

GEOMETRY REGENTS PRACTICE EXAM (SAMPLE)

STUDY GUIDE



SAMPLE STUDY GUIDE WITH LIMITED QUESTIONS

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THE FULL VERSION STUDY GUIDE

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Introduction

Preparing for a certification exam can feel overwhelming, but with the right tools, it becomes an opportunity to build confidence, sharpen your skills, and move one step closer to your goals. At Examzify, we believe that effective exam preparation isn't just about memorization, it's about understanding the material, identifying knowledge gaps, and building the test-taking strategies that lead to success.

This guide was designed to help you do exactly that.

Whether you're preparing for a licensing exam, professional certification, or entry-level qualification, this book offers structured practice to reinforce key concepts. You'll find a wide range of multiple-choice questions, each followed by clear explanations to help you understand not just the right answer, but why it's correct.

The content in this guide is based on real-world exam objectives and aligned with the types of questions and topics commonly found on official tests. It's ideal for learners who want to:

- Practice answering questions under realistic conditions,
- Improve accuracy and speed,
- Review explanations to strengthen weak areas, and
- Approach the exam with greater confidence.

We recommend using this book not as a stand-alone study tool, but alongside other resources like flashcards, textbooks, or hands-on training. For best results, we recommend working through each question, reflecting on the explanation provided, and revisiting the topics that challenge you most.

Remember: successful test preparation isn't about getting every question right the first time, it's about learning from your mistakes and improving over time. Stay focused, trust the process, and know that every page you turn brings you closer to success.

Let's begin.

How to Use This Guide

This guide is designed to help you study more effectively and approach your exam with confidence. Whether you're reviewing for the first time or doing a final refresh, here's how to get the most out of your Examzify study guide:

1. Start with a Diagnostic Review

Skim through the questions to get a sense of what you know and what you need to focus on. Your goal is to identify knowledge gaps early.

2. Study in Short, Focused Sessions

Break your study time into manageable blocks (e.g. 30 – 45 minutes). Review a handful of questions, reflect on the explanations.

3. Learn from the Explanations

After answering a question, always read the explanation, even if you got it right. It reinforces key points, corrects misunderstandings, and teaches subtle distinctions between similar answers.

4. Track Your Progress

Use bookmarks or notes (if reading digitally) to mark difficult questions. Revisit these regularly and track improvements over time.

5. Simulate the Real Exam

Once you're comfortable, try taking a full set of questions without pausing. Set a timer and simulate test-day conditions to build confidence and time management skills.

6. Repeat and Review

Don't just study once, repetition builds retention. Re-attempt questions after a few days and revisit explanations to reinforce learning. Pair this guide with other Examzify tools like flashcards, and digital practice tests to strengthen your preparation across formats.

There's no single right way to study, but consistent, thoughtful effort always wins. Use this guide flexibly, adapt the tips above to fit your pace and learning style. You've got this!

Questions

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- 1. What is the sum of the angles in any triangle?**
 - A. 180 degrees
 - B. 360 degrees
 - C. 90 degrees
 - D. 270 degrees
- 2. What is the result of reflecting a point across a line?**
 - A. The point remains unchanged
 - B. The point moves to a new location directly opposite across the line
 - C. The point rotates around the line
 - D. The point translates parallel to the line
- 3. What can be said about the diameter of a circle compared to other chords?**
 - A. It is shorter than any other chord
 - B. It is equal in length to other radii
 - C. It is always the longest chord
 - D. It can never be perpendicular to any chords
- 4. What point in a triangle is the intersection of the angle bisectors?**
 - A. Orthocenter
 - B. Incenter
 - C. Circumcenter
 - D. Centroid
- 5. Define a convex polygon.**
 - A. A polygon where all interior angles are less than 180 degrees
 - B. A polygon with at least one angle greater than 180 degrees
 - C. A polygon that can be inscribed in a circle
 - D. A polygon with all sides of equal length
- 6. What is the locus of two points called?**
 - A. Angle bisector
 - B. Perpendicular bisector
 - C. Midsegment
 - D. Orthocenter

7. What geometric figure is defined as a locus of points?

- A. Triangle
- B. Line
- C. Circle
- D. Square

8. What does the converse of a statement involve?

- A. Negating both parts of the statement
- B. Reversing the order of the statement
- C. Combining with an inverse
- D. Adding a true conclusion

9. What is the result of rotating a point (x, y) by 270 degrees or -90 degrees?

- A. $(y, -x)$
- B. $(-y, x)$
- C. (x, y)
- D. $(-x, -y)$

10. How can you find the area of a parallelogram?

- A. $A = \text{base} * \text{height}$
- B. $A = \frac{1}{2} * (\text{base} + \text{base}) * \text{height}$
- C. $A = \text{length} * \text{width}$
- D. $A = \pi * r^2$

Answers

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1. A
2. B
3. C
4. B
5. A
6. B
7. C
8. B
9. A
10. A

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Explanations

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1. What is the sum of the angles in any triangle?

