The *Praxis*® Study Companion

Geometry

5163

Welcome to *The Praxis® Study Companion*

Prepare to Show What You Know

You have been working to acquire the knowledge and skills you need for your teaching career. Now you are ready to demonstrate your abilities by taking a *Praxis®* test.

Using the *Praxis® Study Companion* is a smart way to prepare for the test so you can do your best on test day. This guide can help keep you on track and make the most efficient use of your study time.

The Study Companion contains practical information and helpful tools, including:

- An overview of the *Praxis* tests
- Specific information on the *Praxis* test you are taking
- A template study plan
- Study topics
- Practice questions and explanations of correct answers
- Test-taking tips and strategies
- Frequently asked questions
- Links to more detailed information

So where should you start? Begin by reviewing this guide in its entirety and note those sections that you need to revisit. Then you can create your own personalized study plan and schedule based on your individual needs and how much time you have before test day.

Keep in mind that study habits are individual. There are many different ways to successfully prepare for your test. Some people study better on their own, while others prefer a group dynamic. You may have more energy early in the day, but another test taker may concentrate better in the evening. So use this guide to develop the approach that works best for you.

Your teaching career begins with preparation. Good luck!

Know What to Expect

Which tests should I take?

Each state or agency that uses the *Praxis* tests sets its own requirements for which test or tests you must take for the teaching area you wish to pursue.

Before you register for a test, confirm your state or agency's testing requirements at **www.ets.org/praxis/states**.

How are the *Praxis* tests given?

Praxis tests are given on computer. Other formats are available for test takers approved for accommodations (see page 32).

What should I expect when taking the test on computer?

When taking the test on computer, you can expect to be asked to provide proper identification at the test center. Once admitted, you will be given the opportunity to learn how the computer interface works (how to answer questions, how to skip questions, how to go back to questions you skipped, etc.) before the testing time begins. Watch the **What to Expect on Test Day** video to see what the experience is like.

Where and when are the *Praxis* tests offered?

You can select the test center that is most convenient for you. The *Praxis* tests are administered through an international network of test centers, which includes Prometric® Testing Centers, some universities, and other locations throughout the world.

Testing schedules may differ, so see the *Praxis* web site for more detailed test registration information at **www.ets.org/praxis/register**.
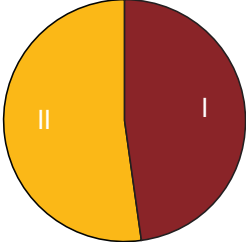
Table of Contents

The Praxis® Study Companion guides you through the steps to success

1. Learn About Your Test

Learn about the specific test you will be taking

Geometry (5163)

Test at a Glance	
Test Name	Geometry
Test Code	5163
Time	130 minutes
Number of Questions	50
Format	Selected-response questions—select one answer choice
	Selected-response questions—select one or more answer choices
	Numeric-entry questions
	On-screen graphing calculator available
Test Delivery	Computer delivered

	Content Categories	Approximate Number of Questions*	Approximate Percentage of Examination
I.	Properties of Geometric Plane Shapes, Congruence, Similarity, Proof, Constructions, and Trigonometry	24	48%
II.	Coordinate Geometry, Circles, Three-Dimensional Geometry, and Geometric Modeling	26	52%

* includes both scored and unscored (pretest) questions. Depending on the number of pretest questions included in each scoring category, the total number of questions in that category may vary from one form of the test to another.

About This Test

The *Praxis* Geometry test is designed to assess the mathematical knowledge and competencies necessary for a beginning Geometry teacher. Test takers have typically completed a bachelor's program with an emphasis in mathematics or mathematics education. The test taker will be required to understand and work with mathematical concepts, to reason mathematically, to make conjectures, to see patterns, to justify statements using informal logical arguments, and to construct simple proofs. Additionally, the examinee will be expected to solve problems by integrating knowledge from different areas of mathematics, to use various representations of concepts, to solve problems that have several solution paths, and to develop mathematical models and use them to solve real-world problems.

The test is not designed to be aligned with any particular school mathematics curriculum, but it is intended to be consistent with the recommendations of national studies on mathematics education, such as the National Governors Association Center for Best Practices and the Council of Chief State School Officers Common Core State Standards in Mathematics (2010), the National Council of Teachers of Mathematics (NCTM) and the Council of the Accreditation of Educator Preparation (CAEP) NCTM CAEP Standards (2012), and the NCTM Principles and Standards for School Mathematics (2000).

This test may contain some questions that will not count toward your score.

Test Specifications

Test specifications describe the knowledge and skills measured by the test. Study topics to help you prepare to answer test questions can be found on page 27.

I. Properties of Geometric Plane Shapes, Congruence, Similarity, Proof, Constructions, and Trigonometry

Properties of Geometric Plane Shapes, Congruence, Proof, and Constructions

A. Knows properties of triangles, quadrilaterals (e.g., rectangle, rhombus, trapezoid), and other polygons

1. Solves problems involving special triangles; e.g., isosceles, equilateral, right, 30-60-90
2. Solves problems that involve medians, midpoints, and altitudes in triangles
3. Identifies geometric properties of various quadrilaterals
4. Identifies relationships among quadrilaterals
5. Solves problems involving sides, angles, or diagonals of polygons
6. Identifies the lines of symmetry in a polygon

B. Knows the properties of lines (e.g., parallel, perpendicular, intersecting) and angles

1. Solves problems involving parallel, perpendicular, and intersecting lines
2. Applies angle relationships (e.g., supplementary, vertical, alternate interior) to solve problems

C. Understands how to solve problems involving perimeter and area of polygons

1. Calculates and interprets perimeter and area of plane figures that can be composed of triangles and quadrilaterals
2. Calculates changes in perimeter and area as the dimensions of plane figures change

D. Understands rigid motions in a plane; e.g., translations, rotations, reflections

1. Uses rigid motions (e.g., translations, rotations, reflections) to transform figures
2. Recognizes that rigid motion transformations preserve distance and angle measure
3. Specifies a sequence of transformations that will map a given figure onto another figure
4. Given a figure, describes the transformations that map the figure onto itself

E. Understands the concept of congruence

1. Determines whether two figures are congruent using theorems (e.g., ASA, SAS, SSS)
2. Determines whether two figures are congruent by directly mapping one figure onto another using a sequence of one or more rigid motions
3. Uses congruence to solve problems with two-dimensional and three-dimensional figures

F. Understands how to prove geometric theorems such as those about lines and angles, triangles, and parallelograms

1. Proves theorems about lines and angles
2. Proves theorems about triangles
3. Proves theorems about parallelograms
4. Understands the nature and structure of geometric proofs, including direct and indirect proofs

G. Knows how geometric constructions are made

1. Identifies and describes formal geometric constructions made with a variety of tools and methods; e.g., copying a segment or an angle; bisecting a segment or an angle; constructing parallel and perpendicular lines; constructing an equilateral triangle, a square, and a regular hexagon inscribed in a circle

Similarity, Proof, and Trigonometry

A. Understands the concept of similarity

1. Uses dilations to transform figures
2. Recognizes that dilation transformations preserve angle measure but not distance
3. Determines whether two figures are similar using theorems (e.g., AA criterion)
4. Determines whether two figures are similar by directly mapping one figure onto another using a sequence of one or more transformations (dilations and/or rigid motions)

5. Uses similarity to solve problems with two-dimensional and three-dimensional figures

B. **Understands how to prove theorems involving similarity**

1. Proves theorems about triangles
2. Uses congruence and similarity criteria for triangles to prove relationships in geometric figures

C. **Understands how trigonometry and the Pythagorean theorem are applied to right triangles**

1. Understands that by similarity, side ratios in right triangles are properties of the angles in the triangle, leading to definitions of trigonometric ratios for acute angles
2. Explains and uses the relationship between the sine and cosine of complementary angles
3. Uses trigonometric ratios to solve right triangles in geometric or applied problems
4. Uses the Pythagorean theorem to solve right triangles in geometric or applied problems
5. Knows the values of trigonometric functions of special angles; e.g., 30°, 45°, 60°, 90°

D. **Understands how trigonometry is applied to general triangles**

1. Applies the Law of Sines and the Law of Cosines to find unknown measurements in triangles

II. **Coordinate Geometry, Circles, Three-Dimensional Geometry, and Geometric Modeling**

Coordinate Geometry

A. **Uses coordinates to prove simple geometric theorems algebraically**

1. Identifies the characteristics of ordered pairs located in quadrants and on the axes of the coordinate plane
2. Uses coordinate geometry to represent and identify the properties of geometric shapes (e.g., Pythagorean theorem, area of a rectangle)
3. Determines the distance between two points
4. Determines the midpoint of the segment joining two points
5. Uses the slope criteria for parallel and perpendicular lines to solve geometric problems

