following could be an equation of the line?

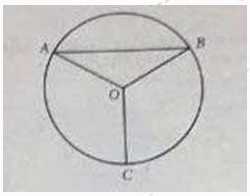
A) $x = 0$

B) $y = 1$

C) $x = y$

D) $y = -x$

11



Point O is the center of the circle above, and the measure of $\angle OAB$ is 30°. If the length of $\overline{OC}$ is 18, what is the length of arc $\widehat{AB}$?

A) 9π

B) 12π

C) 15π

D) 18π

11

$$h(x) = 2(x-4)^2 - 32$$

The quadratic function h is defined as shown. In xy-plane, the graph of $y = h(x)$ intersects the x-axis point $(0,0)$ ant $(t, 0)$, where t is a constant. What is the value of t?

A) 1

B) 2

C) 4

D) 8

13

$$x(x-2)=35$$

What is the product of the solutions to the given equation?

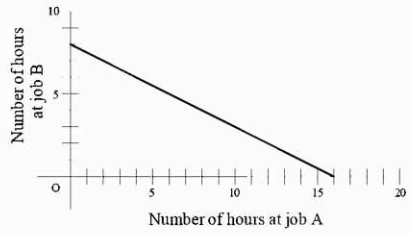
A) 35

B) 12

C) -2

D) -35

14



To earn money for college, Avery works two part-time jobs: A and B. She earns \$10 per hour working at job A and \$20 per hour working at job B. In one week, Avery earned a total of s dollars for working at the two part-time jobs. The graph above represents all possible combinations of numbers of hours Avery could have worked at the two jobs to earn s dollars. What is the value of s?

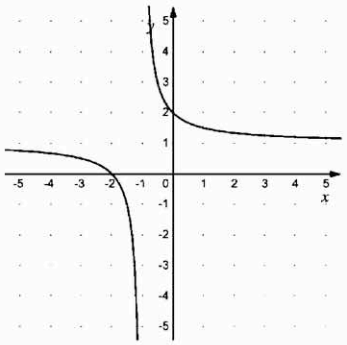
A) 128

B) 160

C) 200

D) 320

15



The graph of $y=f(x)$ is shown in the xy-pla above. Which of the following could define f

