

Subject: Geometry
Unit: Analytic Geometry
Grade: 10

Students will:

1. compare parallel and perpendicular slopes. (**analysis**)
2. find the slope of a line given two points. (**application**)
3. find the length of a line segment given two endpoints using the Pythagorean Theorem. (**application**)
4. find the length of a line segment given two endpoints on a coordinate plane using the distance formula. (**synthesis**)
5. classify triangles according to their sides. (**analysis**)
6. classify triangles according to their angles. (**analysis**)
7. learn the 6 steps for coordinate proofs. (**knowledge**)
8. prove that triangle is a scalene triangle, right triangle, and/or an isosceles triangle. (**evaluation**)
9. investigate, justify, and apply theorems about the sum of the measures of the angles of a triangle. (**evaluation**)
10. justify that points are vertices of a particular triangle (geometry proof). (**evaluation**)

Common Core Standards addressed:

Use coordinates to prove simple geometric theorems algebraically

4. Use coordinates to prove simple geometric theorems algebraically. *For example, prove or disprove that a figure defined by four given points in the coordinate plane is a rectangle; prove or disprove that the point $(1, \sqrt{3})$ lies on the circle centered at the origin and containing the point $(0,2)$.*
5. Prove the slope criteria for parallel and perpendicular lines and use them to solve geometric problems (*e.g., find the equation of a line parallel or perpendicular to a given line that passes through a given point*).

Prove geometric theorems

10. Prove theorems about triangles. *Theorems include: measures of interior angles of a triangle sum to 180 degrees; base angles of isosceles triangles are congruent; the segment joining midpoints of two sides of a triangle is parallel to the third side and half the length; the medians of a triangle meet at a point*

Name: _____
Geometry R
Miss. O'Malley

Date: 2/17/13
Period: _____

Analytic Geometry Test

Time: You will have two class periods to complete this test (approximately 80 minutes).

Format: On this test you will find 44 questions, for a total of 100 points. It will consist of two parts:

Part I (Completed on Day 1): 40 questions

- 10 binary choice questions each worth 1 point for a total of 10 points
- 10 fill in the blank questions each worth 1 points for a total of 10 points
- 10 matching questions each worth 1 point for a total of 10 points
- 10 multiple choice questions each worth 1 point for a total of 10 points

Part II (Completed on Day 2): 4 questions

- 4 essay/proof type questions, each worth 15 points for a total of 60 points

Directions: Write all answers directly on the test. Show all work and do not leave any questions blank. You will not be able to go back to Part I of the test on Day 2. If you are unsure of an answer, take your best educated guess.

******Do not stress about this test! Do your best and you will be fine! If you have any questions, raise your hand and I will answer them ☺**

True/False Directions: (Numbers 1-6; 1 point each; 6 points total)

For each statement below, circle “**true**” if the statement is true or “**false**” if the statement is false.

True False 1. Two lines with the same slopes are parallel lines.

True False 2. Perpendicular lines form a right angle.

True False 3. The slope of a horizontal line is undefined.

True False 4. An isosceles right triangle has two equal sides and a right angle.

True False 5. The lines $y = 2x - 3$ and $y = -2x + 4$ are perpendicular.

True False 6. The slope of the line $y = 7x - 3$ is $7x$.

Matching Directions: (Items 7-12; 1 point each; total 6 points)

For each definition in column A, choose the term from column B. Write the letter of the chosen term in the blank beside the title. You will have two terms left over.

Column A-Definition

Column B- Term

_____ 7. a triangle in which all three sides have different lengths

(A) acute

_____ 8. an angle whose degree measure is greater than 0 and less than 90

(B) scalene

_____ 9. a triangle with three congruent sides

(C) isosceles

_____ 10. an angle whose degree measure is greater than 90 and less than 180

(D) equilateral

_____ 11. a triangle with two sides that are the same length

(E) right

(F) obtuse

_____ 12. angles that have the same measure

(G) congruent

(H) straight

Fill in the blank directions: (Items 13-18; 1 point each; total 6 points)
Write the correct answer on the line below each question.

13. What is the Pythagorean Theorem?

14. What is the distance formula?

15. What is the slope formula?

16. What is the point/slope formula for the equation of a line?

17. What is the distance of line AB when A is (5,9) and B is (-7, -7)

18. What is the slope of the points (1,2) and (5, 7)?

Multiple choice directions: (Items 19-24; 1 point each; total 6 points)

Write the capital letter of the correct answer to each item on the blank to the left of each number.

- _____ 19. When the coordinates of X are $(2,-3)$ and the coordinates of Y are $(2,7)$, what does XY equal?
- A. 4
 - B. -4
 - C. 10
 - D. -10
- _____ 20. What is the slope of the line whose equation is $2x - y = 4$?
- A. $\frac{1}{2}$
 - B. 2
 - C. -2
 - D. 4
- _____ 21. The endpoints of \overline{AB} are $A(0,6)$ and $B(-4,0)$. What are the coordinates of the midpoint of \overline{AB} ?
- A. $(-2,3)$
 - B. $(2,-3)$
 - C. $(-2,-3)$
 - D. $(2,3)$
- _____ 22. The slope of line y is $\frac{2}{3}$. What is the slope of a line perpendicular to line y ?
- A. $\frac{2}{3}$
 - B. $-\frac{2}{3}$
 - C. $\frac{3}{2}$
 - D. $-\frac{3}{2}$
- _____ 23. The coordinates of two points are $(0,6)$ and $(3,0)$. What is the equation of the line through these points?
- A. $y = 2x + 6$
 - B. $y = -2x + 6$
 - C. $y = \frac{1}{2}x + 3$
 - D. $y = -\frac{1}{2}x + 3$
- _____ 24. What is the equation of the line that passes through the point $(0,-9)$ and has a slope of 6?
- A. $y = 6x - 9$
 - B. $y = -6x + 9$
 - C. $y = 6x + 9$
 - D. $y = -6x - 9$

Essays Directions: (Items 25-28; 10 points each; 40 points total)

On the essay paper provided, answer each essay. Make sure you answer all aspects of each question (spelling and punctuation do not count).

25. Explain how you would justify that points B(2,2), C(-1,-1), D(2,-1) is an isosceles right triangle (HINT: 6 step proof)
26. In geometry, when completing coordinate proofs, there are different properties of quadrilaterals you need to know in order to justify the proof. List the properties of the following polygons: **parallelogram, rhombus, isosceles trapezoid**
27. Explain three different ways that geometric figures can be used to represent real world situations?
28. Think about what we learned this past unit about analytic geometry. Next, write a note to a student who wasn't in class yesterday. In your note, explain the important aspects of analytic geometry.