Next-Generation ACCUPLACER
PLACEMENT TEST
STUDY GUIDE

FOR MORE INFORMATION CONTACT:
Tutoring and Testing Center
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Lake Land College Placement Testing Policy

• Students will be mandatorily placed into appropriate courses as determined by scores on the Lake Land College placement test/ACT/SAT test and program requirements.
• Students may retest once in each skill area–limit of two sets of Lake Land College test scores within a four-year period.
• Initial placement test is free; minimal retest fee.
• Students with special needs can make special arrangements for placement testing by contacting the Coordinator for Student Accommodations at 217-234-5259.

How well you do may be affected by how well you follow instructions. A short tutorial with sample questions will show you how to take the test. Be sure you understand test instructions before beginning.

Take your time and work at your own speed. There is no time limit. Scores are determined by the number of correct answers. It is to your advantage to take your time.

* Placement in courses is based upon test scores.
* Placement test scores are part of the selection criteria for special admissions programs.

Skill areas include reading, writing (English), and math:

• Next-Generation Reading assesses the test-taker’s ability to derive meaning from a range of texts and to determine the meaning of words and phrases in short and extended contexts.
• Next-Generation Writing evaluates a test-taker’s ability to revise and edit multi-paragraph text.
• The mathematics tests cover quantitative reasoning, algebra, statistics, and functions.

Tips for Taking ACCUPLACER Tests

1. Relax! The ACCUPLACER tests are designed to help you succeed in school. Your scores help determine which courses are most appropriate for your current level of knowledge and skills.
2. You will be able to concentrate better on the test if you get plenty of rest and eat properly before the test. Please arrive a few minutes early so you can find the testing area, restrooms, etc., and have time to gather your thoughts before the test begins.
3. Be sure you understand directions before beginning each test.
4. Read each question carefully until you understand what the question is asking. If answering an item requires several steps, be sure you consider them all.
5. Be sure to answer every item. You are not penalized for guessing. Your score will provide more useful placement information if you answer every item, even if you guess.
6. Don’t be afraid to change an answer if you believe that your first choice was wrong.
7. If you have a problem or question during the test, raise your hand, and the test proctor will help you. Although they cannot answer test questions for you, they can help you with other issues.
Next-Generation Reading Test

The Next-Generation Reading test is a broad-spectrum computer adaptive assessment of test-takers’ developed ability to derive meaning from a range of prose texts and to determine the meaning of words and phrases in short and extended contexts. Passages on the test cover a range of content areas, writing modes, and complexities (relatively easy to very challenging). Both single and paired passages are included. The test pool includes both authentic texts (previously published passages excerpted or minimally adapted from their published form) and commissioned texts (written specifically for the test). Questions are multiple choice in format and appear as both discrete (stand-alone) questions and as parts of sets of questions built around a common passage or passages.

- 20 questions
  - 12 discrete questions—either single-sentence vocabulary or based on a short passage
  - 8 set-based questions—presented in two sets of four
- Skills Assessed: Ability to derive meaning from 4 main content categories
  - Information and Ideas (reading closely, determining central ideas and themes, summarizing, understanding relationships)
  - Rhetoric (analyzing word choice rhetorically, analyzing text structure, analyzing point of view, analyzing purpose, analyzing arguments)
  - Synthesis (analyzing multiple texts)
  - Vocabulary
- Text Type
  - Authentic
  - Informational
  - Literary
- Text length
  - 75 - 400 words
  - Single texts (75 - 400 words)
  - Paired texts (~400 words across 2 texts)
- Range of Content Areas
  - Careers/history/social studies
  - Humanities
  - Science
  - Literary texts are either fiction or literary nonfiction
- Writing Modes (text types)
  - Narrative
  - Informative/Explanatory
  - Arguments
Sample Questions
Directions for questions 1-14

Read the passage(s) below and answer the question based on what is stated or implied in the passage(s) and in any introductory material that may be provided.

In this passage, an amateur theater group called the Laurel Players is putting on its first production.

(1) The Players, coming out of their various kitchen doors and hesitating for a minute to button their coats or pull on their gloves, would see a landscape in which only a few very old, weathered houses seemed to belong; it made their own homes look as weightless and impermanent, as foolishly misplaced as a great many bright new toys that had been left outdoors overnight and rained on. (2) Their automobiles didn’t look right either—unnecessarily wide and gleaming in the colors of candy and ice cream, seeming to wince at each splatter of mud, they crawled apologetically down the broken roads that led from all directions to the deep, level slab of Route Twelve. (3) Once there the cars seemed able to relax in an environment all their own, a long bright valley of colored plastic and plate glass and stainless steel—KING KONE, MOBILGAS, SHOPORAMA, EAT—but eventually they had to turn off, one by one, and make their way up the winding country road that led to the central high school; they had to pull up and stop in the quiet parking lot outside the high-school auditorium.

(4) “Hi!” the Players would shyly call to one another.