- A. 180 degrees
- B. 360 degrees
- C. 90 degrees
- D. 270 degrees

In any triangle, the fundamental property holds that the sum of the interior angles is always 180 degrees. This is a core concept in Euclidean geometry and applies to all types of triangles, whether they are scalene, isosceles, or equilateral. To visualize this, you can imagine drawing a triangle and extending its sides or drawing a line parallel to one side through the opposite vertex. By using alternate interior angles or the properties of transversals, it becomes clear that the angles within the triangle add up to 180 degrees. This principle is crucial in various applications of geometry, such as calculating missing angles or analyzing the properties of polygons. Understanding this relationship helps build a strong foundation for more complex geometric concepts. The other options do not apply to triangles, as 90 degrees represents the sum of angles in a right triangle, while 360 and 270 degrees refer to angles in a circle and specific polygon configurations respectively. Thus, the correct answer, representing the sum of interior angles in any triangle, is 180 degrees.

2. What is the result of reflecting a point across a line?

- A. The point remains unchanged
- B. The point moves to a new location directly opposite across the line
- C. The point rotates around the line
- D. The point translates parallel to the line

When a point is reflected across a line, it is flipped over that line to create a mirror image. This means the point moves to a new location that is directly opposite its original position in relation to the line. The distance from the original point to the line is the same as the distance from the line to its new location after reflection. This property preserves the perpendicular distances from the point to the line, ensuring that the reflection acts as a mirror reflection. For instance, if you have a point located at (3, 2) and you reflect it across a horizontal line, the new point will have its y-coordinate adjusted in a way that places it directly opposite the line, while the x-coordinate stays the same. This transformation establishes a direct line segment between the original point and the reflected point that is perpendicular to the line. The other choices do not accurately describe the reflection process. The point does not stay unchanged, does not undergo rotation, and does not translate parallel to the line. Each of these options suggests a different type of geometric transformation that does not align with the definition of reflection.

3. What can be said about the diameter of a circle compared to other chords?

- A. It is shorter than any other chord
- B. It is equal in length to other radii
- C. It is always the longest chord**
- D. It can never be perpendicular to any chords

The diameter is the longest chord in a circle because it passes through the center of the circle and connects two points on its circumference. Any other chord, regardless of its length, does not extend across the center and therefore cannot match the length of the diameter. The relationship between the diameter and other chords can be understood through geometry: as the distance from the center decreases, the length of the chord decreases, making the diameter unique in its maximal length. Other options can be examined in this context. It is not accurate to say that the diameter is shorter than any other chord, as it is the longest. While the diameter has the same length as two radii combined, this does not imply that it is equal to the lengths of the radii themselves individually. The diameter can indeed be perpendicular to a chord, particularly when it bisects that chord, which further supports its unique properties compared to other chords. Thus, it is established that the diameter is the longest chord in the circle.

4. What point in a triangle is the intersection of the angle bisectors?

- A. Orthocenter
- B. Incenter**
- C. Circumcenter
- D. Centroid

The incenter of a triangle is the point where the angle bisectors of all three angles intersect. This means it is equally distant from all three sides of the triangle, which is a key characteristic of the incenter. The incenter is also the center of the incircle, which is the largest circle that fits inside the triangle, tangent to all three sides. During the construction of a triangle's incenter, the angle bisectors are drawn from each vertex to the opposite side, creating segments that split each angle into two equal parts. The point where these segments meet is exactly where the incenter lies. In contrast, the other points mentioned have different roles in triangle geometry. The orthocenter is the intersection of the altitudes; the circumcenter is where the perpendicular bisectors of the sides intersect, serving as the center of the circumcircle; and the centroid is the point where the medians of the triangle intersect. While each of these points is significant in different contexts, they do not share the property of being the intersection of angle bisectors. This clearly establishes why the incenter is the correct answer in this question.

5. Define a convex polygon.

- A. A polygon where all interior angles are less than 180 degrees
- B. A polygon with at least one angle greater than 180 degrees
- C. A polygon that can be inscribed in a circle
- D. A polygon with all sides of equal length

A convex polygon is defined as a polygon where all interior angles are less than 180 degrees. This characteristic ensures that if you draw a line segment between any two points inside the polygon, the line segment will lie entirely within the boundaries of the polygon. When all interior angles are less than 180 degrees, the shape does not "cave in" or create indentations, which is a defining trait of convexity. In contrast, a polygon with at least one angle greater than 180 degrees will have concave properties, meaning parts of the shape will fold inward. The option regarding a polygon that can be inscribed in a circle refers to cyclic polygons, which can include both convex and concave shapes; therefore, it does not exclusively define a convex polygon. Lastly, a polygon with all sides of equal length describes a regular polygon, but such a polygon can also be either convex or concave. Hence, the condition about angles being less than 180 degrees is the critical aspect that specifically defines convex polygons.