A) $f(x)=\frac{1}{x-1}-1$

B) $f(x)=\frac{1}{x-1}+1$

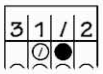
C) $f(x)=\frac{1}{x+1}-1$

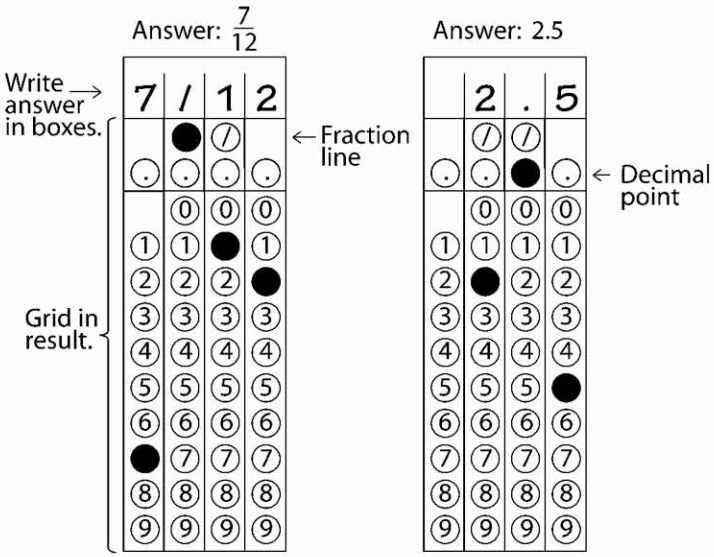
D) $f(x)=\frac{1}{x+1}+1$

3

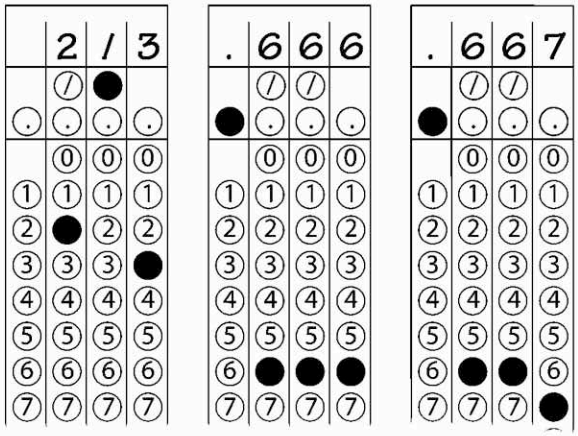
DIRECTIONS

For questions 16-20, solve the problem and enter your answer in the grid, as described below, on the answer sheet.

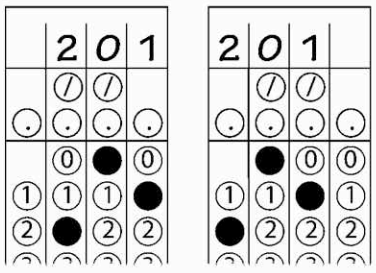
1. Although not required, it is suggested that you write your answer in the boxes at the top of the columns to help you fill in the circles accurately. You will receive credit only if the circles are filled in correctly.
2. Mark no more than one circle in any column.
3. No question has a negative answer.
4. Some problems may have more than one correct answer. In such cases, grid only one answer.
5. **Mixed numbers** such as $3\frac{1}{2}$ must be gridded as 3.5 or 7/2. (If  is entered into the grid, it will be interpreted as $\frac{31}{2}$, not $3\frac{1}{2}$.)
6. **Decimal answers:** If you obtain a decimal answer with more digits than the grid can accommodate, it may be either rounded or truncated, but it must fill the entire grid.



Acceptable ways to grid $\frac{2}{3}$ are:



Answer: 201 – either position is correct



NOTE: You may start your answers in any column, space permitting. Columns you don't need to use should be left blank.

3

16

If $\sqrt{x+5} = 6$, what is the value of x?

17

$$3(3x + 5) = kx + 15$$

In the equation above, k is a constant. If all values of x satisfy the equation, what is the value of k?

18

$$5(4x - 1) = 4x + 3$$

What value of x satisfies the equation above?

19

$$-3x + 5y = 1$$
$$2x - 3y = 2$$

If (x, y) is the solution to the given system of equations, what is the value of x?

20

An exponential function f is defined by $f(t) = b^t$, where b is a constant greater than 1. If $f(8) = 16 \cdot f(6)$, what is the value of b?

Math Test – Calculator

55 MINUTES, 38 QUESTIONS

Turn to Section 4 of your answer sheet to answer the questions in this section.

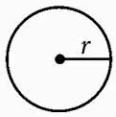
DIRECTIONS

For questions 1-30, solve each problem, choose the best answer from the choices provided, and fill in the corresponding circle on your answer sheet. **For questions 31-38**, solve the problem and enter your answer in the grid on the answer sheet. Please refer to the directions before question 31 on how to enter your answers in the grid. You may use any available space in your test booklet for scratch work.

NOTES

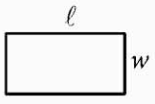
1. The use of a calculator **is permitted**.
2. All variables and expressions used represent real numbers unless otherwise indicated.
3. Figures provided in this test are drawn to scale unless otherwise indicated.
4. All figures lie in a plane unless otherwise indicated.
5. Unless otherwise indicated, the domain of a given function f is the set of all real numbers x for which $f(x)$ is a real number.

