CTP 5
SAMPLE ITEMS

ERB | **CTP** COMPREHENSIVE TESTING PROGRAM

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What's New?

While previous editions of CTP have always included some questions that challenge a student's critical thinking skills, the updated questions in CTP 5 subtests focus much more systematically on these skills. This is the most notable difference between CTP 5 and its predecessors—an increased emphasis on assessing critical thinking skills.

We analyzed and classified each CTP 5 question by our own rigorous standards as well as the Webb Depth of Knowledge (DOK) taxonomy in order to include appropriately diverse critical thinking questions throughout the assessment. Where applicable, we also introduced more high-level DOK questions while carefully maintaining CTP's historic level of difficulty to ensure comparability between CTP 5 and CTP 4 or CTP 4R. The sample questions contained within this document will help illustrate CTP 5's enhanced focus on critical thinking skills as well as model the cognitive demands these types of questions elicit.

Please note that there are variations in the representation of DOK levels across subtests due to the nature of the subject matter. For instance, Verbal Reasoning and Quantitative Reasoning do not include DOK Level 1 questions as there are no factual recall items in these subtests. Additionally, Writing Mechanics and Vocabulary do not include DOK Level 3 questions because these subtests measure grammar, syntax, and word meaning—areas that do not lend themselves to the higher level of analysis that is characteristic of DOK Level 3.

English Language Arts

Depth of Knowledge Level 1 (DOK 1):

DOK 1 requires students to receive or recite facts or to use simple skills or abilities. Questions require only a shallow understanding of text presented and often consist of verbatim recall from text or simple understanding of a single word or phrase.

Depth of Knowledge Level 2 (DOK 2):

DOK 2 includes the engagement of some mental processing beyond recalling or reproducing a response; it requires both comprehension and subsequent processing of text or portions of text. Inter-sentence analysis of inference is required. Some important concepts are covered but not in a complex way. Questions at this level may include words such as "summarize," "interpret," "infer," "classify," "organize," "collect," "display," "compare," and "determine whether fact or opinion." Literal main ideas are stressed. A DOK 2 assessment question may require students to apply some of the skills and concepts that are covered in DOK 1.

Depth of Knowledge Level 3 (DOK 3):

Deep knowledge becomes more of a focus at DOK 3. Students are encouraged to go beyond the text; however, they are still required to show understanding of the ideas in the text. Students may be encouraged to explain, generalize, or connect ideas. Questions at DOK 3 involve reasoning and planning. Students must be able to support their thinking. Questions may involve abstract theme identification, inference across an entire passage, or students' application of prior knowledge. Questions may also involve more superficial connections between texts.

These definitions are based on information that can be found in the article by Norman Webb, 2002: http://facstaff.wcer.wisc.edu/normw/All%20content%20areas%20%20DOK%20levels%2032802.pdf

Mathematics and Quantitative Reasoning

Depth of Knowledge Level 2 (DOK 2):

DOK 2 (Basic Application of Skill/Concept) includes the engagement of some mental processing beyond a habitual response: use of information, conceptual knowledge, selection of appropriate procedures for a task, use of two or more steps with decision points along the way. DOK 2 level tasks may ask a student to "classify," "organize," "estimate," "make observations," "collect and display data," and "compare data." Some representative examples of DOK 2 performance are:

> Requiring students to make some decisions as to how to approach the problem or activity.
> Explaining the purpose and use of experimental procedures.
> Carrying out experimental procedures.
> Making observations and collecting data.
> Classifying, organizing, and collecting data.
> Organizing and displaying data in tables, graphs, and charts.

Depth of Knowledge Level 3 (DOK 3):

DOK 3 (Strategic Thinking) requires reasoning, planning, using evidence, and possibly developing a plan or sequence of steps to approach problems. These tasks may require some decision-making and justification, and/or abstract, complex, or non-routine chains of reasoning. In most instances, requiring students to explain their thinking is a DOK 3 kind of task. Activities that require students to make conjectures are also at this level. Evaluating, critiquing, or considering other solutions is also a DOK 3 type of task. Some representative examples of DOK 3 performance are:

> Drawing conclusions from observations.
> Citing evidence and developing a logical argument for concepts.
> Explaining phenomena in terms of concepts.
> Using concepts to solve problems.
> Interpreting information from a complex graph that requires some decisions on what features of the graph need to be considered and how information from the graph can be aggregated.