6. Uses coordinates to compute perimeters of polygons and areas of triangles and quadrilaterals
7. Uses coordinates to prove simple geometric theorems algebraically

Circles

A. **Understands properties of circles**

1. Solves problems involving diameter and radius of a circle
2. Solves problems involving measures of inscribed angles, central angles, circumscribed angles, and arcs
3. Uses properties of tangent lines to circles to solve problems
4. Proves theorems about circles
5. Solves problems involving the inscribed and circumscribed circles of a triangle, a square, and a regular hexagon, including the constructions of the circles

B. **Understands how to solve problems involving length of arcs and area of sectors**

1. Solves problems involving circumference and area of a circle
2. Solves problems involving length of arcs and area of sectors

C. **Knows how to translate between the geometric description and the equation for a circle**

1. Knows and uses the geometric description of a circle
2. Determines and uses the equation of a circle of given center and radius
3. Finds the center and radius of a circle given by an equation in standard form
4. Completes the square to find the center and radius of a circle given by an equation

Three-Dimensional Geometry and Geometric Modeling

A. **Knows how to solve problems involving surface area and volume of solids**

1. Calculates and interprets surface area and volume of solids; e.g., prisms, pyramids, cones, cylinders, spheres
2. Calculates changes in surface area and volume as the dimensions of a solid change

B. Knows how to visualize relationships (e.g., cross section, nets, rotations) between two-dimensional and three-dimensional objects

1. Identifies the shapes of two-dimensional cross sections of three-dimensional objects, and identifies three-dimensional objects generated by rotations of two-dimensional objects

2. Uses two-dimensional representations of three-dimensional objects to visualize and solve problems

C. Knows how to apply geometric concepts in real-world situations

1. Uses geometric shapes, their measures, and their properties to describe objects

2. Applies geometric methods to solve design problems

2. Familiarize Yourself with Test Questions

Become comfortable with the types of questions you'll find on the Praxis *tests*

The *Praxis* assessments include a variety of question types: constructed response (for which you write a response of your own); selected response, for which you select one or more answers from a list of choices or make another kind of selection (e.g., by clicking on a sentence in a text or by clicking on part of a graphic); and numeric entry, for which you enter a numeric value in an answer field. You may be familiar with these question formats from taking other standardized tests. If not, familiarize yourself with them so you don't spend time during the test figuring out how to answer them.

Understanding Computer-Delivered Questions

Questions on computer-delivered tests are interactive in the sense that you answer by selecting an option or entering text on the screen. If you see a format you are not familiar with, read the directions carefully. The directions always give clear instructions on how you are expected to respond.

For most questions, you respond by clicking an oval to select a single answer from a list of answer choices.

However, interactive question types may also ask you to respond by:

- **Clicking more than one oval** to select answers from a list of choices.
- **Typing in an entry box.** When the answer is a number, you may be asked to enter a numerical answer. Some questions may have more than one place to enter a response.
- **Clicking check boxes.** You may be asked to click check boxes instead of an oval when more than one choice within a set of answers can be selected.
- **Clicking parts of a graphic.** In some questions, you will select your answers by clicking on a location (or locations) on a graphic such as a map or chart, as opposed to choosing your answer from a list.
- **Clicking on sentences.** In questions with reading passages, you may be asked to choose your answers by clicking on a sentence (or sentences) within the reading passage.
- **Dragging and dropping answer choices into targets on the screen.** You may be asked to select answers from a list of choices and drag your answers to the appropriate location in a table, paragraph of text or graphic.
- **Selecting answer choices from a drop-down menu.** You may be asked to choose answers by selecting choices from a drop-down menu (e.g., to complete a sentence).

Remember that with every question you will get clear instructions.

Perhaps the best way to understand computer-delivered questions is to view the [Computer-delivered Testing Demonstration](#) on the Praxis web site to learn how a computer-delivered test works and see examples of some types of questions you may encounter.

Understanding Selected-Response Questions

Many selected-response questions begin with the phrase "which of the following." Take a look at this example:

Which of the following is a flavor made from beans?

(A) Strawberry

(B) Cherry

(C) Vanilla

(D) Mint

How would you answer this question?

All of the answer choices are flavors. Your job is to decide which of the flavors is the one made from beans.

Try following these steps to select the correct answer.

1) **Limit your answer to the choices given.** You may know that chocolate and coffee are also flavors made from beans, but they are not listed. Rather than thinking of other possible answers, focus only on the choices given ("which of the following").

2) **Eliminate incorrect answers.** You may know that strawberry and cherry flavors are made from fruit and that mint flavor is made from a plant. That leaves vanilla as the only possible answer.

3) **Verify your answer.** You can substitute "vanilla" for the phrase "which of the following" and turn the question into this statement: "Vanilla is a flavor made from beans." This will help you be sure that your answer is correct. If you're still uncertain, try substituting the other choices to see if they make sense. You may want to use this technique as you answer selected-response questions on the practice tests.

Try a more challenging example

The vanilla bean question is pretty straightforward, but you'll find that more challenging questions have a similar structure. For example:

Entries in outlines are generally arranged according to which of the following relationships of ideas?

(A) Literal and inferential

(B) Concrete and abstract

(C) Linear and recursive

(D) Main and subordinate

You'll notice that this example also contains the phrase "which of the following." This phrase helps you determine that your answer will be a "relationship of ideas" from the choices provided. You are supposed to find the choice that describes how entries, or ideas, in outlines are related.

Sometimes it helps to put the question in your own words. Here, you could paraphrase the question in this way: "How are outlines usually organized?" Since the ideas in outlines usually appear as main ideas and subordinate ideas, the answer is (D).

QUICK TIP: Don't be intimidated by words you may not understand. It might be easy to be thrown by words like "recursive" or "inferential." Read carefully to understand the question and look for an answer that fits. An outline is something you are probably familiar with and expect to teach to your students. So slow down, and use what you know.

Watch out for selected-response questions containing "NOT," "LEAST," and "EXCEPT"

This type of question asks you to select the choice that does not fit. You must be very careful because it is easy to forget that you are selecting the negative. This question type is used in situations in which there are several good solutions or ways to approach something, but also a clearly wrong way.

How to approach questions about graphs, tables, or reading passages

When answering questions about graphs, tables, or reading passages, provide only the information that the questions ask for. In the case of a map or graph, you might want to read the questions first, and then look at the map or graph. In the case of a long reading passage, you might want to go ahead and read the passage first, noting places you think are important, and then answer the questions. Again, the important thing is to be sure you answer the questions as they refer to the material presented. So read the questions carefully.

How to approach unfamiliar formats

New question formats are developed from time to time to find new ways of assessing knowledge. Tests may include audio and video components, such as a movie clip or animation, instead of a map or reading passage. Other tests may allow you to zoom in on details in a graphic or picture.

Tests may also include interactive questions. These questions take advantage of technology to assess knowledge and skills in ways that standard selected-response questions cannot. If you see a format you are not familiar with, **read the directions carefully**. The directions always give clear instructions on how you are expected to respond.

QUICK TIP: Don't make the questions more difficult than they are. Don't read for hidden meanings or tricks. There are no trick questions on *Praxis* tests. They are intended to be serious, straightforward tests of your knowledge.

Understanding Constructed-Response Questions

Constructed-response questions require you to demonstrate your knowledge in a subject area by creating your own response to particular topics. Essays and short-answer questions are types of constructed-response questions.

For example, an essay question might present you with a topic and ask you to discuss the extent to which you agree or disagree with the opinion stated. You must support your position with specific reasons and examples from your own experience, observations, or reading.

Take a look at a few sample essay topics:

- "Celebrities have a tremendous influence on the young, and for that reason, they have a responsibility to act as role models."
- "We are constantly bombarded by advertisements—on television and radio, in newspapers and magazines, on highway signs, and the sides of buses. They have become too pervasive. It's time to put limits on advertising."
- "Advances in computer technology have made the classroom unnecessary, since students and teachers are able to communicate with one another from computer terminals at home or at work."

Keep these things in mind when you respond to a constructed-response question

1) **Answer the question accurately.** Analyze what each part of the question is asking you to do. If the question asks you to describe or discuss, you should provide more than just a list.

2) **Answer the question completely.** If a question asks you to do three distinct things in your response, you should cover all three things for the best score. Otherwise, no matter how well you write, you will not be awarded full credit.