REFERENCE

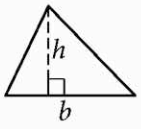


$A = \pi r^2$

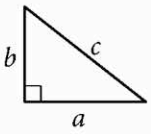
$C = 2\pi r$



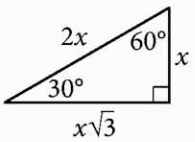
$A = \ell w$

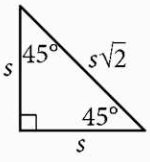


$A = \frac{1}{2}bh$

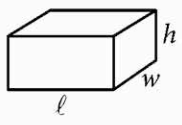


$c^2 = a^2 + b^2$

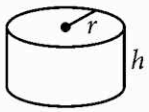




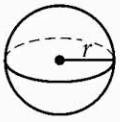
Special Right Triangles



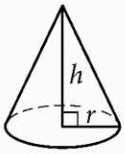
$V = \ell wh$



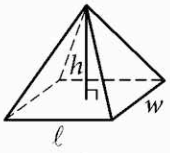
$V = \pi r^2 h$



$V = \frac{4}{3}\pi r^3$



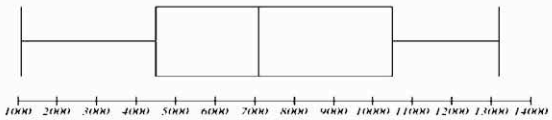
$V = \frac{1}{3}\pi r^2 h$



$V = \frac{1}{3}\ell wh$

The number of degrees of arc in a circle is 360.
The number of radians of arc in a circle is 2π.
The sum of the measures in degrees of the angles of a triangle is 180.

1



The number of acres of useful timberland in 13 counties in California is summarized in the box plot above. Which of the following is closest to the median number of acres?

A) 4,399

B) 7,067

C) 8,831

D) 10,595

2

Robert rented a truck to transport materials he purchased from a hardware store. He was charged an initial fee of $20.00 plus an additional $0.70 per mile driven. If the truck was driven 38 miles, what was the total amount Robert was charged?

A) $46.60

B) $52.90

C) $66.90

D) $86.50

3

The equation $y = 0.1x$ models the relationship between the number of different pieces of music a certain pianist practices, y, during an x-minute practice session. How many pieces did the pianist practice if the session lasted 30 minutes?

A) 1

B) 3

C) 10

D) 30

4

$$3(a + 4) + 6a = 3(a + 4) + 30$$

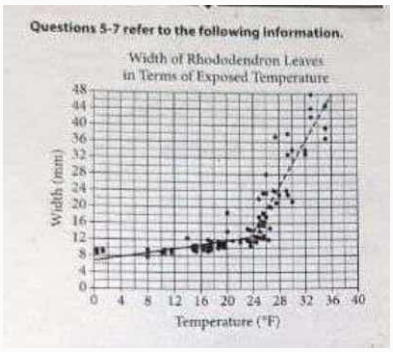
What value of a satisfies the equation above?

A) 0.5

B) 2

C) 5

D) 24



Rhododendron leaves curl up at temperatures below freezing, and they uncurl and widen as the temperature rises. The scatterplot above shows the results of a study in which the widths of some rhododendron leaves from the same plant were measured at various times over a certain period. The widths w, in millimeters (mm), were plotted against the temperatures T, in degrees Fahrenheit (°F), at the times the leaves were measured. The solid line segment is a line of best fit that models the relationship between the temperatures and widths of the leaves when $0 \leq T < 24$. The dashed line segment is a line of best fit that models the relationship when $24 \leq T \leq 36$.

5

Based on the dashed line segment, which of the following is closest to the temperature at which the width of a rhododendron leaf is predicted to be 42 millimeters?

A) 34 °F

B) 36 °F

C) 38 °F

D) 40 °F

6

At a time when the temperature was 14 °F, the width of one of the rhododendron leaves was measured. By approximately how much does the actual measurement differ from the predicted value?

A) It is approximately 10 millimeters greater than the predicted value.

B) It is approximately 2 millimeters greater than the predicted value.

C) It is approximately 2 millimeters less than the predicted value.

D) It is approximately 10 millimeters less than the predicted value.

7

Based on the sold line segment, which of the following could be predicted width, in millimeters, of a rhododendron leaf when the temperature is T °F, where $0 \leq T < 12$?

A) 5

B) 8

C) 12

D) 14

8

An object with a mass of 1.0 kilogram weighs approximately 2.2 pounds. An object having which of the following masses, in kilograms, weighs closest to 2.0 pounds?

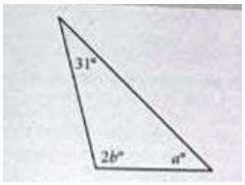
A) 0.45

B) 0.91

C) 1.1

D) 4.4

9



In the triangle above, $a = 45$. What is the value of b?