(8) Clumping their heavy galoshes around the stage, blotting at their noses with Kleenex and frowning at the unsteady print of their scripts, they would disarm each other at last with peals of forgiving laughter, and they would agree, over and over, that there was plenty of time to smooth the thing out. (9) But there wasn’t plenty of time, and they all knew it, and a doubling and redoubling of their rehearsal schedule seemed only to make matters worse. (10) Long after the time had come for what the director called “really getting this thing off the ground; really making it happen,” it remained a static, shapeless, inhumanly heavy weight; time and time again they read the promise of failure in each other’s eyes, in the apologetic nods and smiles of their parting and the spastic haste with which they broke for their cars and drove home to whatever older, less explicit promises of failure might lie in wait for them there.

1. The contrasts the narrator draws in sentences 1 and 2 between the Players’ homes and the houses in the “landscape” and between the Players’ automobiles and the “roads” are most likely meant to suggest that the Players’ homes and automobiles are

A. old and neglected
B. modern and alien
C. small but expensive
D. grand but unappreciated

2. Based on the passage, which of the following most accurately characterizes the claim that “there was plenty of time to smooth the thing out” (sentence 8)?

A. A comforting falsehood that the Players know to be untrue
B. An outright lie that the director persuades the Players to accept
C. An optimistic conclusion reached by outside observers watching an early rehearsal
D. A realistic appraisal offered by the director after careful analysis of the play’s shortcomings

3. The descriptive language in sentence 10 is mainly intended to reinforce the passage’s depiction of the Players’

A. growing resentment of the director’s leadership
B. increasing reluctance to work as hard as they have been
C. lingering doubts about their fellow cast members
D. persistent mood of despair regarding the play

4. The narrator most strongly suggests that which of the following resulted in the transformation described in the last paragraph?

A. The change in time of day during which rehearsals were being held
B. The greater frequency with which rehearsals were being scheduled
C. The shift in the director’s style from strict to more forgiving
D. The break in routine occurring the day before the first performance
Passage 1
Green Bank, West Virginia, is a tech-savvy teenager’s nightmare. In this tiny town in Pocahontas County—population 143—wireless signals are illegal. No cell phones. No WiFi. No radio. No Bluetooth. No electronic transmitters at all. You’re not even allowed to cozy up to an electric blanket.

The remote town is smack in the center of the National Radio Quiet Zone, a 13,000 square mile stretch of land designated by the Federal Communications Commission to protect two government radio telescopes from human-made interference. The rules are most strict in Green Bank. So strict that a police officer roves the streets listening for forbidden wireless signals.

It’s necessary, though. The town is home to the Green Bank Telescope, the largest steerable radio telescope in the world—and arguably our most powerful link to the cosmos. Scientists there listen to radio energy that has journeyed light years, unlocking secrets about how the stars and galaxies formed. A rogue radio signal could prevent potential discoveries, discoveries that could answer big questions about how the universe ticks.


Passage 2
Lawn mowers seem to have little in common with astronomy, but they are keeping astronomers at the National Radio Astronomical Observatory up at night. A new type of robotic lawn mower has been proposed that uses beacons to train the lawn mower to stay within property lines. The beacons, placed around the yard, transmit at the same wavelength as interstellar molecules astronomers study to understand how stars form. Humans wouldn’t notice the tiny amount of energy given off by the beacons, but the Green Bank Telescope—the size of a football stadium—is so sensitive it can detect the energy given off by a snowflake as it melts. By simply mowing the lawn, a homeowner runs the risk of interfering with one of our greatest tools for studying the universe.

The manufacturer of one “lawnbot” requested a waiver to operate within the National Radio Quiet Zone. Astronomers countered with the suggestion that the beacons be reprogrammed to transmit at another wavelength not emitted by interstellar molecules. Alternately, astronomers want global positioning system (GPS) devices added to each lawnbot to prevent them from operating within the Quiet Zone.
As soon as I saw the Manhattan map, I wanted to draw it. I should be able to draw the place where I lived. So I asked Mom for tracing paper and she got it for me and I brought it into my fort and I pointed the light right down on the first map in the Hagstrom Atlas—downtown, where Wall Street was and the stock market worked. The streets were crazy down there; they didn’t have any kind of streets and avenues; they just had names and they looked like a game of Pick-Up Sticks. But before I could even worry about the streets, I had to get the land right. Manhattan was actually built on land. Sometimes when they were digging up the streets you saw it down there—real dirt! And the land had a certain curve to it at the bottom of the island, like a dinosaur head, bumpy on the right and straight on the left, a swooping majestic bottom.