3) **Answer the question that is asked.** Do not change the question or challenge the basis of the question. You will receive no credit or a low score if you answer another question or if you state, for example, that there is no possible answer.

4) **Give a thorough and detailed response.** You must demonstrate that you have a thorough understanding of the subject matter. However, your response should be straightforward and not filled with unnecessary information.

5) **Reread your response.** Check that you have written what you thought you wrote. Be sure not to leave sentences unfinished or omit clarifying information.

QUICK TIP: You may find that it helps to take notes on scratch paper so that you don't miss any details. Then you'll be sure to have all the information you need to answer the question.

3. Practice with Sample Test Questions

Answer practice questions and find explanations for correct answers

Sample Test Questions

This test is available via computer delivery. To illustrate what the computer-delivered test looks like, the following sample question shows an actual screen used in a computer-delivered test. For the purposes of this guide, sample questions are provided as they would appear in a paper-delivered test.

FORMULAS

Volume

Sphere with radius r: $\qquad\qquad\qquad\qquad\qquad\qquad\qquad V = \frac{4}{3}\pi r^3$

Right circular cone with height h and base of radius r: $\qquad V = \frac{1}{3}\pi r^2 h$

Right circular cylinder with height h and base of radius r: $\quad V = \pi r^2 h$

Pyramid with height h and base of area B: $\qquad\qquad\qquad V = \frac{1}{3}Bh$

Right prism with height h and base of area B: $\qquad\qquad\quad V = Bh$

Surface Area

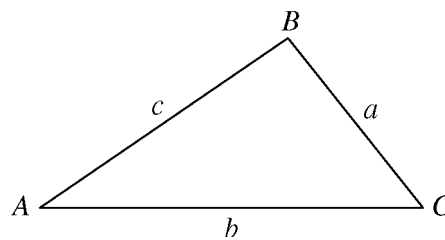Sphere with radius r: $\qquad\qquad\qquad\qquad\qquad\qquad\qquad A = 4\pi r^2$

Right circular cone with radius r and slant height s: $\qquad A = \pi rs + \pi r^2$

Distance from point (x_1, y_1) to line $Ax + By + C = 0$

$$d = \frac{|Ax_1 + By_1 + C|}{\sqrt{A^2 + B^2}}$$

Law of Sines
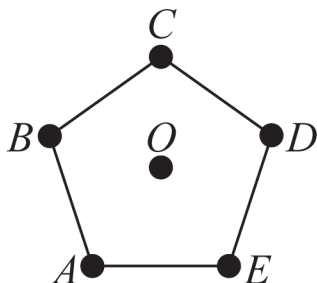
$$\frac{\sin A}{a} = \frac{\sin B}{b} = \frac{\sin C}{c}$$

Law of Cosines

$$c^2 = a^2 + b^2 - 2ab\left(\cos C\right)$$

Sample Test Questions

The sample questions that follow illustrate the kinds of questions in the test. They are not, however, representative of the entire scope of the test in either content or difficulty. Answers with explanations follow the questions.
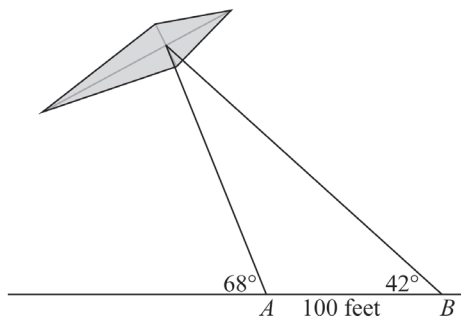
1.

The figure above shows regular pentagon *ABCDE* with center *O*. Which of the following plane transformations will map the regular pentagon onto itself?

(A)   A clockwise rotation of $72°$ about point *E*

(B)   A clockwise rotation of $108°$ about point *O*

(C)   A counterclockwise rotation of $72°$ about point *O*

(D)   A counterclockwise rotation of $108°$ about point *E*

2.

A kite is being flown as shown in the figure above. Points *A* and *B* on the ground are 100 feet apart. The angle of elevation from the ground to the kite from point *A* is $68°$, and from point *B* it is $42°$. What is the distance from point *A* to the kite, rounded to the nearest foot?

(A)   67 feet

(B)   72 feet

(C)   139 feet

(D)   153 feet

3.   A circle in the *xy*-plane has a radius of 16 and has its center at $(-p,q)$, where *p* and *q* are positive constants. What is the equation of the circle?

(A) $(x-p)^2 + (y+q)^2 = 4$

(B) $(x-p)^2 + (y+q)^2 = 256$

(C) $(x+p)^2 + (y-q)^2 = 4$

(D) $(x+p)^2 + (y-q)^2 = 256$

For the following question, enter your answers in the answer boxes.

4.   What are the coordinates (x,y) of the midpoint of the line segment that has $(-2,3)$ and $(4,-5)$ as endpoints?

([   ] , [   ])

5.   A tree casts a shadow that has a length of 92 feet. The angle of elevation from the end of the shadow to the top of the tree is $60°$. Which of the following is the best estimate for the height of the tree, in feet?

(A)   53

(B)   65

(C)   130

(D)   159
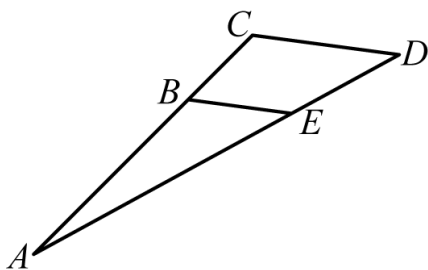
6. In triangle *ACD* above, $\dfrac{AB}{AC} = \dfrac{AE}{AD}$. In order to prove that sides $\overline{BE}$ and $\overline{CD}$ are parallel,

   Madeline indicates that $\angle A$ is congruent to itself by the reflexive property, and so triangles *ABE* and *ACD* are similar by the side-angle-side similarity theorem. Which of the following statements completes Madeline's proof?

   (A) Because triangles *ABE* and *ACD* are similar, then sides $\overline{BE}$ and $\overline{CD}$ are proportional, and proportional sides in similar triangles are parallel.

   (B) Because triangles *ABE* and *ACD* are similar, then $\angle ABE$ and $\angle CBE$ must be supplementary, which means that sides $\overline{BE}$ and $\overline{CD}$ must be parallel.

   (C) Because triangles *ABE* and *ACD* are similar, then $\angle ABE$ and $\angle CBE$ must be congruent alternate interior angles, which means that sides $\overline{BE}$ and $\overline{CD}$ must be parallel.

   (D) Because triangles *ABE* and *ACD* are similar, then $\angle ABE$ and $\angle ACD$ must be congruent, which means that they are congruent corresponding angles and sides $\overline{BE}$ and $\overline{CD}$ must be parallel.
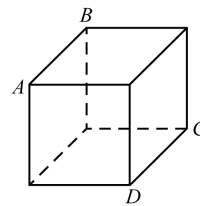
7. If a plane passes through points *A*, *B*, and *C* in the cube above, which of the following is the most precise classification of the polygon that results from this cross section?

   (A) Parallelogram

   (B) Rectangle

   (C) Square

   (D) Trapezoid
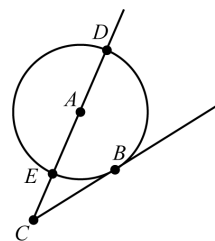
8. In the figure above, line *CB* is tangent to the circle with center *A*. If the measure of arc *DB* is 125°, what is the measure of angle *EAB*?

   (A) 27.5°

   (B) 35°

   (C) 55°

   (D) 62.5°
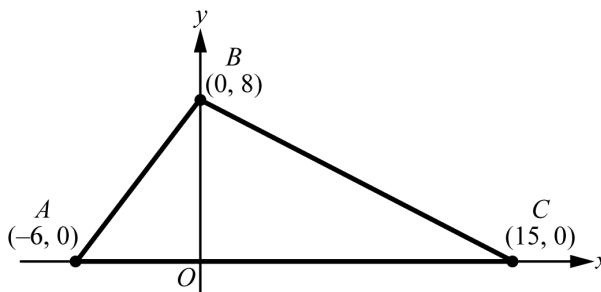
9. What is the perimeter of triangle *ABC* in the *xy*-plane above?