A) 52

B) 59

C) 76

D) 104

10

At a large high school. 300 students were selected at random and were asked in a survey about a menu change in the school cafeteria. All 300 students completed the survey. It was estimated that 38% of the students were in support of a menu change, with a margin of error of 5.5%. Which of the following is the best interpretation of the survey results?

A) The percent of the students at the school who support a menu change is 38%.

B) The percent of the students at the school who support a menu change is greater than 38%.

C) Plausible values of the percent of the students at the school who support a menu change are between 32.5% and 43.5%.

D) Plausible values of the number of the students at the school who support a menu change are between 295 and 305.

11

$$x - 3y = 7$$
$$3y = 9$$

If (x, y) is the solution to the system of equations above, what is the value of x?

A) -2

B) 10

C) 16

D) 34

12

Nayya burns 5 kilocalories per minute running on a treadmill and 10 kilocalories per minute pedaling on a stationary bike. Which of the following equations represents the total number of kilocalories, T, Nayya has burned after running on the treadmill for 50 minutes and pedaling on the stationary bike for m minutes?

A) $T = 15m + 50$

B) $T = 50m + 50$

C) $T = 5m + 500$

D) $T = 10m + 250$

13

$$f(x) = \frac{(x + 7)}{4}$$

For the function f defined above, what is the value of $f(9) - f(1)$?

A) 1

B) 2

C) $\frac{1}{4}$

D) $\frac{9}{4}$

14

There were approximately 113,000 occupational therapy jobs in the United States in 2012. The Bureau of Labor Statistics has projected that this number will increase by 29% from 2012 to 2022. Of the following numbers, which is closest to the number of occupational therapy jobs the bureau has projected for the United States in 2022?

A) 115,900

B) 116,300

C) 142,000

D) 145,800

15

A survey was conducted using a sample of history professors selected at random from the California State Universities. The professors surveyed were asked to name the publishers of their current topics. What is the largest population to which the result of the survey can be generalized?

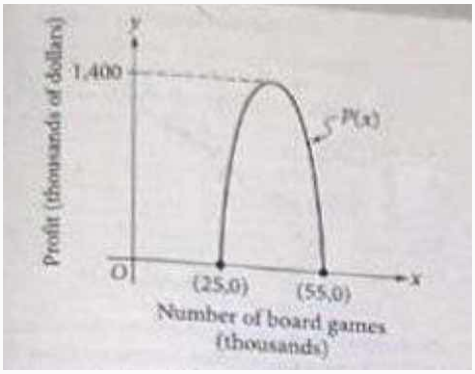
A) All professors in the United States

B) All history professors in the United States

C) All history professors at all California State Universities

D) All professors at all California State Universitis

16



A company produces board games and sells them online and in stores. The quadratic function P models the company's monthly profits $P(x)$, in thousands of dollars, when x board games, in thousands, are produced and sold. The graph of $y = P(x)$, where $25 \leq x \leq 55$, is shown in the xy-plane above. How many board games must the company produce and sell in order to earn the maximum profit estimated by the model?

A) 20,000

B) 40,000

C) 60,000

D) 1,400,000

17

A number n is increased 6%. If the result is 318, what is the value of n?

A) 199

B) 299

C) 300

D) 337

18

$$d = 55t$$

The equation above can be used to calculate the distance d, in miles, traveded by a car moving at a speed of 55 miles per hour over a period of 1 hours. For any positive constant k, the distance the cat would have traveled after $9k$ hours is how many times the distance the car would have traveded after $3k$ hours?

A) 3

B) 6

C) $3k$

D) $6k$

19

In which of the following tables is the relationship between the values of x and their corresponding y-values nonlinear?