9. In the passage, the use of “crazy,” “dinosaur head,” “bumpy,” “straight,” and “swooping” serve mainly to emphasize the
   A. narrator’s serious approach to mapmaking
   B. narrator’s frustration with drawing
   C. irregularity of downtown Manhattan
   D. ways in which a landscape can change over time

The life of Edith Wharton is not an inspiring rags-to-riches saga, nor is it a cautionary tale of riches to rags—riches to riches, rather. Born Edith Newbold Jones, in January of 1862, into one of the leading families of New York, the author maintained multiple establishments and travelled in the highest style, with a host of servants, augmenting her several inheritances by writing best-selling fiction. In the Depression year of 1936, when two thousand dollars was a good annual income, her writing earned her a hundred and thirty thousand, much of it from plays adapted from her works. Yet her well-padded, auspiciously sponsored life was not an easy one. The aristocratic social set into which she was born expected its women to be ornamental, well-sheltered, intellectually idle agents of their interwoven clans, whereas Edith was an awkward, red-haired bookworm and dreamer, teased by her two older brothers about her big hands and feet and out of sympathy with her intensely conventional mother, née Lucretia Stevens Rhinelander—a mother-daughter disharmony that rankled in Edith’s fiction to the end.

Adapted from John Updike, “The Changeling,” a review of the biography *Edith Wharton* by Hermione Lee. ©2007 by Condé Nast.

10. Which choice best describes the overall structure of the passage?
   A. Biographical incidents are recounted chronologically.
   B. An author’s life is connected to various themes in her work.
   C. The works of two authors are compared and contrasted.
   D. A list of advantages is followed by a list of disadvantages.

Bones found in South America reveal a bizarre new dinosaur. Based on an ancestry that links it to *Tyrannosaurus rex*, this reptile should have been a meat eater. Instead, it preferred plants. Researchers described the new species in *Nature*.

Its genus name—*Chilesaurus*—reflects that it was found in what’s now Chile. The team that discovered the fossils gave it a species name of *diegosuarezi* to honor Diego Suarez. While just 7 years old, Diego found the first dinosaur bones in the same general area of Chile. It’s a place known as the Toqui Formation.

*C. diegosuarezi* roamed South America 150 million years ago. It measured about 3 meters (roughly 10 feet) from head to tail. Its sturdy back legs, thin body and short, stout arms made it look a bit like *T. rex*. But it also had a long neck, small head and a mouth full of leaf-shaped teeth. Those gave it a *Brontosaurus*-like appearance. And like the *Brontosaurus*, it would have eaten plants, making it an herbivore.

Adapted from Ashley Yeager, “‘Frankenstein’ Dino Showed a Mashup of Traits.” ©2015 by Society for Science & the Public.

11. When the author writes that *C. diegosuarezi* “should have been a meat eater,” she most likely means that the species
   A. would have been healthier if it had eaten meat
   B. would have grown even larger if it had eaten meat
   C. had the head, neck, and teeth of a meat eater
   D. had body features similar to those of its meat-eating relative

Adapted from John Updike, “The Changeling,” a review of the biography *Edith Wharton* by Hermione Lee. ©2007 by Condé Nast.
The first album that singer Leehom Wang bought as an adolescent was the Beastie Boys' *Licensed to Ill*; his first concert was Heart, at the War Memorial in Rochester, New York. As for Chinese pop music, though, Wang says he recalls hearing it only once as a youngster—when his singer uncle, Li Jian-fu, paid a visit in the 1980s and played his nationalistic-patriotic hit “Descendants of the Dragon” in Wang’s living room.

Wang didn’t know it then, but he would go on to remix “Descendants of the Dragon” for a new generation, adding new lyrics about his parents’ own immigrant experience. Over the last decade, Wang’s songs have frequently emphasized his dedication to and pride in his Chinese heritage—themes that reflect his personal journey and have a powerful commercial appeal, particularly on the mainland.

At the same time, Wang has demonstrated a strong interest in incorporating traditional Chinese music and instruments into his hip-hop and R&B-based tunes.

Adapted from Julie Makinen, “Can Leehom Wang Transcend China and America’s Pop Cultures?” ©2014 by Los Angeles Times.

12. The second paragraph marks a shift in the passage from a discussion of Leehom Wang’s

A. family members to Leehom Wang himself
B. early musical influences to his later musical career
C. interest in the United States to his interest in China
D. fondness for pop music to his fondness for traditional music

13. Which of the following would be most similar to the examples the author provides in the passage?

A. A person’s confidential information is compromised because that person left some papers in a public place.
B. A person enjoys numerous television programs, so that person buys a sophisticated new television on which to watch them.
C. A person’s unfiltered first reaction to a major event becomes widely known because that person posts it online.
D. A person wants to keep a record of his or her private thoughts, so that person secretly starts keeping a daily journal.

14. The passage most strongly emphasizes which aspect of the job of construction management?

A. The variety of its responsibilities
B. The educational background it requires
C. The kind of person for whom it is suitable
D. The amount of stress it inflicts

Construction management is ideal for someone who has a general interest in building and design. Working as a construction manager affords the chance to learn a construction project from the planning stage with architects and engineers, to the budgeting stage with cost estimators, to the production stage with laborers. And that’s just a small taste of the job’s duties: Construction managers also obtain work permits, hire contractors, troubleshoot emergencies, schedule walkthroughs and keep clients informed on work timetables and progress.

Adapted from “Best Construction Jobs: Construction Manager.” ©2015 by U.S. News & World Report L.P.