   (A) 48

   (B) 49

   (C) 50

   (D) 51
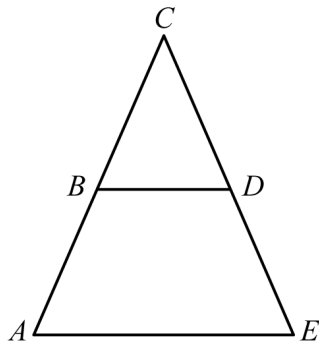
	Statement		Statement
1	Segment $\overline{BD}$ is parallel to segment $\overline{AE}$	1	Given
2	$\angle C \cong \angle C$	2	Reflexive property
3	?	3	Corresponding angles formed by parallel lines are congruent
4	$\triangle ACE \cong \triangle BCD$	4	The AA (angle-angle) similarity theorem

10. In triangle ACE above, segment $\overline{BD}$ is parallel to segment $\overline{AE}$. Based on the reasons in the proof above, which of the following is the correct statement for step 3 in the proof that $\triangle ACE \sim \triangle BCD$ triangle?

(A) $\angle ABD \cong \angle CBD$

(B) $\angle ABD \cong \angle BDC$

(C) $\angle AED \cong \angle CBD$

(D) $\angle AED \cong \angle BDC$

11. The figure above shows a right circular cylinder with a height of 4 centimeters and a diameter of 5 centimeters. If the height and diameter of the
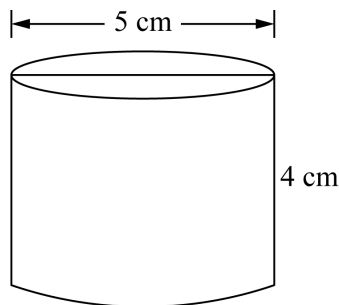
cylinder are both doubled in length, which of the following gives the new volume of the resulting cylinder, in cubic centimeters?

(A) 50π

(B) 100π

(C) 200π

(D) 800π

12. The point with coordinates $(-5, 4)$ lies in which quadrant of the xy-plane?

(A)   Quadrant I

(B)   Quadrant II

(C)   Quadrant III

(D)   Quadrant IV
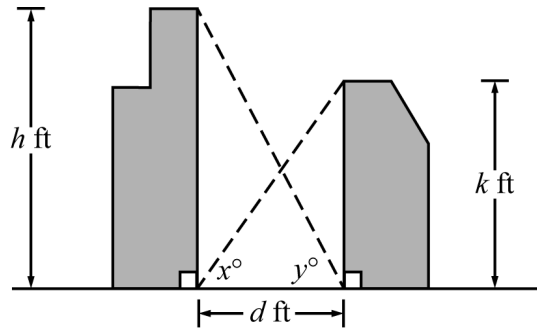
For the following question, select all the answer choices that apply.

13. The figure above represents two buildings d feet apart. The heights of the buildings are h feet and k feet, respectively, and the angles formed by the lines of sight from the base of each building to the top of the other building measure x degrees and y degrees, respectively. Which of the following sets of quantities are sufficient to determine the value of k?

Select all that apply.

[A] d and x

[B] d, h, and y

[C] h, x, and y

Answers to Sample Questions

1. The correct answer is (C). Since the five angles *AOB*, *BOC*, *COD*, *DOE*, and *EOA* are congruent and the sum of their measures is 360°, it follows that the measure of each of the angles *AOB*, *BOC*, *COD*, *DOE*, and *EOA* is $\frac{360°}{5}$, or 72°. A counterclockwise rotation of 72° about point *O*, the center of regular pentagon *ABCDE*, will map the pentagon to itself.

2. The correct answer is (D).
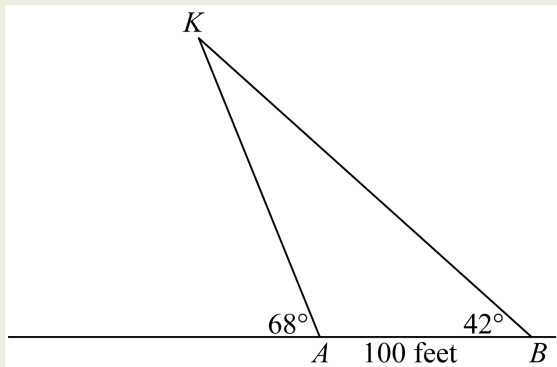
If point *K* represents the kite, as shown in the figure above, then in triangle *KAB*, the measure of angle *KBA* is 42°, the measure of angle *KAB* is 180 − 68, or 112°, and the measure of angle *AKB* is 180 − 42 − 112, or 26°. Using the law of sines in triangle *KAB*, we get

$\frac{KA}{\sin(42°)} = \frac{AB}{\sin(26°)}$, which, when solved for $\overline{KA}$,

gives $\frac{100 \times \sin(42°)}{\sin(26°)}$, or approximately 152.6 feet. The distance from point *A* to the kite, rounded to the nearest foot, is 153 feet.

3. The correct answer is (D). Recall that the equation of a circle in the *xy*-plane with the center at (h,k) and a radius of *r* is $(x-h)^2 + (y-k)^2 = r^2$. When $(h,k) = (-p,q)$ and $r = 16$, the equation of the circle is $(x-(-p))^2 + (y-q)^2 = 16^2$, or $(x+p)^2 + (y-q)^2 = 256$.

4. The correct answer is $(1,-1)$. Recall that the midpoint of the line segment connecting points (x_1,y_1) and (x_2,y_2) is $\left(\frac{x_1+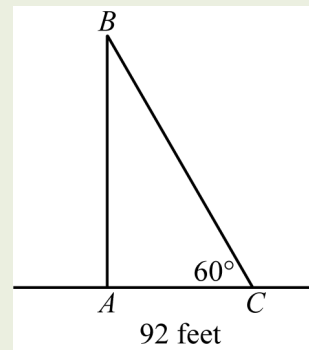x_2}{2}, \frac{y_1+y_2}{2}\right)$. The midpoint of the line segment connecting $(-2,3)$ and $(4,-5)$ is $\left(\frac{(-2)+4}{2}, \frac{3+(-5)}{2}\right)$, or $(1,-1)$.

5. The correct answer is (D).

In the figure above, $\overline{AB}$ represents the tree and $\overline{AC}$ represents the shadow of the tree. Triangle *ABC* is a 30° − 60° − 90° triangle. Recall that in a 30° − 60° − 90° triangle, the length of the longest leg is $\sqrt{3}$ times the length of the shortest leg. (This is equivalent to the fact that $\tan(60°) = \sqrt{3}$.) Since the length of the shadow (that is, the length of the shortest leg) is 92 feet, the height of the tree (that is, the length of the longest leg) is $\sqrt{3} \times 92$, or approximately 159 feet.

6. The correct answer is (D). Since $\angle ABE$ and $\angle ACD$ are corresponding angles in the similar triangles *ABE* and *ACD*, it follows that they are congruent angles. Since $\angle ABE$ and $\angle ACD$ are corresponding angles when transversal $\overline{AC}$ intersects line segments $\overline{BE}$ and $\overline{CD}$, and since the two angles are congruent, it follows that line segments $\overline{BE}$ and $\overline{CD}$ are parallel.

7. The correct answer is (D).
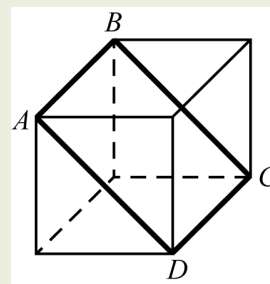
Since the plane passes through points *A*, *B*, and *C*, the plane will also pass through the point *D*, as shown in the figure above. The cross section polygon is quadrilateral *ABCD*, which is a rectangle because the opposite sides are equal to each other and because $\overline{AB}$ is perpendicular to $\overline{AD}$.

8. The correct answer is (C). Since $\overline{DE}$ is a diameter of the circle, the sum of the measures of arcs DB and EB is $180°$, and therefore the measure of arc EB is $180 - 125$, or $55°$. Since the measure of central angle EAB is the same as the measure of arc EB, it follows that the measure of central angle EAB is $55°$.

9. The correct answer is (A). The Pythagorean theorem applied to right triangle OAB implies that $AB = \sqrt{6^2 + 8^2} = 10$. The Pythagorean theorem applied to right triangle OBC implies that $BC = \sqrt{8^2 + 15^2} = 17$. From the figure, we can conclude that $AC = 21$, so the perimeter of triangle ABC is $10 + 17 + 21$, or 48.

10. The correct answer is (D). Since angles AED and BDC are corresponding angles when transversal $\overline{CE}$ intersects parallel lines $\overline{BD}$ and $\overline{AE}$, it follows that the two angles are congruent. This information can be used in step 4 in conjunction to the AA similarity theorem to conclude that triangles ACE and BCD are similar.

11. The correct answer is (C). Recall that the volume of a right circular cylinder with height h and base radius r is $\pi r^2 h$. The new cylinder has a height of 8 centimeters and a diameter of 10 centimeters. The volume of the new cylinder is $\pi \times \left(\dfrac{10}{2}\right)^2 \times 8$, or 200π cubic centimeters.