A)

x	1	2	3	4
y	8	11	14	17

B)

x	1	2	3	4
y	4	8	12	16

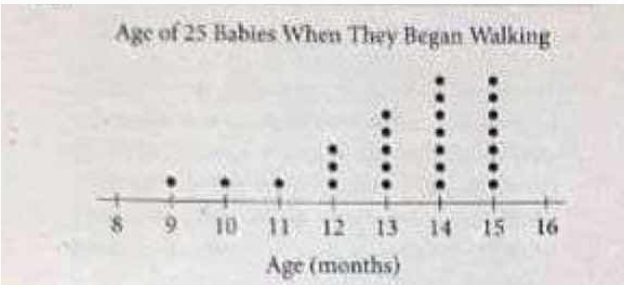
C)

x	1	2	3	4
y	8	13	18	23

D)

x	1	2	3	4
y	6	12	24	48

20



The dot plot above gives the ages, in months, at which 25 babies began walking Which of the following is true about the mean and the median of the data

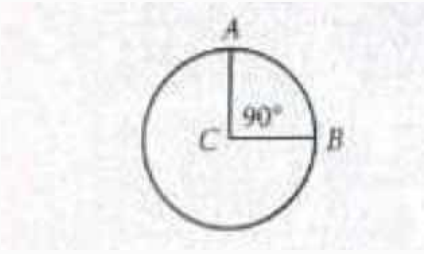
A) The mean is greater than the median.

B) The mean is less than the median.

C) The mean is equal to the median.

D) The relationship between the mean and the median cannot be determined from the dot plot.

21



Point C is the center of the circle shown above. What is the measure of angle ACB, in radians?

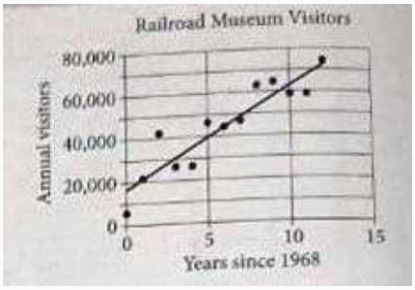
A) 2π

B) π

C) $\frac{\pi}{2}$

D) $\frac{\pi}{4}$

22



The scatterplot above shows the number of visitors to a railroad museum in Pennsylvania each year from 1968 to 1980, where t is the number of years since 1968 and n is the number of visitors. A line of best be is also shown. Which of the following could be an equation of the line of best fit shown?

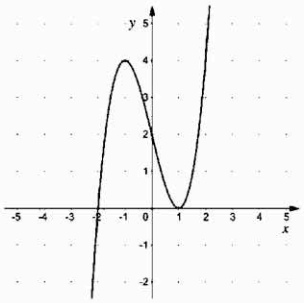
A) $n = 16{,}090 + 4{,}680t$

B) $n = 4{,}690 + 16{,}090t$

C) $n = 16{,}090 + 9{,}060t$

D) $n = 9{,}060 + 16{,}090t$

23



The graph of $y = p(x)$ is shown in the xy-plane above. Which of the following equations could define the function p?

A) $p(x) = (x - 2)(x + 1)^2$

B) $p(x) = (x - 2)^2(x + 1)$

C) $p(x) = (x + 2)^2(x - 1)$

D) $p(x) = (x + 2)(x - 1)^2$

24

x	-11	-10	-9	-8
$f(x)$	21	18	15	12

The table above shows some values of x and their corresponding values $f(x)$ for the linear function f. What is the x-intercept of the graph of $y = f(x)$ in the xy-plane?

A) $(-3, 0)$

B) $(-4, 0)$

C) $(-9, 0)$

D) $(-12, 0)$

25

$$\frac{x^2 - c}{x - b}$$

In the expression above, b and c are positive integers. If the expression is equivalent to $x + b$ and $x \neq b$, which of the following could be the value of c?

A) 4

B) 6

C) 8

D) 10

26

$$S(n) = 38{,}000a^n$$

The function S above models the annual salary, in dollars, of an employee n years after starting a job, where a is a constant. If the employee's salary increases by 4% each year, what is the value of a?

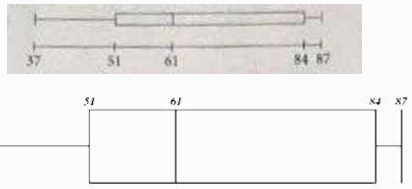
A) 0.04

B) 0.4

C) 1.04

D) 1.4

27



Which of the following statements about the data represented in the box plot above must be true?

A) There are more data between 61 and 84 than between 51 and 61.

B) There are no data between 37 and 51.

C) The mean of the data is 61.