Technology has scrambled the lines between public and private. Cellphones make our most intimate conversations available to anyone within earshot, while headphones create zones of pure solitude even in the midst of the liveliest crowd. Smartphones and tablets allow us to spend time with art without ever leaving the office, while sophisticated new robots enable people who are house-bound to participate in live events remotely.

Adapted from Philip Kennicott, “How to Act in Public Spaces in a Digital Age.” ©2015 by the Washington Post.
Next-Generation Writing Test

The Next-Generation Writing test is a broad-spectrum computer adaptive assessment of test-takers’ developed ability to revise and edit a range of prose texts for effective expression of ideas and for conformity to the conventions of Standard Written English sentence structure, usage, and punctuation. Passages on the test cover a range of content areas, writing modes, and complexities (relatively easy to very challenging). All passages are commissioned—that is, written specifically for the test—so that “errors” (a collective term for a wide range of rhetorical and conventions-related problems) can more effectively be introduced into them. Questions are multiple choice in format and appear as parts of sets built around a common, extended passage; no discrete (stand-alone) questions are included. In answering the questions, test-takers must determine the best revision or editing decision in a particular case (or that no change should be made to the passage as originally presented).

- 25 questions (in 5 sets of 5)
- Skills Assessed: Ability to revise and edit multi-paragraph texts for:
  o Expression of ideas (development, organization, and effective language use)
  o Standard English Conventions (sentence structure, punctuation, usage)
- Text Type: Commissioned essay
  o Literary
  o Informational
- Text Length
  o Single, unified texts (300 – 350 words)
- Range of Content Areas
  o Careers/history/social studies
  o Humanities
  o Science
- Writing modes (text types)
  o Narrative
  o Informative/explanatory
  o Arguments
Sample Questions

Read the following early draft of an essay and then choose the best answer to the question or the best completion of the statement.

(1) The prevalence of nectarines in US supermarkets today is directly related to the company started by two unrelated men who shared a last name, an inventive bent, and a drive to succeed. (2) Moving from Korea to the United States in 1914, Ho "Charles" Kim founded the Kim Brothers trucking company in California in 1921 with his friend Harry Kim. (3) Much of the freight their trucks carried in the early years were fruit grown in the San Joaquin valley. (4) Kim Brothers soon expanded to include nurseries, orchards, and fruit-packing sheds. (5) Eventually the operation became a major employer, providing year-round jobs for about two hundred people and up to four hundred part-time jobs during harvest season coming after growing season. (6) Kim Brothers succeeded even in the face of the Great Depression of the 1920s and 30s because the company produced and sold the first commercially viable nectarines. (7) The nectarine is a hybrid fruit. (8) It combines peach and plum, with the taste and texture of the former and the smooth skin of the latter. (9) With the help of a staff horticulturalist, Kim Brothers developed and patented the "fuzzless peach" known as the Sun Grand nectarine. (10) Though not the first nectarine—the fruit had existed in China for two millennia; the Sun Grand was unique in being hardy enough to ship great distances. (11) By the 1960s, Kim Brothers included more than five hundred acres of farmland and grossed more than $1 million annually. (12) Charles and Harry Kim were eventually recognized as the first millionaires of Korean descent. (13) They were also known for giving back to their community. (14) Charles was also instrumental in helping to create Los Angeles's Koreatown (home today to more Koreans than any place other than North and South Korea).

1. Which is the best version of the underlined portion of sentence 3 (reproduced below)?

Much of the freight their trucks carried in the early years were fruit grown in the San Joaquin valley.

A. (as it is now)
B. have been
C. are
D. was

2. Which is the best decision regarding the underlined portion of sentence 5 (reproduced below)?

Eventually the operation became a major employer, providing year-round jobs for about two hundred people and up to four hundred part-time jobs during harvest season coming after growing season.

A. Leave it as it is now
B. Revise it to "when the crops were ready to pick."
C. Revise it to "after the produce had ripened."
D. DELETE it and end the sentence with a period

3. Which is the most logical placement for sentence 7 (reproduced below)?

The nectarine is a hybrid fruit.

A. Where it is now
B. After sentence 3
C. After sentence 10
D. After sentence 11

4. Which is the best version of the underlined portion of sentence 10 (reproduced below)?

Though not the first nectarine—the fruit had existed in China for two millennia; the Sun Grand was unique in being hardy enough to ship great distances.

A. (as it is now)
B. millennia. The
C. millennia—the
D. millennia) the

5. Sentence 13 is reproduced below.

They were also known for giving back to their community.

The writer is considering adding the following text at the end of the sentence.

by building churches, funding scholarships, and establishing the Korean Association of Southern California.

Should the writer make this addition there?