12. The correct answer is (B). Since the x-coordinate of the point is negative and the y-coordinate of the point is positive, the point lies in quadrant II.

13. The correct answers are (A) and (C). In the figure below, the two buildings are represented by line segments $\overline{AB}$ and $\overline{CD}$.
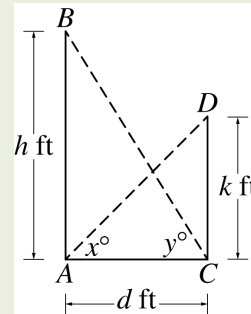
Choice (A): In right triangle ACD, $\tan(x°) = \dfrac{k}{d}$, and therefore $k = \tan(x°) \times d$. The values of d and x are sufficient to determine the value of k.

Choice (C): In right triangle ABC, $\tan(y°) = \dfrac{h}{d}$, and therefore $d = \dfrac{h}{\tan(y°)}$.

In right triangle ACD, $\tan(x°) = \dfrac{k}{d}$, and therefore $k = \tan(x°) \times d = \tan(x°) \times \dfrac{h}{\tan(y°)}$. The values of h, x, and y are sufficient to determine the value of k.

4. Determine Your Strategy for Success

Set clear goals and deadlines so your test preparation is focused and efficient

Effective *Praxis* test preparation doesn't just happen. You'll want to set clear goals and deadlines for yourself along the way. Otherwise, you may not feel ready and confident on test day.

1) Learn what the test covers.

You may have heard that there are several different versions of the same test. It's true. You may take one version of the test and your friend may take a different version a few months later. Each test has different questions covering the same subject area, but both versions of the test measure the same skills and content knowledge.

You'll find specific information on the test you're taking on page 5, which outlines the content categories that the test measures and what percentage of the test covers each topic. Visit **www.ets.org/praxis/testprep** for information on other *Praxis* tests.

2) Assess how well you know the content.

Research shows that test takers tend to overestimate their preparedness—this is why some test takers assume they did well and then find out they did not pass.

The *Praxis* tests are demanding enough to require serious review of likely content, and the longer you've been away from the content, the more preparation you will most likely need. If it has been longer than a few months since you've studied your content area, make a concerted effort to prepare.

3) Collect study materials.

Gathering and organizing your materials for review are critical steps in preparing for the *Praxis* tests. Consider the following reference sources as you plan your study:

- Did you take a course in which the content area was covered? If yes, do you still have your books or your notes?
- Does your local library have a high school-level textbook in this area? Does your college library have a good introductory college-level textbook in this area?

Practice materials are available for purchase for many *Praxis* tests at **www.ets.org/praxis/testprep**. Test preparation materials include sample questions and answers with explanations.

4) Plan and organize your time.

You can begin to plan and organize your time while you are still collecting materials. Allow yourself plenty of review time to avoid cramming new material at the end. Here are a few tips:

- Choose a test date far enough in the future to leave you plenty of preparation time. Test dates can be found at **www.ets.org/praxis/register/dates_centers**.
- Work backward from that date to figure out how much time you will need for review.
- Set a realistic schedule—and stick to it.

5) Practice explaining the key concepts.

Praxis tests with constructed-response questions assess your ability to explain material effectively. As a teacher, you'll need to be able to explain concepts and processes to students in a clear, understandable way. What are the major concepts you will be required to teach? Can you explain them in your own words accurately, completely, and clearly? Practice explaining these concepts to test your ability to effectively explain what you know.

6) Understand how questions will be scored.

Scoring information can be found on page 35.

7) Develop a study plan.

A study plan provides a road map to prepare for the *Praxis* tests. It can help you understand what skills and knowledge are covered on the test and where to focus your attention. Use the study plan template on page 25 to organize your efforts.

And most important—get started!

Would a Study Group Work for You?

Using this guide as part of a study group

People who have a lot of studying to do sometimes find it helpful to form a study group with others who are working toward the same goal. Study groups give members opportunities to ask questions and get detailed answers. In a group, some members usually have a better understanding of certain topics, while others in the group may be better at other topics. As members take turns explaining concepts to one another, everyone builds self-confidence.

If the group encounters a question that none of the members can answer well, the group can go to a teacher or other expert and get answers efficiently. Because study groups schedule regular meetings, members study in a more disciplined fashion. They also gain emotional support. The group should be large enough so that multiple people can contribute different kinds of knowledge, but small enough so that it stays focused. Often, three to six members is a good size.

Here are some ways to use this guide as part of a study group:

- **Plan the group's study program.** Parts of the study plan template, beginning on page 25 can help to structure your group's study program. By filling out the first five columns and sharing the worksheets, everyone will learn more about your group's mix of abilities and about the resources, such as textbooks, that members can share with the group. In the sixth column ("Dates I will study the content"), you can create an overall schedule for your group's study program.

- **Plan individual group sessions.** At the end of each session, the group should decide what specific topics will be covered at the next meeting and who will present each topic. Use the topic headings and subheadings in the Test at a Glance table on page 5 to select topics, and then select practice questions, beginning on page 13.

- **Prepare your presentation for the group.** When it's your turn to present, prepare something that is more than a lecture. Write two or three original questions to pose to the group. Practicing writing actual questions can help you better understand the topics covered on the test as well as the types of questions you will encounter on the test. It will also give other members of the group extra practice at answering questions.

- **Take a practice test together.** The idea of a practice test is to simulate an actual administration of the test, so scheduling a test session with the group will add to the realism and may also help boost everyone's confidence. Remember, complete the practice test using only the time that will be allotted for that test on your administration day.

- **Learn from the results of the practice test.** Review the results of the practice test, including the number of questions answered correctly in each content category. For tests that contain constructed-response questions, look at the Sample Test Questions section, which also contain sample responses to those questions and shows how they were scored. Then try to follow the same guidelines that the test scorers use.

- **Be as critical as you can.** You're not doing your study partner(s) any favors by letting them get away with an answer that does not cover all parts of the question adequately.

- **Be specific.** Write comments that are as detailed as the comments about the sample responses. Indicate where and how your study partner(s) are doing an inadequate job of answering the question. Writing notes in the margins of the answer sheet may also help.

- **Be supportive.** Include comments that point out what your study partner(s) got right.

Then plan one or more study sessions based on aspects of the questions on which group members performed poorly. For example, each group member might be responsible for rewriting one paragraph of a response in which someone else did an inadequate job.

Whether you decide to study alone or with a group, remember that the best way to prepare is to have an organized plan. The plan should set goals based on specific topics and skills that you need to learn, and it should commit you to a realistic set of deadlines for meeting those goals. Then you need to discipline yourself to stick with your plan and accomplish your goals on schedule.

5. Develop Your Study Plan

Develop a personalized study plan and schedule

Planning your study time is important because it will help ensure that you review all content areas covered on the test. Use the sample study plan below as a guide. It shows a plan for the *Core Academic Skills for Educators: Reading* test. Following that is a study plan template that you can fill out to create your own plan. Use the "Learn about Your Test" and "Test Specifications" information beginning on page 5 to help complete it.

Use this worksheet to:
1. **Define Content Areas:** List the most important content areas for your test as defined in chapter 1.
2. **Determine Strengths and Weaknesses:** Identify your strengths and weaknesses in each content area.
3. **Identify Resources:** Identify the books, courses, and other resources you plan to use for each content area.
4. **Study:** Create and commit to a schedule that provides for regular study periods.