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Verbal Reasoning

Question 1 · CTP Level 6 · DOK 2

Complete the statement by selecting the most logical conclusion.
If all citrus fruits are a good source of Vitamin C, and if tangerines are a type of citrus fruit, then

A. all citrus fruits are tangerines
B. all citrus fruits have a lot of potassium
C. all tangerines are a good source of Vitamin C
D. all tangerines have more Vitamin C than other citrus fruits

Skill: Logical Reasoning, Type I

Solve deductive ordering problems and draw conclusions that are directly deducible from the information provided.

Key: C

Option C is the logical conclusion of the two premises given in the stem; therefore C is the correct answer.

Question 2 · CTP Level 8 · DOK 3

Sylvia notices that when her alarm clock goes off in the morning, her dog Spot picks up his food dish with his mouth. She then feeds Spot his breakfast. Sylvia concludes that Spot thinks that the alarm means that it is time to eat.

Which of the following is the best way to test this conclusion?

A. Give Spot a different kind of food in the morning, and see if Spot picks up his dish.
B. Wait until Spot picks up his dish in the morning, and then set off the alarm clock.
C. Set the alarm clock off at different times of day, and see if Spot picks up his dish.
D. Play a different kind of alarm clock each day for a week, and then feed Spot.

Skill: Logical Reasoning, Type II

Solve inductive reasoning problems by reasoning from details or evidence to a generalization or hypothesis that makes sense of the evidence.

Key: C

The correct answer is option C. Only option C will test whether the alarm going off triggers Spot to pick up his food dish, indicating that he thinks it is time for him to eat.

Reading Comprehension

Passage 1 · CTP Level 5 · *Out of Curiosity*

Scientists from the National Aeronautics and Space Administration (NASA) say
"curiosity and exploration are vital to the human spirit." Because of this idea,
space scientists study and learn more about the solar system every day.

Two types of planets orbit the Sun in our solar system: terrestrial planets, which are the
four rocky planets closest to the Sun, and gaseous planets, made of gas, which are the
four outer planets. Scientists believe terrestrial and gaseous planets were both formed
the same way, with a center of metal, rocks, and ice. Since the centers of the gaseous
planets were large and dense, their gravity captured gases floating in nearby space.

One of the ways scientists learn about the solar system is by collecting and comparing information
about different planets. For example, the largest terrestrial planet, Earth, and the largest gaseous
planet, Jupiter, have many similarities and differences. Jupiter's diameter is 11.2 times the diameter of
Earth. Because Jupiter is so much larger, its gravity is more than double Earth's gravity. That means
a 150-pound person on Earth would weigh 360 pounds on Jupiter. Earth has a hard surface and
liquid water oceans. Jupiter does not have a solid surface. Its liquid center spins and is surrounded by
gases. Earth's thin atmosphere contains oxygen which is necessary for many forms of life, including
humans. Jupiter's thick atmosphere contains chemicals that would be poisonous for humans to breathe.

Jupiter and Earth both have large storms such as hurricanes. The strongest recorded hurricanes on
Earth have been 1,000 miles wide with 215-mile per hour winds. Such storms are short-lasting on
Earth because it is a rocky planet. The rocky surface gradually slows down the wind. Since Jupiter is
a gaseous planet, storms there can last hundreds of years. In fact, humans have spent night after night
in observatories staring through telescopes watching the same storm on Jupiter for almost two hundred
years. They call the storm The Great Red Spot. It is more than two times the diameter of the Earth. Its
wind speeds are around 400 miles per hour, four times faster than an average hurricane on Earth.

Comparing two planets is only one way to gather information. Space scientists
have really only begun investigating the solar system. The Sun, planets, moons,
and other features provide many interesting subjects for humans to study.

Adapted from "Why We Explore." NASA https://www.nasa.gov/exploration/
whyweexplore/why_we_explore_main.html#.Wayx-8iGPIU

Reading Comprehension CONTINUED

Question 3 · CTP Level 5 · DOK 3

What is the implied main idea of paragraph 3?