A. Yes, because it elaborates on the claim made at the beginning of the sentence.
B. Yes, because it establishes the historical period in which Kim Brothers operated.
C. No, because it introduces details that are irrelevant to the paragraph's focus on nectarines.
D. No, because it fails to explain whether the institutions that the Kims established still exist today.
(1) In the Sahara, near the border of Morocco and Algeria, a new species of spider, *Cebrennus rechenbergi*, has been found. (2) These spiders don’t simply scurry across the sand on their many legs, like tumbling gymnasts, they propel themselves forward (or backward) in a series of quick flips. (3) They do this, however, only to elude predators, not to chase prey. (4) A human is thus unlikely ever to see these arachnids flipping toward him or her, only away. (5) A spider of this species was discovered in the Erg Chebbi. (6) It is a sandy desert in southeastern Morocco. (7) A German robotics researcher who makes yearly treks to the region to study how desert creatures thrive in that climate caught one of the spiders and brought it back to his caravan. (8) The next morning, he was amazed to see the creature try to escape by flipping itself quickly away. (9) The researcher turned the spider over to an arachnid specialist for identification. (10) Ultimately, the spider was determined to be a member of a previously unknown species. (11) *C. rechenbergi* are “huntsman spiders”—skilled predators—found only in the Erg Chebbi. (12) They are nocturnal creatures; during the day, they rest in tubes of silken thread they weave into the sand. (13) Agile and athletic, *C. rechenbergi* rear up on their back legs and lash out when attacked—or it somersaults away, rolling like tumbleweed. (14) Few spiders propel themselves as *C. rechenbergi* do, and none do so as comprehensively. (15) Golden rolling spiders of Namibia, for instance, can tumble, but they do so only using gravity to roll downhill. (16) *C. rechenbergi*, by contrast, elude predators by rolling uphill, downhill, or on flat ground. (17) Their reproductive organs distinguish them from other *Cebrennus* spiders. (18) While these spiders run only 3.3 feet per second, they can tumble at 6.6 feet per second. (19) Even if this speedy escape method proves effective, however, it can be costly: tumbling away too many times a day will ultimately exhaust the spiders and lead to their demise.

6. Which is the best version of the underlined portion of sentence 2 (reproduced below)?

_These spiders don’t simply scurry across the sand on their many legs, like tumbling gymnasts, they propel themselves forward (or backward) in a series of quick flips._

A. (as it is now)  
B. legs like tumbling gymnasts;  
C. legs; like tumbling gymnasts,  
D. legs like tumbling gymnasts,
12. Which sentence blurs the focus of the second paragraph and should therefore be deleted?

A. Sentence 4  
B. Sentence 5  
C. Sentence 6  
D. Sentence 7

13. Which is the best version of the underlined portion of sentence 9 (reproduced below)?

Her poems often bore witness to what she called “the bond of live things everywhere,” a bond she evoked through seemingly simple but precisely chosen words.

A. (as it is now)  
B. called:  
C. called—  
D. called,

14. Which version of the underlined portion of sentence 10 (reproduced below) provides the most effective introduction to the last paragraph?

Clifon’s powerful and innovative poems have been widely recognized and appreciated.

A. (as it is now)  
B. passion for teaching others about poetry has  
C. desire to use poetry to speak for the powerless has  
D. many gifts as a writer and teacher have

15. In sentence 12 (reproduced below), the writer wants to echo Bingham’s observation from sentence 11. Which version of the underlined portion best accomplishes that goal?

Of Clifton’s ambitious lines, poet Kevin Young said, “There is a kind of quietude in that lowercase, but also a boldness of speech” that achieves a “powerful intimacy.”

A. (as it is now)  
B. spare  
C. nuanced  
D. vivid

11. Which is the best decision regarding the underlined portion of sentence 3 (reproduced below)?

Family, injustice, being African American and female were Clifton’s enduring themes.

A. Leave it as it is now  
B. Revise it to “and being”  
C. Revise it to “and the subjects of”  
D. DELETE it
Next-Generation Quantitative Reasoning, Algebra, and Statistics Test (QAS)

The Next-Generation Quantitative Reasoning, Algebra, and Statistics placement test is a computer adaptive assessment of test-takers’ ability for selected mathematics content. Questions will focus on a range of topics including computing with rational numbers, applying ratios and proportional reasoning, creating linear expressions and equations, graphing and applying linear equations, understanding probability and set notation, and interpreting graphical displays. In addition, questions may assess a student’s math ability via computational or fluency skills, conceptual understanding, or the capacity to apply mathematics presented in a context. All questions are multiple choice in format and appear discretely (stand alone) across the assessment. On screen 4-function and square-root calculators available for some questions.

- 20 items
- Content assessed
  - Rational numbers
  - Ratio and proportional relationships
  - Exponents
  - Algebraic expressions
  - Linear equations
  - Linear applications and graphs
  - Probability and sets
  - Descriptive statistics
  - Geometry concepts
- Skills Assessed
  - Computation/fluency
  - Conceptual understanding
  - Applications woven throughout many strands
- Item types
  - Discrete
- Calculator Availability
  - 4-function and square-root calculators available for some items
**Sample Questions**

Choose the best answer. If necessary, use the paper you were given.