Praxis Test Name (Test Code): Core Academic Skills for Educators: Reading (5712)
Test Date: 9/15/18

Content covered	Description of content	How well do I know the content? (scale 1–5)	What resources do I have/need for the content?	Where can I find the resources I need?	Dates I will study the content	Date completed
Key Ideas and Details						
Close reading	Draw inferences and implications from the directly stated content of a reading selection	3	Middle school English text book	College library, middle school teacher	7/15/18	7/15/18
Determining Ideas	Identify summaries or paraphrases of the main idea or primary purpose of a reading selection	3	Middle school English text book	College library, middle school teacher	7/17/18	7/17/18
Determining Ideas	Identify summaries or paraphrases of the supporting ideas and specific details in a reading selection	3	Middle and high school English text book	College library, middle and high school teachers	7/20/18	7/21/18
Craft, Structure, and Language Skills						
Interpreting tone	Determine the author's attitude toward material discussed in a reading selection	4	Middle and high school English text book	College library, middle and high school teachers	7/25/18	7/26/18
Analysis of structure	Identify key transition words and phrases in a reading selection and how they are used	3	Middle and high school English text book, dictionary	College library, middle and high school teachers	7/25/18	7/27/18
Analysis of structure	Identify how a reading selection is organized in terms of cause/effect, compare/contrast, problem/solution, etc.	5	High school text book, college course notes	College library, course notes, high school teacher, college professor	8/1/18	8/1/18
Author's purpose	Determine the role that an idea, reference, or piece of information plays in an author's discussion or argument	5	High school text book, college course notes	College library, course notes, high school teacher, college professor	8/1/18	8/1/18

Content covered	Description of content	How well do I know the content? (scale 1–5)	What resources do I have/need for the content?	Where can I find the resources I need?	Dates I will study the content	Date completed
Language in different contexts	Determine whether information presented in a reading selection is presented as fact or opinion	4	High school text book, college course notes	College library, course notes, high school teacher, college professor	8/1/18	8/1/18
Contextual meaning	Identify the meanings of words as they are used in the context of a reading selection	2	High school text book, college course notes	College library, course notes, high school teacher, college professor	8/1/18	8/1/18
Figurative Language	Understand figurative language and nuances in word meanings	2	High school text book, college course notes	College library, course notes, high school teacher, college professor	8/8/18	8/8/18
Vocabulary range	Understand a range of words and phrases sufficient for reading at the college and career readiness level	2	High school text book, college course notes	College library, course notes, high school teacher, college professor	8/15/18	8/17/18
Integration of Knowledge and Ideas						
Diverse media and formats	Analyze content presented in diverse media and formats, including visually and quantitatively, as well as in words	2	High school text book, college course notes	College library, course notes, high school teacher, college professor	8/22/18	8/24/18
Evaluation of arguments	Identify the relationship among ideas presented in a reading selection	4	High school text book, college course notes	College library, course notes, high school teacher, college professor	8/24/18	8/24/18
Evaluation of arguments	Determine whether evidence strengthens, weakens, or is relevant to the arguments in a reading selection	3	High school text book, college course notes	College library, course notes, high school teacher, college professor	8/27/18	8/27/18
Evaluation of arguments	Determine the logical assumptions upon which an argument or conclusion is based	5	High school text book, college course notes	College library, course notes, high school teacher, college professor	8/28/18	8/30/18
Evaluation of arguments	Draw conclusions from material presented in a reading selection	5	High school text book, college course notes	College library, course notes, high school teacher, college professor	8/30/18	8/31/18
Comparison of texts	Recognize or predict ideas or situations that are extensions of or similar to what has been presented in a reading selection	4	High school text book, college course notes	College library, course notes, high school teacher, college professor	9/3/18	9/4/18
Comparison of texts	Apply ideas presented in a reading selection to other situations	2	High school text book, college course notes	College library, course notes, high school teacher, college professor	9/5/18	9/6/18

My Study Plan

Use this worksheet to:

1. **Define Content Areas:** List the most important content areas for your test as defined in chapter 1.
2. **Determine Strengths and Weaknesses:** Identify your strengths and weaknesses in each content area.
3. **Identify Resources:** Identify the books, courses, and other resources you plan to use for each content area.
4. **Study:** Create and commit to a schedule that provides for regular study periods.

Praxis Test Name (Test Code): _____

Test Date: _____

Content covered	Description of content	How well do I know the content? (scale 1–5)	What resources do I have/need for this content?	Where can I find the resources I need?	Dates I will study this content	Date completed

Content covered	Description of content	How well do I know the content? (scale 1–5)	What resources do I have/need for the content?	Where can I find the resources I need?	Dates I will study the content	Date completed

6. Study Topics

Explore in detail the content that this test covers

Introduction

The Geometry test is designed to measure the knowledge and skills necessary for a beginning teacher of Geometry.

This chapter is intended to help you organize your preparation for the test and to give you a clear indication of the depth and breadth of the knowledge required for success on the test.

Virtually all accredited programs address the topics covered by the test; however, you are not expected to be an expert on all aspects of the topics that follow.

You are likely to find that the topics below are covered by most introductory textbooks. Consult materials and resources, including lecture and laboratory notes, from all your coursework. You should be able to match up specific topics and subtopics with what you have covered in your courses.

Try not to be overwhelmed by the volume and scope of content knowledge in this guide. Although a specific term may not seem familiar as you see it here, you might find you can understand it when applied to a real-life situation. Many of the items on the actual test will provide you with a context to apply to these topics or terms.

Discussion Areas

Interspersed throughout the study topics are discussion areas, presented as open-ended questions or statements. These discussion areas are intended to help test your knowledge of fundamental concepts and your ability to apply those concepts to situations in the classroom or the real world. Most of the areas require you to combine several pieces of knowledge to formulate an integrated understanding and response. If you spend time on these areas, you will gain increased understanding and facility with the subject matter covered on the test. You may want to discuss these areas and your answers with a teacher or mentor.

Note that this study companion *does **not** provide answers for the discussion area questions*, but thinking about the answers to them will help improve your understanding of fundamental concepts and will probably help you answer a broad range of questions on the test.

Study Topics

I. Properties of Geometric Plane Shapes, Congruence, Similarity, Proof, Constructions, and Trigonometry

Properties of Geometric Plane Shapes, Congruence, Proof, and Constructions

A. Knows properties of triangles, quadrilaterals (e.g., rectangle, rhombus, trapezoid), and other polygons

B. Knows the properties of lines (e.g., parallel, perpendicular, intersecting) and angles

C. Understands how to solve problems involving perimeter and area of polygons

D. Understands rigid motions in a plane; e.g., translations, rotations, reflections

E. Understands the concept of congruence

F. Understands how to prove geometric theorems such as those about lines and angles, triangles, and parallelograms

G. Knows how geometric constructions are made

Similarity, Proof, and Trigonometry

A. Understands the concept of similarity

B. Understands how to prove theorems involving similarity

C. Understands how trigonometry and the Pythagorean theorem are applied to right triangles

D. Understands how trigonometry is applied to general triangles

Discusson Areas: Properties of Geometric Plane Shapes, Congruence, Proof, and Constructions and Similarity, Proof, and Trigonometry

- Can you use the definitions and properties of special triangles (e.g., isosceles, equilateral, right, 30-60-90) and special polygons (e.g., regular polygon, parallelogram, trapezoid, rhombus, rectangle, square, and kite) ?

- Can you solve perimeter and area problems involving plane figures either directly or by decomposing into familiar shapes?

- Can you use the definitions and properties of angles, circles, line segments, perpendicular lines, and parallel lines?

- Can you translate, reflect, rotate, and dilate figures, describe these transformations as functions, and perform a sequence of transformations on a figure?

- Can you use the relationships of the angles formed when parallel lines are cut by a transversal?

- Can you prove and apply the theorems of supplementary angles, complementary angles, vertical angles, exterior angles, triangle sum, and base angles?

- Can you construct geometric figures using a straightedge and compass or recognize steps in common constructions?

- Can you describe or prove congruence and similarity in terms of transformations?

- Can you apply triangle congruence and similarity criteria to solve problems or prove theorems?

- Can you describe some real-life applications that involve the Pythagorean theorem and trigonometric ratios?

- Can you use the law of sines and the law of cosines to solve problems?

- Can you use trigonometric ratios to solve problems involving right triangles?

- Can you use the relationship between sine and cosine of complementary angles?

- Can you describe and use the properties of the median, altitude, and angle bisector of a triangle?

- Can you identify the lines of symmetry of a polygon?

- Can you calculate the changes in perimeter and area when the dimensions of a polygon are changed?

II. Coordinate Geometry, Circles, Three-Dimensional Geometry, and Geometric Modeling

Coordinate Geometry

A. Uses coordinates to prove simple geometric theorems algebraically

Circles

A. Understands properties of circles

B. Understands how to solve problems involving length of arcs and area of sectors

C. Knows how to translate between the geometric description and the equation for a circle

Three-Dimensional Geometry and Geometric Modeling

A. Knows how to solve problems involving surface area and volume of solids

B. Knows how to visualize relationships (e.g., cross section, nets, rotations) between two-dimensional and three-dimensional objects

C. Knows how to apply geometric concepts in real-world situations

Discussion areas: Coordinate Geometry, Circles, and Three-Dimensional Geometry and Geometric Modeling

- Can you use the definitions, properties, and theorems about circles, such as inscribed and central angles, radii, chords, arcs, tangents, secants, circumference, and area?

- Can you derive and use the formula for the arc length and the sector area of a circle?

- Can you use definitions and properties of the coordinate plane (e.g., quadrants) ?

