

Name _____

Date _____

Lab: Quadrilaterals in the Coordinate Plane

Objective

In this lab you will investigate a specific quadrilateral. In your assigned groups you will look for special properties, such as parallel sides, congruent sides/diagonals, right angles and congruent diagonals. You will use algebraic tools such as the distance formula and slope formula to find these special properties. After analyzing the properties of your figure you will then classify your quadrilateral and explain.

Your group will be graded on:

- Your ability to work with each other and communicate through your individual roles.
- The neatness and organization of your work.
- The completeness and accuracy of your answers.
- Your understanding and explanations of quadrilateral classification.

Please see attached for Rubric.

Roles:

Time Keeper

- You have 30 minutes to complete this activity.
- Keep your group members informed of the time left, otherwise you will lose points.

Recorder

- You are responsible for neatly writing the group member names on the blank paper provided.
- Also, you are to record all final calculations for the activity.

Manager

- You are to ensure that all team members stay on task and contribute to the group.
- You are responsible for the completion of the activity.

Checker

- You are to double-check all calculations for accuracy.
- You should also make sure that your group completes all necessary parts of the activity.

Grading Rubric

CATEGORY	4	3	2	1
Working with Others	Students were engaged, listening to suggestions of others and working cooperatively throughout lesson.	Students were engaged, but had trouble listening to others and/or working cooperatively.	Students cooperated with others, but needed prompting to stay on-task.	Students did not work effectively with each other.
Neatness and Organization	The work is presented in a neat, clear, organized fashion that is easy to read.	The work is presented in a neat and organized fashion that is usually easy to read.	The work is presented in an organized fashion but may be hard to read at times.	The work appears sloppy and unorganized. It is hard to know what information goes together.
Mathematical Concepts	Explanation shows complete understanding of the mathematical concepts used to solve the problem(s).	Explanation shows substantial understanding of the mathematical concepts used to solve the problem(s).	Explanation shows some understanding of the mathematical concepts needed to solve the problem(s).	Explanation shows very limited understanding of the underlying concepts needed to solve the problem(s) OR is not written.
Mathematical Errors	90-100% of the steps and solutions have no mathematical errors.	Almost all (85-89%) of the steps and solutions have no mathematical errors.	Most (75-84%) of the steps and solutions have no mathematical errors.	More than 75% of the steps and solutions have mathematical errors.
Explanation	Explanation is detailed and clear.	Explanation is clear.	Explanation is a little difficult to understand, but includes critical components.	Explanation is difficult to understand and is missing several components OR was not included.
Completion	All problems are completed.	All but one of the problems are completed.	All but two of the problems are completed.	Several of the problems are not completed.

Quadrilaterals in the Coordinate Plane (A)