1. Which of the following expressions is 5 times as much as the sum of \( r \) and \( s \)?
   A. \( 5 \times (r + s) \)
   B. \( 5 + r + s \)
   C. \( r + s \times 5 \)
   D. \( (r + s) \times 5 \)

2. What is the solution to the equation
   \[
   \frac{1}{2}x + \frac{3}{2}(x + 1) - \frac{1}{4} = 5
   \]
   A. \( \frac{5}{2} \)
   B. \( \frac{13}{8} \)
   C. \( \frac{15}{8} \)
   D. \( \frac{17}{8} \)

3. What is the number of grams in 500 kilograms?
   (1 kilogram = 1,000 grams)
   A. 0.5
   B. 5,000
   C. 50,000
   D. 500,000

4. [Graph showing jars sold by flavor and year]

Robert sells four different flavors of jam at an annual farmers market. The graph above shows the number of jars of each type of jam he sold at the market during the first two years. Which flavor of jam had the greatest increase in number of jars sold from Year 1 to Year 2?
   A. Blueberry
   B. Grape
   C. Peach
   D. Strawberry

5. In the \( xy \)-plane, a line crosses the \( y \)-axis at the point \((0, 3)\) and passes through the point \((4, 5)\). Which of the following is an equation of the line?
   A. \( y = \frac{1}{2}x + 3 \)
   B. \( y = 2x + 3 \)
   C. \( y = \frac{1}{2}x - 4 \)
   D. \( y = 2x - 4 \)

6. The amount of money \( M \), in dollars, Paul earns can be represented by the equation \( M = 12.5h + 11 \), where \( h \) is the number of hours Paul works. Which of the following is the best interpretation of the number 11 in the equation?
   A. The amount of money, in dollars, Paul earns each hour
   B. The total amount of money, in dollars, Paul earns after working for \( h \) hours
   C. The total amount of money, in dollars, Paul earns after working for one hour
   D. The amount of money, in dollars, Paul earns in addition to an hourly wage

7. The table gives the population of the 5 largest countries in the European Union in the year 2014. Which of the following is closest to the mean population of these countries?

<table>
<thead>
<tr>
<th>Country</th>
<th>Approximate population (millions)</th>
</tr>
</thead>
<tbody>
<tr>
<td>France</td>
<td>65.9</td>
</tr>
<tr>
<td>Germany</td>
<td>80.8</td>
</tr>
<tr>
<td>Italy</td>
<td>60.8</td>
</tr>
<tr>
<td>Spain</td>
<td>46.5</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>64.3</td>
</tr>
</tbody>
</table>

A. 80.8 million
   B. 64.3 million
   C. 63.7 million
   D. 60.8 million
8. Which of the following fractions is equivalent to \( \frac{-6 - (-9)}{8} \)?
   A. \( \frac{-3}{8} \)
   B. \( \frac{3}{8} \)
   C. \( \frac{-15}{8} \)
   D. \( \frac{15}{8} \)

9. Water runs from a pump at a rate of 1.5 gallons per minute. At this rate, how long would it take to fill a tub with a 150-gallon capacity?
   A. 10 minutes
   B. 100 minutes
   C. 225 minutes
   D. 2,250 minutes

10. The volume of a right rectangular prism is found by multiplying the length of the base by the width of the base by the height of the prism. A right rectangular prism has a volume of 30 cubic inches. If the height of the prism is 6 inches, what is the area of the base of the prism?
    A. 5 square inches
    B. 24 square inches
    C. 36 square inches
    D. 180 square inches

11. Jacoby followed a recipe that requires 2 cups of water for every 3 cups of flour. If he used 8 cups of flour, how many cups of water did he use?
    A. \( \frac{2}{3} \)
    B. 4
    C. \( \frac{5}{3} \)
    D. 12

12. \( 4(x + 5) + 4x + 8 \)
    Which of the following is equivalent to the expression above?
    A. \( 4(2x + 7) \)
    B. \( 8(x + 4) \)
    C. \( 5x + 17 \)
    D. \( 8x + 13 \)

13. It took Khalid 90 minutes to complete 40 tasks. Which of the following is an equivalent rate?
    A. 10 tasks in 0.9 minutes
    B. 10 tasks in 2.25 minutes
    C. 10 tasks in 9 minutes
    D. 10 tasks in 22.5 minutes

14. The table above shows a survey of 50 registered voters in a city. Each voter was asked whether they planned to vote "yes" or "no" on two different issues. If a voter who plans to vote "yes" on issue P is randomly selected, what is the probability that voter also plans to vote "yes" on issue Q?
    A. 0.16
    B. 0.36
    C. 0.40
    D. 0.67

15. Which of the following values is equivalent to \( 5^{-3} \)?
    A. \( \frac{1}{125} \)
    B. \( \frac{1}{15} \)
    C. \(-15\)
    D. \(-125\)

16. Which of the following expressions is equivalent to \( (x^4 \cdot x^5) \)?
    A. \( x^{10} \)
    B. \( x^{15} \)
    C. \( x^{25} \)
    D. \( x^{30} \)
17. The elevation at the summit of Mount Whitney is 4,418 meters above sea level. Climbers begin at a trailhead that has an elevation of 2,550 meters above sea level. What is the change in elevation, to the nearest foot, between the trailhead and the summit? (1 foot = 0.3048 meters)
   A. 569 feet
   B. 5,604 feet
   C. 6,129 feet
   D. 14,495 feet