- Can you derive the equation of a circle given its graph in the coordinate plane?

- Can you find the center and radius of a circle from a given equation?

- Can you compute the perimeter of a polygon and the area of a triangle and a quadrilateral using coordinates?

- Can you use coordinates to compute the length or the midpoint of a line segment?

- Can you use coordinates to compute the slope of a line, given the end points?

- Can you use the slope criteria for parallel and perpendicular lines graphed in the coordinate plane?

- Can you apply the correct formula to compute the surface area and volume of prisms, cylinders, pyramids, cones, and spheres?

- Can you identify two-dimensional cross sections of three-dimensional shapes, including the conic sections?

- Can you visualize three-dimensional shapes that result when a two-dimensional shape is rotated about a line?

- Can you use two-dimensional nets to represent three-dimensional objects?

- Can you calculate the changes in surface area and volume when the dimensions of a solid are changed?

7. Review Smart Tips for Success

Follow test-taking tips developed by experts

Learn from the experts. Take advantage of the following answers to questions you may have and practical tips to help you navigate the *Praxis* test and make the best use of your time.

Should I guess?

Yes. Your score is based on the number of questions you answer correctly, with no penalty or subtraction for an incorrect answer. When you don't know the answer to a question, try to eliminate any obviously wrong answers and then guess at the correct one. Try to pace yourself so that you have enough time to carefully consider every question.

Can I answer the questions in any order?

You can answer the questions in order or skip questions and come back to them later. If you skip a question, you can also mark it so that you can remember to return and answer it later. Remember that questions left unanswered are treated the same as questions answered incorrectly, so it is to your advantage to answer every question.

Are there trick questions on the test?

No. There are no hidden meanings or trick questions. All of the questions on the test ask about subject matter knowledge in a straightforward manner.

Are there answer patterns on the test?

No. You might have heard this myth: the answers on tests follow patterns. Another myth is that there will never be more than two questions in a row with the correct answer in the same position among the choices. Neither myth is true. Select the answer you think is correct based on your knowledge of the subject.

Can I write on the scratch paper I am given?

Yes. You can work out problems on the scratch paper, make notes to yourself, or write anything at all. Your scratch paper will be destroyed after you are finished with it, so use it in any way that is helpful to you. But make sure to select or enter your answers on the computer.

Smart Tips for Taking the Test

1. **Skip the questions you find extremely difficult.** Rather than trying to answer these on your first pass through the test, you may want to leave them blank and mark them so that you can return to them later. Pay attention to the time as you answer the rest of the questions on the test, and try to finish with 10 or 15 minutes remaining so that you can go back over the questions you left blank. Even if you don't know the answer the second time you read the questions, see if you can narrow down the possible answers, and then guess. Your score is based on the number of right answers, so it is to your advantage to answer every question.

2. **Keep track of the time.** The on-screen clock will tell you how much time you have left. You will probably have plenty of time to answer all of the questions, but if you find yourself becoming bogged down, you might decide to move on and come back to any unanswered questions later.

3. **Read all of the possible answers before selecting one.** For questions that require you to select more than one answer, or to make another kind of selection, consider the most likely answers given what the question is asking. Then reread the question to be sure the answer(s) you have given really answer the question. Remember, a question that contains a phrase such as "Which of the following does NOT …" is asking for the one answer that is NOT a correct statement or conclusion.

4. **Check your answers.** If you have extra time left over at the end of the test, look over each question and make sure that you have answered it as you intended. Many test takers make careless mistakes that they could have corrected if they had checked their answers.

5. **Don't worry about your score when you are taking the test.** No one is expected to answer all of the questions correctly. Your score on this test is not analogous to your score on the *GRE*® or other tests. It doesn't matter on the *Praxis* tests whether you score very high or barely pass. If you meet the minimum passing scores for your state and you meet the state's other requirements for obtaining a teaching license, you will receive a license. In other words, what matters is meeting the minimum passing score. You can find passing scores for all states that use the *Praxis* tests at https://www.ets.org/praxis/institutions/scores/passing/ or on the web site of the state for which you are seeking certification/licensure.

6. **Use your energy to take the test, not to get frustrated by it.** Getting frustrated only increases stress and decreases the likelihood that you will do your best. Highly qualified educators and test development professionals, all with backgrounds in teaching, worked diligently to make the test a fair and valid measure of your knowledge and skills. Your state painstakingly reviewed the test before adopting it as a licensure requirement. The best thing to do is concentrate on answering the questions.

8. Check on Testing Accommodations

See if you qualify for accommodations to take the Praxis *test*

What if English is not my primary language?

Praxis tests are given only in English. If your primary language is not English (PLNE), you may be eligible for extended testing time. For more details, visit **www.ets.org/praxis/register/plne_accommodations/**.

What if I have a disability or other health-related need?

The following accommodations are available for *Praxis* test takers who meet the Americans with Disabilities Act (ADA) Amendments Act disability requirements:

- Extended testing time
- Additional rest breaks
- Separate testing room
- Writer/recorder of answers
- Test reader
- Sign language interpreter for spoken directions only
- Perkins Brailler
- Braille slate and stylus
- Printed copy of spoken directions
- Oral interpreter
- Audio test
- Braille test
- Large print test book
- Large print answer sheet
- Listening section omitted

For more information on these accommodations, visit **www.ets.org/praxis/register/disabilities**.

Note: Test takers who have health-related needs requiring them to bring equipment, beverages, or snacks into the testing room or to take extra or extended breaks must request these accommodations by following the procedures described in the *Bulletin Supplement for Test Takers with Disabilities or Health-Related Needs* (PDF), which can be found at **https://www.ets.org/s/praxis/pdf/bulletin_supplement_test_takers_with_disabilities_health_needs.pdf**.

You can find additional information on available resources for test takers with disabilities or health-related needs at **www.ets.org/disabilities**.

9. Do Your Best on Test Day

Get ready for test day so you will be calm and confident

You followed your study plan. You prepared for the test. Now it's time to prepare for test day.

Plan to end your review a day or two before the actual test date so you avoid cramming. Take a dry run to the test center so you're sure of the route, traffic conditions, and parking. Most of all, you want to eliminate any unexpected factors that could distract you from your ultimate goal—passing the *Praxis* test!

On the day of the test, you should:

- be well rested
- wear comfortable clothes and dress in layers
- eat before you take the test
- bring an acceptable and valid photo identification with you
- bring an approved calculator only if one is specifically permitted for the test you are taking (see Calculator Use, at http://www.ets.org/praxis/test_day/policies/calculators)
- be prepared to stand in line to check in or to wait while other test takers check in

You can't control the testing situation, but you can control yourself. Stay calm. The supervisors are well trained and make every effort to provide uniform testing conditions, but don't let it bother you if the test doesn't start exactly on time. You will have the allotted amount of time once it does start.

You can think of preparing for this test as training for an athletic event. Once you've trained, prepared, and rested, give it everything you've got.

What items am I restricted from bringing into the test center?

You cannot bring into the test center personal items such as:

- handbags, knapsacks, or briefcases
- water bottles or canned or bottled beverages
- study materials, books, or notes
- pens, pencils, scrap paper, or calculators, unless specifically permitted for the test you are taking (see Calculator Use, at http://www.ets.org/praxis/test_day/policies/calculators)
- any electronic, photographic, recording, or listening devices

Personal items are not allowed in the testing room and will not be available to you during the test or during breaks. You may also be asked to empty your pockets. At some centers, you will be assigned a space to store your belongings, such as handbags and study materials. Some centers do not have secure storage space available, so please plan accordingly.

Test centers assume no responsibility for your personal items.

If you have health-related needs requiring you to bring equipment, beverages or snacks into the testing room or to take extra or extended breaks, you need to request accommodations in advance. Procedures for requesting accommodations are described in the **Bulletin Supplement for Test Takers with Disabilities or Health-related Needs (PDF)**.

Note: All cell phones, smart phones (e.g., Android® devices, iPhones®, etc.), and other electronic, photographic, recording, or listening devices are strictly prohibited from the test center. If you are seen with such a device, you will be dismissed from the test, your test scores will be canceled, and you will forfeit your test fees. If you are seen *using* such a device, the device will be confiscated and inspected. For more information on what you can bring to the test center, visit **www.ets.org/praxis/test_day/bring**.

Are You Ready?

Complete this checklist to determine whether you are ready to take your test.

> Do you know the testing requirements for the license or certification you are seeking in the state(s) where you plan to teach?

> Have you followed all of the test registration procedures?

> Do you know the topics that will be covered in each test you plan to take?

> Have you reviewed any textbooks, class notes, and course readings that relate to the topics covered?