6. What is the locus of two points called?

- A. Angle bisector
- B. Perpendicular bisector
- C. Midsegment
- D. Orthocenter

The correct answer identifies the concept of a perpendicular bisector, which is the locus of all points that are equidistant from two given points. When considering two specific points, the perpendicular bisector is a line that not only divides the segment connecting those two points into two equal halves but also forms right angles with that segment. To visualize this, imagine two points in a plane. The midpoint of the segment connecting those two points serves as a reference. The perpendicular bisector effectively represents all the locations where any given point maintains equal distance to both points. This line provides an essential foundation in geometric constructions and proofs, particularly in determining various properties related to triangles and circles. While the angle bisector, midsegment, and orthocenter each have unique properties and roles in geometry, they do not fulfill the criteria of representing the locus of all points equidistant from two specific points. The angle bisector is associated with angles, the midsegment connects midpoints of sides within a triangle, and the orthocenter is a specific point derived from the altitudes of a triangle. Thus, the correct identification of the perpendicular bisector as the locus of points equidistant from two given points is crucial for understanding fundamental geometric principles.

7. What geometric figure is defined as a locus of points?

- A. Triangle
- B. Line
- C. Circle**
- D. Square

A locus of points refers to a collection of all points that satisfy a particular condition or set of conditions defined in geometry. In the context of the options provided, a circle is defined as the locus of all points that are equidistant from a central point. This central point is known as the center of the circle, and the constant distance from this center to any point on the circle is referred to as the radius. For example, if you were to take a point on a piece of paper, then measure a fixed distance (the radius) in all directions, you would trace out a circle. This unique relationship between all points on the circumference and the center illustrates how a circle perfectly fits the definition of a locus of points. In contrast, a triangle, a line, and a square do not inherently fulfill the same definition as they do not describe a set of points based on a uniform distance from a center point or fulfill a single condition in the same manner that circles do. While they are indeed geometric figures made up of specific points, they do not represent a locus in the way defined here.

8. What does the converse of a statement involve?

- A. Negating both parts of the statement
- B. Reversing the order of the statement**
- C. Combining with an inverse
- D. Adding a true conclusion

The converse of a statement involves reversing the order of its parts. For a given conditional statement in the form "If P, then Q," the converse would be "If Q, then P." This means that the hypothesis and the conclusion of the original statement are swapped. Understanding this concept is essential when studying logical reasoning and the relationships between statements, especially in geometry, where theorems often have converses that can be true or false independently of the original statement. The other choices do not accurately represent what a converse entails. Negating both parts refers more to the inverse of a statement. Combining with an inverse is not a standard operation in logic. Adding a true conclusion does not transform a statement into its converse; it simply changes the parameters of the original statement without addressing the order of its parts.

9. What is the result of rotating a point (x, y) by 270 degrees or -90 degrees?

- A. (y, -x)**
- B. (-y, x)
- C. (x, y)
- D. (-x, -y)

The rotation of a point in the coordinate plane can be determined by applying rotation rules depending on the angle of rotation. When rotating a point (x, y) by 270 degrees counterclockwise or equivalently -90 degrees clockwise, the position of the point in relation to the origin shifts accordingly. In the case of a 270-degree counterclockwise rotation, the new coordinates can be derived through the transformation: - The x-coordinate of the original point becomes the negative of the y-coordinate, and - The y-coordinate becomes the x-coordinate. So, if we take the point (x, y) and rotate it 270 degrees, the transformation results in the coordinates switching places with one being negated. Therefore, the coordinates of the point after this rotation will be (y, -x). This transformation is crucial in understanding how points move within the Cartesian plane based on angle measurements, showing the relationships between original coordinates and their new positions after rotation.

10. How can you find the area of a parallelogram?

A. $A = \text{base} * \text{height}$

B. $A = 1/2 * (\text{base} + \text{base}) * \text{height}$

C. $A = \text{length} * \text{width}$

D. $A = \pi * r^2$

*To determine the area of a parallelogram, the formula used is $A = \text{base} * \text{height}$. This formula arises from the fact that the area of any polygon can be calculated as the base length multiplied by the vertical height from that base to the opposite side. In the case of a parallelogram, the height is the perpendicular distance between the two bases, ensuring that the area represents the space contained within its boundaries. When applying this formula, it's important to identify the correct base and the respective height that stands perpendicular to that base. The parallelogram's opposite sides are equal in length and parallel, which simplifies the use of the base-height relationship. Therefore, as long as you select a base and measure the height directly perpendicular to it, you can accurately calculate the area of any parallelogram. The other options provided do not accurately represent the method to calculate the area of a parallelogram. The formula involving the average of two bases and height corresponds to the area of a trapezoid, while the other two options relate to the area calculations for rectangles and circles, respectively. Each of those applies to different shapes and contexts, emphasizing the specific nature of the formula for parallelograms.*

Next Steps

Congratulations on reaching the final section of this guide. You've taken a meaningful step toward passing your certification exam and advancing your career.

As you continue preparing, remember that consistent practice, review, and self-reflection are key to success. Make time to revisit difficult topics, simulate exam conditions, and track your progress along the way.

If you need help, have suggestions, or want to share feedback, we'd love to hear from you. Reach out to our team at hello@examzify.com.

Or visit your dedicated course page for more study tools and resources:

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We wish you the very best on your exam journey. You've got this!

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