18. \(3x - 2y = 15\)
   \[x = 3\]
   The two lines given by the equations above intersect in the \(xy\)-plane. What is the value of the \(y\)-coordinate of the point of intersection?
   A. -7
   B. -3
   C. 3
   D. 7

19. \(L = \{0, 20, 40, 80, 100\}\)
    \(M = \{5, 10, 15, 20, 25\}\)
    \(N = \{10, 20, 30, 40, 50\}\)
    Sets \(L, M,\) and \(N\) are shown above. Which of the following sets represents \(L \cup (M \cap N)\) (the union of \(L\) with the intersection of sets \(M\) and \(N\))?
    A. \(\{0, 5, 10, 15, 20, 25, 30, 40, 50, 80, 100\}\)
    B. \(\{0, 10, 20, 40, 80, 100\}\)
    C. \(\{20, 40\}\)
    D. \(\{20\}\)

20. Triangle \(PQR\) lies in the \(xy\)-plane, and the coordinates of vertex \(Q\) are \(2, \ -3\). Triangle \(PQR\) is rotated 180° clockwise about the origin and then reflected across the \(y\)-axis to produce triangle \(P'Q'R'\), where vertex \(Q'\) corresponds to vertex \(Q\) of triangle \(PQR\). What are the coordinates of \(Q'\)?
   A. \((-3, -2)\)
   B. \((3, -2)\)
   C. \((-2, 3)\)
   D. \((2, 3)\)
Next-Generation Advanced Algebra and Functions Test (AAF)

The Next-Generation Advanced Algebra and Functions placement test is a computer adaptive assessment of test-takers’ ability for selected mathematics content. Questions will focus on a range of topics, including a variety of equations and functions, including linear, quadratic, rational, radical, polynomial, and exponential. Questions will also delve into some geometry and trigonometry concepts. In addition, questions may assess a student’s math ability via computational or fluency skills, conceptual understanding, or the capacity to apply mathematics presented in a context. All questions are multiple choice in format and appear discretely (stand alone) across the assessment. On screen 4-function, square-root, and graphing calculators available for some questions.

- 20 items
- Content assessed
  - Linear equations
  - Linear applications and graphs
  - Factoring
  - Quadratics
  - Functions
  - Radical and rational equations
  - Polynomial equations
  - Exponential and logarithmic equations
  - Geometry concepts
  - Trigonometry
- Skills Assessed
  - Computation/fluency
  - Conceptual understanding
  - Applications woven throughout many strands
- Item types
  - Discrete
- Calculator Availability
  - 4-function, square-root, and graphing calculators available for some items
Sample Questions
Choose the best answer. If necessary, use the paper you were given.

1. Function \( g \) is defined by \( g(x) = 3(x + 8) \). What is the value of \( g(12) \)?
   A. \(-4\)
   B. \(20\)
   C. \(44\)
   D. \(60\)

2. Which of the following is an equation of the line that passes through the point \((0, 0)\) and is perpendicular to the line shown above?
   A. \(y = \frac{5}{4}x\)
   B. \(y = \frac{5}{4}x + 3\)
   C. \(y = -\frac{4}{5}x\)
   D. \(y = -\frac{4}{5}x + 3\)

3. The surface area of a right rectangular prism can be found by finding the sum of the area of each of the faces of the prism. What is the surface area of a right rectangular prism with length 4 centimeters (cm), width 9 cm, and height 3 cm? (Area of a rectangle is equal to length times width.)
   A. \(75 \text{ cm}^2\)
   B. \(108 \text{ cm}^2\)
   C. \(120 \text{ cm}^2\)
   D. \(150 \text{ cm}^2\)

4. Which of the following expressions is equivalent to \( (x + 7)(x^2 - 3x + 2) \)?
   A. \(x^3 - 3x^2 + 2x + 14\)
   B. \(x^3 + 4x^2 - 19x + 14\)
   C. \(x^3 - 3x + 14\)
   D. \(x^2 - 2x + 9\)

5. The graph above shows the cost, in dollars, of apples as a function of the number of pounds of apples purchased at a particular grocery store. The equation above defines the cost \(C\), in dollars, for \(p\) pounds of pears at the same store. Which of the following statements accurately compares the cost per pound of apples and the cost per pound of pears at this store?
   A. Apples cost approximately $0.07 less per pound than pears do.
   B. Apples cost approximately $0.04 less per pound than pears do.
   C. Apples cost approximately $0.73 less per pound than pears do.
   D. Apples cost approximately $0.62 more per pound than pears do.
6. Which of the following is the graph of a function where \( y = f(x) \)?

A. 

![Graph A](image1)

B. 

![Graph B](image2)

C. 

![Graph C](image3)

D. 