Group: _____

Time Keeper: _____

Recorder: _____

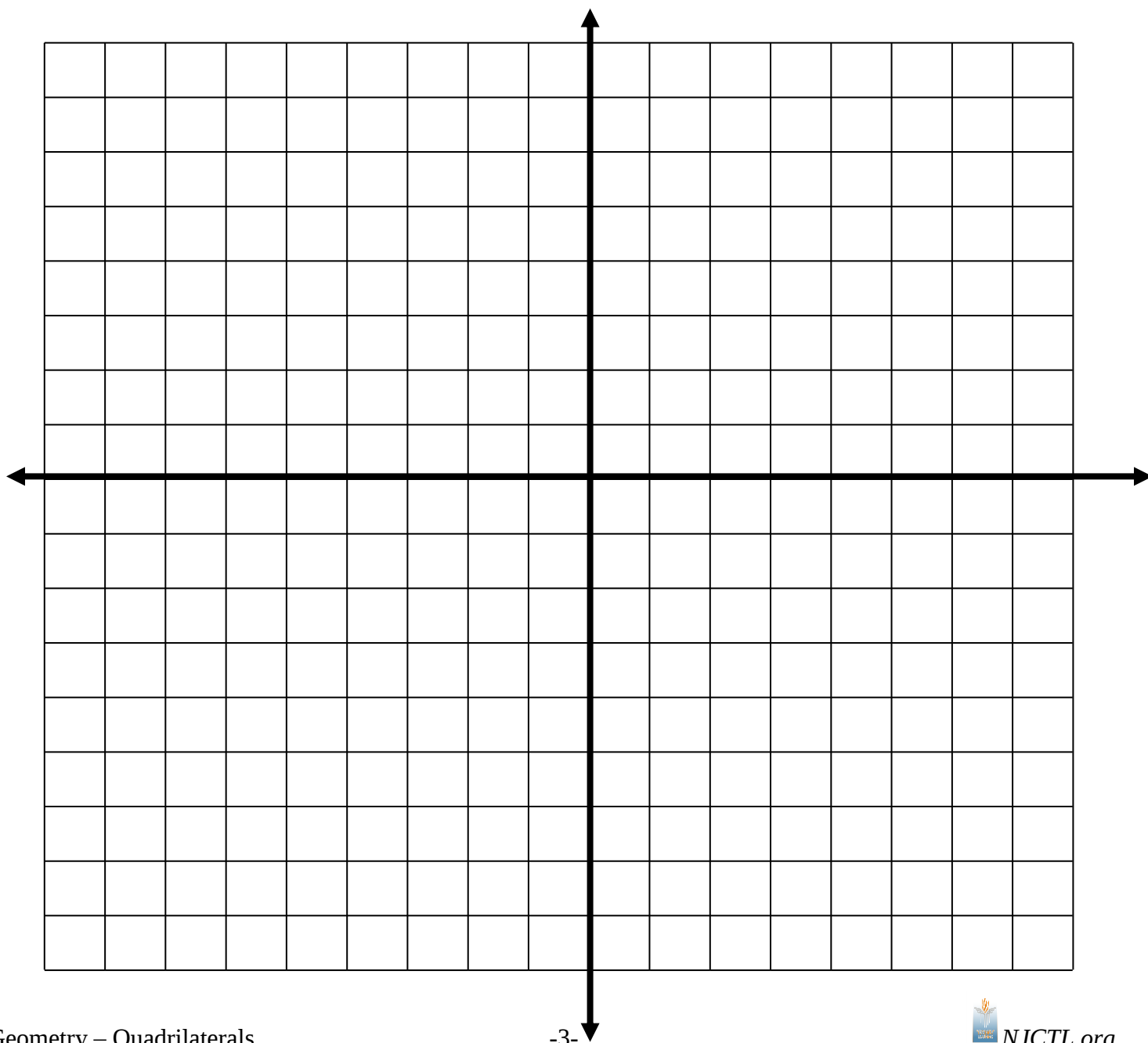
Manager: _____

Checker: _____

Directions: Below you are given a quadrilateral. You will be analyzing the sides and diagonals of the quadrilateral. Plot your points on the graph below and label them. Connect all vertices of the quadrilateral and draw the two diagonals. Calculate the slope of each side and of the two diagonals. Show your work on the back of this paper. Calculate the length of each side and of the two diagonals. Show your work on the back of this paper.

Part 1:

W(-2,2) O(1,6) H(6,6) S(3,2)



W(-2,2) O(1,6) H(6,6) S(3,2)

Part 2:

		<u>Slope</u>	<u>Length</u>
✓	<u>Sides</u>		
1.			
2.			
3.			
4.			
✓	<u>Diagonals</u>		
1.			
2.			

Part 3:

Explain mathematically how you know that the quadrilateral is or is not each of the following types of quadrilaterals.

- Parallelogram
- Rectangle
- Rhombus
- Square

Quadrilaterals in the Coordinate Plane (B)