A. Earth has a solid surface and liquid water.

B. Jupiter has much more gravity than Earth.

C. Jupiter is more interesting to study than Earth.

D. Earth and Jupiter have different physical properties.

Skill: Explicit Information, Type I

Use explicit information to identify the main idea or primary purpose of a text or part of a text.

Key: D

D is the correct option. All of the details compare physical characteristics. Options A and B are both true statements, but they only refer to one detail of the paragraph. These options are too narrow to be the main idea. Option C is a conclusion drawn about the author's opinion but the paragraph provides facts and not opinions.

Reading Comprehension CONTINUED

Question 4 · CTP Level 5 · DOK 2

What is the main organizational pattern in paragraphs 3 and 4?

A. A list of examples of all the planets.
B. Comparisons and contrasts of two planets.
C. The effects two planets have on each other.
D. The order in which the planets were created.

Skill: Explicit Information, Type III

Identify connections between and among explicit pieces of information from a passage.

Key: B

B is the correct option. Option A refers to all the planets, but these paragraphs only provide details about two planets. Option C correctly refers to two planets, but the paragraphs simply compare them; they do not show the effects that the two planets have on one another. Option D refers to the origins of the planets which are mentioned in paragraph 2 and not in these paragraphs.

Reading Comprehension CONTINUED

Question 5 · CTP Level 5 · DOK 3

This chart is one way to organize information about the planets. A list of examples of all the planets.

Category A	Category B	Category C	Category D
Rocky Surface	Strong Gravity	Liquid Center	People Can Live There

In which categories does Jupiter belong?

A. A and B
B. A and C
C. B and C
D. B and D

Skill: Analysis, Type IV

Categorize and combine pieces of information in a literary or informational text.

Key: C

C is the correct option. Option A correctly notes Jupiter's strong gravity, but Jupiter does not belong in Category A because it is a gaseous planet. Option B correctly notes Jupiter's liquid center, but Jupiter does not belong in Category A because it is a gaseous planet. Option D correctly notes Jupiter's strong gravity, but Jupiter does not belong in Category D because the atmosphere of Jupiter is poisonous to people.

Reading Comprehension CONTINUED

Passage 2 · CTP Level 8 · *Connect the Dots*

Imagine covering a small square with countless tiny dots of paint. Now imagine repeating that effort over hundreds or even thousands of square inches of blank canvas, following clear lines to form identifiable shapes. This describes the method used by the Pointillists, a school of French painters who worked during the late nineteenth century.

Although now it is not the most well-known movement, it was regarded as the height of artistic fashion for several decades in Paris. Furthermore, the legacy from Pointillism influenced later painters and continues even today.

Georges Seurat is considered the father of Pointillism. Seurat trained as an artist and studied the innovative theories of the impressionists and other new artistic movements about the effect of color and the role of human vision. He worked on huge canvasses. However, before he began to paint one of those, he prepared with dozens of smaller sketches and practice pieces. Some of his most famous paintings took upwards of two years to complete! Most feature detailed scenes of townspeople relaxing in public spaces such as parks.

Why would the Pointillists use such a labor-intensive technique? The answer has to do with color. To create a particular hue, most artists of the nineteenth century mixed together several shades to form a single source of color on their palettes. This could create a flat effect that lacked the variety that we see in real life. The Pointillists had a new idea. When they painted with dots, they used several different shades in a single area. This variety created a shifting but unified sense of color and light. Some people say that the Pointillists' canvases seem to shimmer. Others describe a sense of "movement" when they view the works from various angles.

The Pointillists worked at a time of some conflict in the art world. For centuries, a group of experts had controlled which works were displayed publicly in Paris. In the nineteenth century, as artists grew interested in trying new methods and representing fresh subject matter, the experts rejected these developments. However, the artists defied the judgment and created independent displays. By the time Seurat began work, these alternative exhibitions had become more common. Seurat organized one himself and also participated in others.