> Do you know how long the test will take and the number of questions it contains?

> Have you considered how you will pace your work?

> Are you familiar with the types of questions for your test?

> Are you familiar with the recommended test-taking strategies?

> Have you practiced by working through the practice questions in this study companion or in a study guide or practice test?

> If constructed-response questions are part of your test, do you understand the scoring criteria for these questions?

> If you are repeating a *Praxis* test, have you analyzed your previous score report to determine areas where additional study and test preparation could be useful?

If you answered "yes" to the questions above, your preparation has paid off. Now take the *Praxis* test, do your best, pass it—and begin your teaching career!

10. Understand Your Scores

Understand how tests are scored and how to interpret your test scores

Of course, passing the *Praxis* test is important to you so you need to understand what your scores mean and what your state requirements are.

What are the score requirements for my state?

States, institutions, and associations that require the tests set their own passing scores. Visit www.ets.org/praxis/states for the most up-to-date information.

If I move to another state, will my new state accept my scores?

The *Praxis* tests are part of a national testing program, meaning that they are required in many states for licensure. The advantage of a national program is that if you move to another state that also requires *Praxis* tests, you can transfer your scores. Each state has specific test requirements and passing scores, which you can find at www.ets.org/praxis/states.

How do I know whether I passed the test?

Your score report will include information on passing scores for the states you identified as recipients of your test results. If you test in a state with automatic score reporting, you will also receive passing score information for that state.

A list of states and their passing scores for each test are available online at www.ets.org/praxis/states.

What your *Praxis* scores mean

You received your score report. Now what does it mean? It's important to interpret your score report correctly and to know what to do if you have questions about your scores.

Visit http://www.ets.org/s/praxis/pdf/sample_score_report.pdf to see a sample score report.
To access *Understanding Your Praxis Scores*, a document that provides additional information on how to read your score report, visit www.ets.org/praxis/scores/understand.

Put your scores in perspective

Your score report indicates:

- Your score and whether you passed
- The range of possible scores
- The raw points available in each content category
- The range of the middle 50 percent of scores on the test

If you have taken the same *Praxis* test or other *Praxis* tests in the last 10 years, your score report also lists the highest score you earned on each test taken.

Content category scores and score interpretation

Questions on the *Praxis* tests are categorized by content. To help you in future study or in preparing to retake the test, your score report shows how many raw points you earned in each content category. Compare your "raw points earned" with the maximum points you could have earned ("raw points available"). The greater the difference, the greater the opportunity to improve your score by further study.

Score scale changes

ETS updates *Praxis* tests on a regular basis to ensure they accurately measure the knowledge and skills that are required for licensure. When tests are updated, the meaning of the score scale may change, so requirements may vary between the new and previous versions. All scores for previous, discontinued tests are valid and reportable for 10 years, provided that your state or licensing agency still accepts them.

These resources may also help you interpret your scores:

- *Understanding Your Praxis Scores* (PDF), found at **www.ets.org/praxis/scores/understand**

- *Praxis* Passing Scores, found at **https://www.ets.org/praxis/institutions/scores/passing/**

- State requirements, found at **www.ets.org/praxis/states**

Appendix: Other Questions You May Have

Here is some supplemental information that can give you a better understanding of the *Praxis* tests.

What do the *Praxis* tests measure?

The *Praxis* tests measure the specific knowledge and skills that beginning teachers need. The tests do not measure an individual's disposition toward teaching or potential for success, nor do they measure your actual teaching ability. The assessments are designed to be comprehensive and inclusive but are limited to what can be covered in a finite number of questions and question types. Teaching requires many complex skills that are typically measured in other ways, including classroom observation, video recordings, and portfolios.

Ranging from Agriculture to World Languages, there are more than 80 *Praxis* tests, which contain selected-response questions or constructed-response questions, or a combination of both.

Who takes the tests and why?

Some colleges and universities use the *Praxis* Core Academic Skills for Educators tests (Reading, Writing, and Mathematics) to evaluate individuals for entry into teacher education programs. The assessments are generally taken early in your college career. Many states also require Core Academic Skills test scores as part of their teacher licensing process.

Individuals entering the teaching profession take the *Praxis* content and pedagogy tests as part of the teacher licensing and certification process required by many states. In addition, some professional associations and organizations require *Praxis* Subject Assessments for professional licensing.

Do all states require these tests?

The *Praxis* tests are currently required for teacher licensure in approximately 40 states and United States territories. These tests are also used by several professional licensing agencies and by several hundred colleges and universities. Teacher candidates can test in one state and submit their scores in any other state that requires *Praxis* testing for licensure. You can find details at **www.ets.org/praxis/states**.

What is licensure/certification?

Licensure in any area—medicine, law, architecture, accounting, cosmetology—is an assurance to the public that the person holding the license possesses sufficient knowledge and skills to perform important occupational activities safely and effectively. In the case of teacher licensing, a license tells the public that the individual has met predefined competency standards for beginning teaching practice.

Because a license makes such a serious claim about its holder, licensure tests are usually quite demanding. In some fields, licensure tests have more than one part and last for more than one day. Candidates for licensure in all fields plan intensive study as part of their professional preparation. Some join study groups, others study alone. But preparing to take a licensure test is, in all cases, a professional activity. Because a licensure exam surveys a broad body of knowledge, preparing for a licensure exam takes planning, discipline, and sustained effort.

Why does my state require the *Praxis* tests?

Your state chose the *Praxis* tests because they assess the breadth and depth of content—called the "domain"—that your state wants its teachers to possess before they begin to teach. The level of content knowledge, reflected in the passing score, is based on recommendations of panels of teachers and teacher educators in

each subject area. The state licensing agency and, in some states, the state legislature ratify the passing scores that have been recommended by panels of teachers.

How were the tests developed?

ETS consulted with practicing teachers and teacher educators around the country during every step of the *Praxis* test development process. First, ETS asked them what knowledge and skills a beginning teacher needs to be effective. Their responses were then ranked in order of importance and reviewed by hundreds of teachers.

After the results were analyzed and consensus was reached, guidelines, or specifications, for the selected-response and constructed-response tests were developed by teachers and teacher educators. Following these guidelines, teachers and professional test developers created test questions that met content requirements and *ETS Standards for Quality and Fairness*.*

When your state adopted the research-based *Praxis* tests, local panels of teachers and teacher educators evaluated each question for its relevance to beginning teachers in your state. During this "validity study," the panel also provided a passing-score recommendation based on how many of the test questions a beginning teacher in your state would be able to answer correctly. Your state's licensing agency determined the final passing-score requirement.

ETS follows well-established industry procedures and standards designed to ensure that the tests measure what they are intended to measure. When you pass the *Praxis* tests your state requires, you are proving that you have the knowledge and skills you need to begin your teaching career.

How are the tests updated to ensure the content remains current?

Praxis tests are reviewed regularly. During the first phase of review, ETS conducts an analysis of relevant state and association standards and of the current test content. State licensure titles and the results of relevant job analyses are also considered. Revised test questions are then produced following the standard test development methodology. National advisory committees may also be convened to review and revise existing test specifications and to evaluate test forms for alignment with the specifications.

How long will it take to receive my scores?

Scores for tests that do not include constructed-response questions are available on screen immediately after the test. Scores for tests that contain constructed-response questions or essays aren't available immediately after the test because of the scoring process involved. Official score reports are available to you and your designated score recipients approximately two to three weeks after the test date for tests delivered continuously, or two to three weeks after the testing window closes for other tests. See the test dates and deadlines calendar at www.ets.org/praxis/register/dates_centers for exact score reporting dates.

Can I access my scores on the web?

All test takers can access their test scores via My *Praxis* Account free of charge for one year from the posting date. This online access replaces the mailing of a paper score report.

The process is easy—simply log into My *Praxis* Account at www.ets.org/praxis and click on your score report. If you do not already have a *Praxis* account, you must create one to view your scores.

Note: You must create a *Praxis* account to access your scores, even if you registered by mail or phone.

ETS Standards for Quality and Fairness (2014, Princeton, N.J.) are consistent with the *Standards for Educational and Psychological Testing*, industry standards issued jointly by the American Educational Research Association, the American Psychological Association, and the National Council on Measurement in Education (2014, Washington, D.C.).

Your teaching career is worth preparing for, so start today!

Let the Praxis® Study Companion guide you.

To search for the *Praxis* test prep resources
that meet your specific needs, visit:

www.ets.org/praxis/testprep

To purchase official test prep made by the creators
of the *Praxis* tests, visit the ETS Store:

www.ets.org/praxis/store

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