D) The range of the data is 50.

28

Value	Frequency
1	a
2	$2a$
3	$3a$
4	$2a$
5	a

The frequency distribution above summarizes a set of data, where a is a positive integer. How much greater is the mean of the set of data than the median?

A) 0

B) 1

C) 2

D) 3

29

$$y = 2x + 1$$
$$y = ax - 8$$

In the system of equations above, a is a constant. If the system of equations has no solution, what is the value of a?

A) $-\frac{1}{2}$

B) 0

C) 1

D) 2

30

In the xy-plane, a parabola has vertex $(3, 1)$ and intersects the x-axis at two points. If the equation of the parabola is written in the form $y = -ax^2 + bx + c$, where a, b, and c are constants, which of the following could be a value of c?

A) -8

B) 2

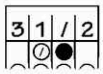
C) 3

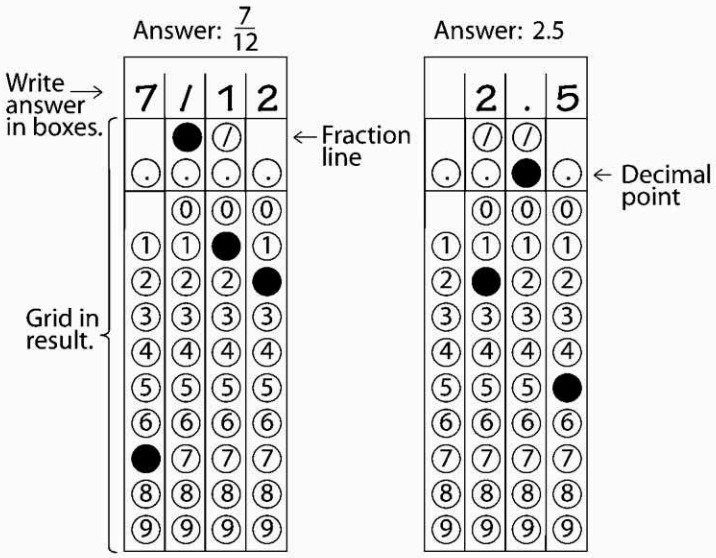
D) 7

4

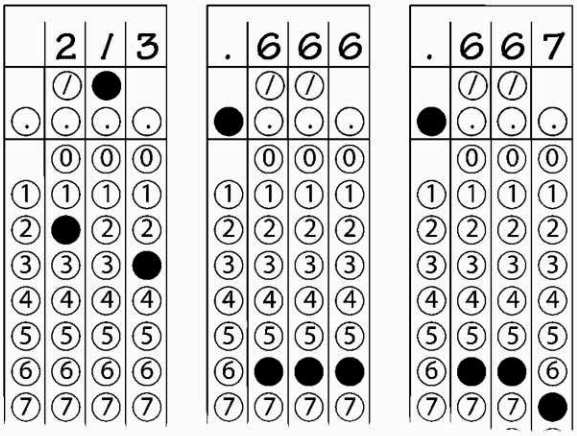
DIRECTIONS

For questions 31-38, solve the problem and enter your answer in the grid, as described below, on the answer sheet.

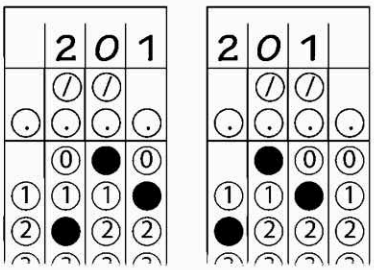
1. Although not required, it is suggested that you write your answer in the boxes at the top of the columns to help you fill in the circles accurately. You will receive credit only if the circles are filled in correctly.
2. Mark no more than one circle in any column.
3. No question has a negative answer.
4. Some problems may have more than one correct answer. In such cases, grid only one answer.
5. **Mixed numbers** such as $3\frac{1}{2}$ must be gridded as 3.5 or 7/2. (If  is entered into the grid, it will be interpreted as $\frac{31}{2}$, not $3\frac{1}{2}$.)
6. **Decimal answers:** If you obtain a decimal answer with more digits than the grid can accommodate, it may be either rounded or truncated, but it must fill the entire grid.