Seurat died young, leaving behind just 7 huge paintings. This small artistic output may be part of the reason only a few other painters labeled themselves as Pointillists. However, Seurat's ideas about color lived on. His friend, Paul Signac, was not as well known for his art, but he was an excellent communicator. He helped spread the theories that the Pointillists embraced among many more artists and critics of the time. This influence can be seen in both oil and watercolor artists from France and Belgium for many decades. There are even painters from the twentieth century and later who credit those Pointillists for finding the best— if not the easiest—ways to create color and light on canvas.

Reading Comprehension CONTINUED

Question 6 · CTP Level 8 · DOK 3

With which statement would the author most likely agree?

A. The Pointillists did not deserve any of the fame they achieved.
B. The Pointillists quickly became a major art movement and then faded just as quickly.
C. The Pointillists became outcasts from the artistic community of the late nineteenth century for challenging the theories of the leading experts.
D. The Pointillists are now less well-known than some of their contemporaries, but they left a wide, subtle influence on the art world.

Skill: Analysis, Type V

Use explicit and/or implicit information to make predictions, draw conclusions, or formulate hypotheses about a text.

Key: D

The correct answer is D, as conveyed in the final paragraph (as well as in the introductory paragraph). The author emphasizes that the movement is not exceptionally well-known now, but has earned well-deserved recognition for its color theories. None of the other choices are supported by the passage.

Question 7 · CTP Level 8 · DOK 2

Based on the passage, Paul Signac was the artist

A. who best popularized Seurat's ideas
B. whose work was most similar to Seurat's
C. whose death allowed Seurat to achieve fame
D. who made Seurat's few paintings famous

Skill: Explicit Information, Type II

Identify explicit details from a passage and provide answers to "who," "what," "where," "when," "why," and "how" questions about the text.

Key: A

The correct response is A. Signac is explicitly described as "He helped spread the theories that the Pointillists embraced among many more artists and critics of the time."

Writing Concepts & Skills

Question 8 · CTP Level 4 · DOK 2

The sentence at the beginning of the question is the main idea of a paragraph. Select the sentence that best supports this main idea.

Elizabeth Blackwell was the first woman to become a medical doctor in the United States.

A. Blackwell moved to America in 1832 because her father wanted to help abolish slavery.
B. Blackwell lost her sight in one eye, so she could not become a medical surgeon.
C. Blackwell graduated from Geneva Medical College in New York in 1849.
D. Blackwell was born in Bristol, England in 1821.

Skill: Supporting Details, Type I

Identify effective and relevant details to support a given idea or thesis.

Key: C

The correct response is C. Only option C provides information about how Elizabeth Blackwell became a medical doctor. The other options all relate to other aspects of her life.

Writing Concepts & Skills CONTINUED

Question 9 · CTP Level 4 · DOK 3

Choose the opening sentence that best fits with the details in the paragraph.

_____ According to the legend, a Chinese farmer tied a string to his hat to keep it from blowing away. This action led to the development of the kite. The first kites were built using materials that were common in China, such as bamboo for the frame, and silk and paper for the sail.

A. Kites were first invented in China over 2,000 years ago.
B. Children and adults alike enjoy kite-flying in China today.
C. Some of the most popular kites in China are in shapes of dragons and birds.
D. An annual kite-flying festival is held in April in Weifang, Shandong, China.

Skill: Supporting Details, Type II

Choose the appropriate main idea or topic sentence for a paragraph.

Key: A

The correct response is A. The paragraph gives details about the invention of the kite in China, and option A is the only response that focuses on this main idea. Options B, C, and D are related to modern-day kite-flying in China.

Writing Concepts & Skills CONTINUED

Question 10 · CTP Level 7 · DOK 3

Which of these topics would be most appropriate to include in a report
on innovations in major construction projects since 1975?

A. A description of the computer programs used by engineers to design bridges.
B. How highway access ramps are planned.
C. The number of cities with outdated sewer systems.
D. A list of cities that have public transportation systems.

Skill: Purpose, Audience,
and Focus, Type II

Determine how the purpose for and focus
of a piece of writing help distinguish
the kind of information included.

Key: A

The correct answer is Option A, which
is the only option that is related to
innovations in construction.

Writing Concepts & Skills CONTINUED

Question 11 · CTP Level 7 · DOK 3

Which of the following statements from a middle school student would be
most likely to convince the school principal to start a drama club?