![Graph D](image4)

7. Which of the following expressions is equivalent to \( 3x^2 + 6x - 24 \)?

A. \( 3(x + 2)(x - 4) \)

B. \( 3(x - 2)(x + 4) \)

C. \( (x + 6)(x - 12) \)

D. \( (x - 6)(x + 12) \)

8. A biologist puts an initial population of 500 bacteria into a growth plate. The population is expected to double every 4 hours. Which of the following equations gives the expected number of bacteria, \( n \), after \( x \) days? (24 hours = 1 day)

A. \( n = 500(2)^x \)

B. \( n = 500(2)^6 \)

C. \( n = 500(6)^x \)

D. \( n = 500(6)^2 \)

9. \( x^2 + 5x - 9 = 5 \)

Which of the following values of \( x \) satisfies the equation above?

A. 7

B. 3

C. -2

D. -7

10. The graph of \( y = f(x) \) is shown in the xy-plane below.

![Graph E](image5)

Which of the following equations could define \( f(x) \)?

A. \( f(x) = x^2 - 2x - 8 \)

B. \( f(x) = -x^2 + 2x - 8 \)

C. \( f(x) = (x - 2)(x + 4) \)

D. \( f(x) = -(x - 1)^2 - 9 \)

11. Which of the following best describes the range of \( y = -2x^4 + 7 \)?

A. \( y \leq -2 \)

B. \( y \geq 7 \)

C. \( y \leq 7 \)

D. All real numbers
12. For which of the following equations is \( x = 6 \) the only solution?
   A. \((6x)^2 = 0\)
   B. \((x - 6)^2 = 0\)
   C. \((x + 6)^2 = 0\)
   D. \((x - 6)(x + 6) = 0\)

13. If \( f(x) = x^2 + 3x + 1 \), what is \( f(x + 2) \)?
   A. \( x^2 + 3x + 3 \)
   B. \((x + 2)^2 + 3(x + 2) + 1\)
   C. \((x + 2)(x^2 + 3x + 1)\)
   D. \( x^2 + 3x + 9 \)

14. What, if any, is a real solution to \( \sqrt{5x + 1} + 9 = 3 \)?
   A. \(-\frac{1}{5}\)
   B. 7
   C. \(\frac{143}{5}\)
   D. There is no real solution.

15. If \( x \neq -2 \) and \( x \neq -\frac{3}{2} \), what is the solution to \( \frac{5}{x + 2} = \frac{x}{2x - 3} \)?
   A. 3 and 5
   B. 2 and \(-\frac{3}{2}\)
   C. \(-2\) and \(\frac{3}{2}\)
   D. \(-3\) and \(-5\)

16. Triangle \( JKL \) and triangle \( PQR \) are shown above. If \( \angle J \) is congruent to \( \angle P \), which of the following must be true in order to prove that triangles \( JKL \) and \( PQR \) are congruent?
   A. \( \angle L \cong \angle R \) and \( JL = PR \)
   B. \( KL = QR \) and \( PR = JL \)
   C. \( JK = PQ \) and \( KL = QR \)
   D. \( \angle K \cong \angle Q \) and \( \angle L \cong \angle R \)

17. In the function \( f(x) = a(x + 2)(x - 3)^6 \), \( a \) and \( b \) are both integer constants and \( b \) is positive. If the end behavior of the graph of \( y = f(x) \) is positive for both very large negative values of \( x \) and very large positive values of \( x \), what is true about \( a \) and \( b \)?
   A. \( a \) is negative, and \( b \) is even.
   B. \( a \) is positive, and \( b \) is even.
   C. \( a \) is negative, and \( b \) is odd.
   D. \( a \) is positive, and \( b \) is odd.

18. Which of the following equations is equivalent to \( 2^{5x} = 7 \)?
   A. \( x = \log_2 \left( \frac{7}{5} \right) \)
   B. \( x = \frac{\log_7 7}{5} \)
   C. \( x = \frac{\log_7 2}{5} \)
   D. \( x = \frac{\log_7 5}{2} \)

19. If \( x > 0 \) and \( y > 0 \), which of the following expressions is equivalent to \( \frac{x - y}{\sqrt{x} - \sqrt{y}} \)?
   A. \( \frac{x - y}{\sqrt{x} - \sqrt{y}} \)
   B. \( \sqrt{x} - \sqrt{y} \)
   C. \( \sqrt{x} + \sqrt{y} \)
   D. \( x\sqrt{x} + y\sqrt{y} \)

20. In triangle \( ABC \), angle \( C \) is a right angle. If \( \cos A = \frac{5}{8} \), what is the value of \( \cos B \)?
   A. \( \frac{3}{8} \)
   B. \( \frac{5}{8} \)
   C. \( \frac{\sqrt{39}}{8} \)
   D. \( \frac{\sqrt{89}}{8} \)
The College Board

The College Board is a mission-driven not-for-profit organization that connects students to college success and opportunity. Founded in 1900, the College Board was created to expand access to higher education. Today, the membership association is made up of over 6,000 of the world’s leading education institutions and is dedicated to promoting excellence and equity in education. Each year, the College Board helps more than seven million students prepare for a successful transition to college through programs and services in college readiness and college success—including the SAT® and the Advanced Placement Program®. The organization also serves the education community through research and advocacy on behalf of students, educators, and schools. For further information, visit collegeboard.org.