Acceptable ways to grid $\frac{2}{3}$ are:



Answer: 201 – either position is correct



NOTE: You may start your answers in any column, space permitting. Columns you don't need to use should be left blank.

31

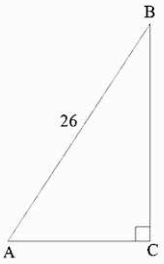
Car component	Not defective	Defective	Total
Component A	225	25	250
Component B	440	10	450
Component C	285	15	300
Total	950	50	1000

The table above summarizes the results of testing 1000 car components of three different types to determine whether they were defective. Of the defective components, what fraction were component B?

32

In the xy-plane, what is the y-coordinate of the point of intersection of the graphs of $y = (x - 1)^2$ and $y = 2x - 3$?

33



Triangle ABC above is a right triangle, and $sin(B) = \frac{5}{13}$. What is the length of side $\overline{BC}$?

34

$$x^2 - ax + 12 = 0$$

In the equation above, a is a constant and $a > 0$. If the equation has two integer solutions, what is a possible value of a?

35

x	y
3	7
k	11
12	n

The table above shows the coordinates of three points on a line in the xy-plane, where k and n are constants. If the slope of the line is 2, what is the value of $k + n$?

36

The acceleration due to gravity, in meters per second per second (m/s^2), on Earth is 1.3 m/s^2 less than 3 times the acceleration due to gravity on Mercury. If the acceleration due to gravity on Earth is 9.8 m/s^2. What is the acceleration due to gravity, in m/s^2, on Mercury?

Questions 37 and 38 refer to the following information.

Kosumi, located in the city of Redfield, South Dakota, is trying to estimate the distances from Redfield to other cities in the state. On a map, he measured the lengths along major highways from Redfield to some other cities and listed these lengths in the table below.

City	Distance from Redfield on map (inches)
Chamberlain	2
Mitchell	$1\frac{3}{4}$
Pierre	$2\frac{1}{4}$
Sioux Falls	3
Sturgis	6
Watertown	$1\frac{1}{2}$

The map that Kosumi used has a scale of $\frac{3}{4}$ inches =50 miles.

37

According to Kosumi's measurements, how many miles is it from Redfield to Sturgis?

38

Kosumi is planning a trip from Redfield to Peirre and expects to average 60 miles per hour while driving. How long, in <u>minutes</u>, will it take for Kosumi to drive from Redfield to Pierre?

SOLUTIONS

Reading

1	B	27	D
2	B	28	A
3	C	29	B
4	C	30	A
5	A	31	C
6	B	32	D
7	C	33	C
8	D	34	A
9	A	35	B
10	D	36	D
11	B	37	A
12	A	38	D
13	C	39	C
14	D	40	B
15	A	41	A
16	B	42	B
17	D	43	D
18	A	44	A
19	C	45	D
20	B	46	D
21	C	47	A
22	C	48	D
23	A	49	A
24	C	50	C
25	C	51	C
26	B	52	C

Writing

1	C	23	C
2	B	24	D
3	B	25	C
4	B	26	A
5	C	27	A
6	D	28	C
7	A	29	A
8	C	30	A
9	B	31	B
10	C	32	D
11	C	33	B
12	B	34	C
13	D	35	D
14	D	36	B
15	A	37	C
16	B	38	B
17	D	39	A
18	B	40	C
19	A	41	D
20	B	42	C
21	B	43	A
22	C	44	D

Math without calculator

1	B
2	A
3	B
4	A
5	C
6	C
7	A
8	D
9	B
10	B
11	B
12	D
13	D
14	B
15	D
16	31
17	9
18	½, .5
19	13
20	4

Math with calculator

1	B	20	B
2	A	21	C
3	B	22	A
4	C	23	D
5	A	24	B
6	B	25	A
7	B	26	C
8	B	27	D
9	A	28	A
10	C	29	D
11	C	30	A
12	D	31	.2, 1/5
13	B	32	1
14	D	33	24
15	C	34	7, 8, 13
16	B	35	30
17	C	36	3.7, 37/10
18	A	37	400
19	D	38	150