A. Lots of kids want to take part in shows when they get to high school, but they
don't have a chance unless they get real experience in middle school.

B. Participation in drama clubs has been shown to help students
achieve higher grades and increase their self-esteem.

C. It is so unfair that everyone talks about sports and music
activities and never even thinks about drama.

D. Wouldn't it be fun to go to a student drama production twice
a year and see what middle schoolers can do?

Skill: Purpose, Audience,
and Focus, Type II

Determine how the purpose for and focus
of a piece of writing help distinguish
the kind of information included.

Key: B

The correct option is B. Only Option B is
written in the formal, respectful tone necessary
for writing a persuasive letter to the school
principal. Options A, C, and D are too informal.

Writing Mechanics

Question 12 · CTP Level 3 · DOK 1

Christopher went to the store and bought a book using <u>your</u> own pocket money.

How should the underlined pronoun be changed?

A. its
B. our
C. his
D. their

Skill: Usage, Type I

Recognize correct and incorrect pronoun use, including pronoun-antecedent agreement.

Key: C

Option C is the correct response. The underlined pronoun should refer back to "Christopher." Thus, it should be a masculine, singular possessive pronoun.

Writing Mechanics CONTINUED

Question 13 · CTP Level 3 · DOK 2

Which of the following should be two sentences?

A. When I found my missing dog, I was so happy.
B. To make my dad proud of me, I cleaned my room.
C. My head hurt and I was tired, but I studied for the math test anyway.
D. I helped my teacher put away the chairs because I couldn't go out for recess, I had a cold.

Skill: Usage, Type V

Recognize rules of sentence boundaries, including avoiding run-ons and fragments.

Key: D

The question asks the test-taker to apply the rules governing sentence boundaries. Option A begins with a dependent clause combined with an independent clause. This is not a run-on sentence or a sentence fragment. Option A is incorrect. Option B begins with an infinitive phrase combined with an independent clause. This is not a run-on sentence or a sentence fragment. Option B is incorrect. Option C links two independent clauses together with a conjunction. This is not a run-on sentence or a sentence fragment. Option C is incorrect. Option D is a run-on sentence and therefore the correct answer. Option D begins with an independent clause combined with a dependent clause and has an additional independent clause set off by a comma.

Vocabulary

Question 14 · CTP Level 5 · DOK 2

Choose the word that best fits in the context of the sentence.

Brandon stands behind a tree to hide from his big sister. He remains _____ so that his sister does not see him move.

A. apparent
B. casual
C. nimble
D. stationary

Skill: Precision

Distinguish among subtle shades of meaning in choosing the appropriate word or words to fill in the blank(s) in a sentence.

Key: D

Option D is the correct response because "being stationary" means to not move, which reflects Brandon's intent to not be seen by his sister. Option A is incorrect because "apparent" means readily seen and Brandon wants to remain hidden. Option B is incorrect because "casual" means relaxed and this does not fit Brandon's intention to hide. Option C is incorrect because "nimble" means to move quickly and easily. This would help Brandon to run from his sister, but not to hide from her.

Vocabulary CONTINUED

Question 15 · CTP Level 8 · DOK 2

Choose the pair of words that best fits in the context of the sentence.

Bicyclists must remain _____ to _____ around obstacles on the road.

- **A.** amiable … navigate
- **B.** composed … ascend
- **C.** attentive … maneuver
- **D.** resourceful … journey

Skill: Precision

Distinguish among subtle shades of meaning in choosing the appropriate word or words to fill in the blank(s) in a sentence.

Key: C

Option C is the correct response because "being attentive" means to pay attention, and "maneuver" means to navigate around. Both these would be needed to avoid "obstacles" on the road. Option A is incorrect because bicyclists navigate, or steer, around obstacles; but amiable means friendly, which does not fit the context. Option B is incorrect because bicyclists should remain composed, calm, and focused; but ascend means to go up, not around. Option D is incorrect because "to journey" means to travel from one place to another and does not mean "to steer." Bicyclists do not need to be "resourceful" in order to be able to avoid obstacles.

Mathematics

Question 16 · CTP Level 3 · DOK 2

In which pair of numbers shown below is the value of the digit 4 in the number on the left 10 times greater than the value of the digit 4 in the number on the right?

A. 4 and 14
B. 45 and 4
C. 41 and 4,432
D. 461 and 4

Skill: Number Sense and Operations with Whole Numbers/Conceptual Understanding

Use place value; read, write, and compare whole numbers; use models to represent, order, and compare whole numbers; and understand expanded notation.

Key: B

The correct option is B. The digit 4 in the number on the left is in the tens place, so its value is 40. The digit 4 in the number on the left is 10 times the value of digit 4 in the number on the right. For Options A and C, the number on the left is less than the number on the right. For Option A, the digit 4 for both numbers is in the ones place, so they both represent 4 ones. For Option C, the digit 4 in the number on the left is in the tens place, so its value is 40. The number on the right in Option C has two 4's, one in the thousands place and one in the hundreds place. Forty is not 10 times larger than 400 or 4000. This question requires that students understand relationships related to place value and interpret the value of each place value position as 10 times the position to the right.

Mathematics CONTINUED

Question 17 · CTP Level 3 · DOK 3

Two students made models to represent fractions. Their models are described.

› Bob modeled his fraction with a square divided into 6 equal sections. His fraction was represented by shading 3 sections in the square.

› Sandra modeled her fraction with a point placed halfway between 0 and 1 on a number line.

Based on these descriptions of the fraction models, which statement is true?

A. Bob modeled a fraction less than $\frac{1}{4}$.

B. Sandra modeled a greater fraction than Bob did.

C. Bob modeled a greater fraction than Sandra did.

D. Bob and Sandra modeled fractions that are equal.

Skill: Number Sense and Operations with Fractions and Decimals

Use value in relation to decimal numbers, recognizes relative magnitude of fractions and decimals, and use models to represent order of fractions and decimals.

Key: D

Choice D is correct. Bob and Sandra's models each represent $\frac{1}{2}$ and are equivalent so choices A, B, and C are incorrect.

Mathematics CONTINUED

Question 18 · CTP Level 6 · DOK 1

Which of the following could not be a rectangle?

- **A.** A parallelogram
- **B.** A polygon
- **C.** A trapezoid
- **D.** A quadrilateral

Skill: Geometry/Conceptual Understanding

Use basic geometric language to classify and characterize properties of geometric figures.

Key: C

A parallelogram could be a rectangle (if it happened to have right angles). A polygon could be a rectangle (if it happened to have four sides and four right angles). A quadrilateral could be a rectangle (if it happened to have four right angles). The reason a trapezoid can never be a rectangle is that a trapezoid must have one pair of opposite parallel sides and one pair of opposite nonparallel sides. In a rectangle, both pairs of opposite sides are parallel. The correct answer choice is C.

Mathematics CONTINUED

Question 19 · CTP Level 6 · DOK 2

Points Q, R, and S represent 3 vertices of square $QRST$. Which pair of coordinates represents point T, the fourth vertex in square $QRST$ above?

A. (3, 5)
B. (6, 2)
C. (5, 3)
D. (2, 6)

Skill: Geometry and Spatial Sense/ Procedural Knowledge
Understand basic characteristics and properties of figures, including applications in coordinate geometry.

Key: C

Option C is correct. Option A: Student reversed the x and y coordinates. Option B: Student noticed that points R and S both have 6 in their coordinates, and points Q and R have x-coordinates of 2. Option C: point T must align vertically with point S, having the same x-coordinate, and align horizontally with point Q, having the same y-coordinate. Option D: Student noticed that both y-coordinates are 6 for point R and S, and point Q and R both have x-coordinates of 2.

Mathematics CONTINUED

Question 20 · CTP Level 6 · DOK 3
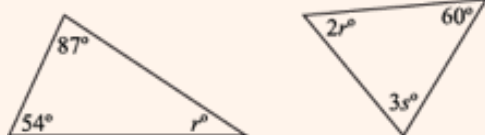
What is the value of s?

A. 14
B. 27
C. 39
D. 46

Skill: Geometry/Problem Solving

Apply geometric properties and relationships, including congruence of figures, lines of symmetry, sum of angle measures in a triangle, images, under transformation, and two- and three-dimensional shape changes.

Key: A

The correct option is A: $r + 54 + 87 = 180$; $r = 180 - 87 - 54 = 39$; $2(39) + 60 + 3s = 180$; $78 + 60 + 3s = 180$; $3s = 42$; $s = 14$. Option B: subtracted 39 and 60 from 180 and divided by 3. Option C: correctly solved for r. Option D: correctly solved for r, doubled 39, added 60, and divided by 3.

Quantitative Reasoning

Question 21 · CTP Level 4 · DOK 2

2 inches

The length of each side of the square above is doubled to make a new square.

The number of inches in the perimeter of the new square.	The number of square inches in the area of the new square.
A	B

Which statement is true?

A. A is greater than B.
B. B is greater than A.
C. A and B are equal.
D. There is not enough information to tell which is greater.

Skill: Extensions/Generalizations

Formulate geometric conclusions based on observation and mathematical judgment.

Key: C

Option C is correct: Each side in the new square will have a length of 4 inches. The perimeter of the new square will be 16 inches and the number of square inches in the area of the new square will be 16 square inches.

Quantitative Reasoning CONTINUED

Question 22 · CTP Level 4 · DOK 3

On Day 1, Allan placed 2 marbles into an empty jar. Each day after that, he continued to add marbles, following the pattern shown.

> On Day 2, there were 7 marbles in the jar.
> On Day 3, there were 17 marbles in the jar.
> On Day 4, there were 32 marbles in the jar.
> On Day 5, there were 52 marbles in the jar.

The number of marbles in the jar on Day 7.	110
A	B

Which statement is true?

A. A is greater than B.
B. B is greater than A.
C. A and B are equal.
D. There is not enough information to tell which is greater.

Skill: Extensions/Generalizations

Recognize patterns and geometric representation of real-life situations.

Key: B

Option B is correct. The rule for the pattern is to add consecutive multiples of 5:
2 + 5 = 7; 7 + 10 = 17; 17 + 15 = 32;
32 + 20 = 52; 52 + 25 = 77; 77 + 30 = 107;
and 107 is less than 110.

Quantitative Reasoning CONTINUED

Question 23 · CTP Level 8 · DOK 2

Jacob's 5 science test scores are all different whole numbers. Each of Kevin's science test scores is exactly 1 point greater than Jacob's score on the same test.

A	B
The result when the mean of Jacob's test scores is subtracted from the mean of Kevin's test scores.	The result when the range of Jacob's test scores is subtracted from the range of Kevin's test scores.

Which statement is true?

A. The quantity in Column A is greater.
B. The quantity in Column B is greater.
C. The two quantities are equal.
D. Not enough information is given for you to decide.

Skill: Analysis

Evaluate statistical arguments, including counting principles and basic interpretation of probabilities.

Key: A

If each of Kevin's scores is 1 point greater than Jacob's score, then the mean of Kevin's scores will be 1 more than the mean of Jacob's scores, but the ranges of the two data sets will be the same. Therefore, the correct answer is Option A.

Quantitative Reasoning CONTINUED

Question 24 · CTP Level 8 · DOK 3

Three band members sold coupon books to raise money. Nikole sold one less than twice as many coupon books as Kellie. Malcolm sold twice the total number of coupon books Kellie and Nikole sold. Which expression represents the number of coupon books Nikole sold if Malcolm sold m coupon books?

A. $\dfrac{m+1}{3}$

B. $\dfrac{m-1}{3}$

C. $\dfrac{2m+1}{3}$

D. $\dfrac{2m-1}{3}$

Skill: Analysis

Interpret algebraic representations.

Key: B

Option A: Made calculation error when subtracting 1. Option B: Let x represent the number of coupon books sold by Kellie. Therefore, number sold by Nikole is $2x$ - 1. The total sold by both is $3x$ - 1. Malcolm sold twice this amount or $6x$ - 2. Let $m = 6x$ - 2 and solve for x.

The resulting expression is $x = \dfrac{m+2}{6}$

Substituting this expression in $2x$ - 1 generates the correct representation for the number of coupon books sold by Nikole. Option C: Forgot to double the total number of books sold by Nikole and Kellie and made calculation error when subtracting 1. Option D: Forgot to double the total number of books sold by Nikole and Kellie.