Group: _____

Time Keeper: _____

Recorder: _____

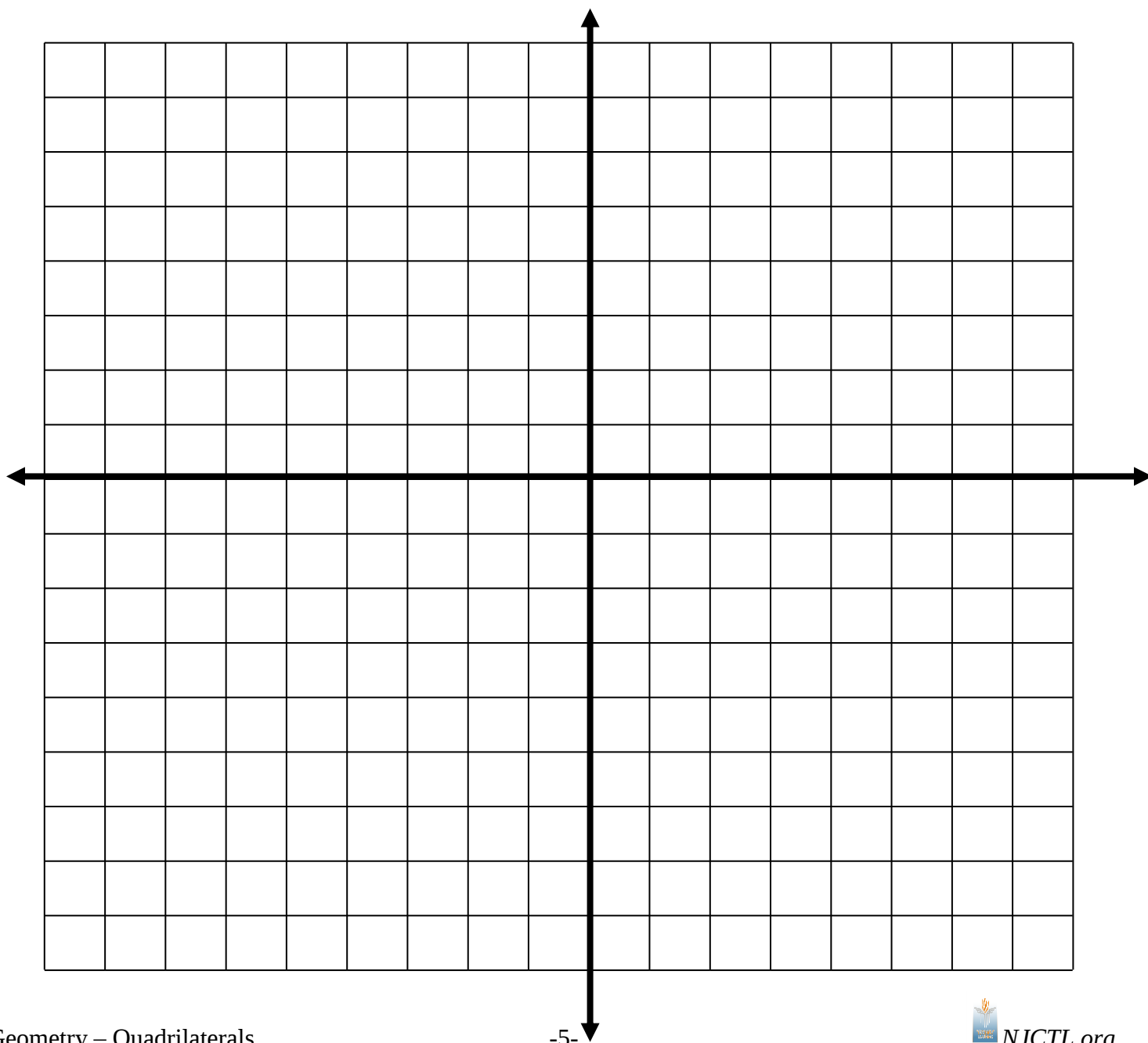
Manager: _____

Checker: _____

Directions: Below you are given a quadrilateral. You will be analyzing the sides and diagonals of the quadrilateral. Plot your points on the graph below and label them. Connect all vertices of the quadrilateral and draw the two diagonals. Calculate the slope of each side and of the two diagonals. Show your work on the back of this paper. Calculate the length of each side and of the two diagonals. Show your work on the back of this paper.

Part 1:

W(1,-4) B(3,-1) L(7,-1) S(5,-4)



Part 2:**W(1,-4) B(3,-1) L(7,-1) S(5,-4)**

		<u>Slope</u>	<u>Length</u>
✓	<u>Sides</u>		
1.			
2.			
3.			
4.			
✓	<u>Diagonals</u>		
1.			
2.			

Part 3:

Explain mathematically how you know that the quadrilateral is or is not each of the following types of quadrilaterals.

- Parallelogram
- Rectangle
- Rhombus
- Square

Quadrilaterals in the Coordinate Plane (C)

Group: _____

Time Keeper: _____

Recorder: _____

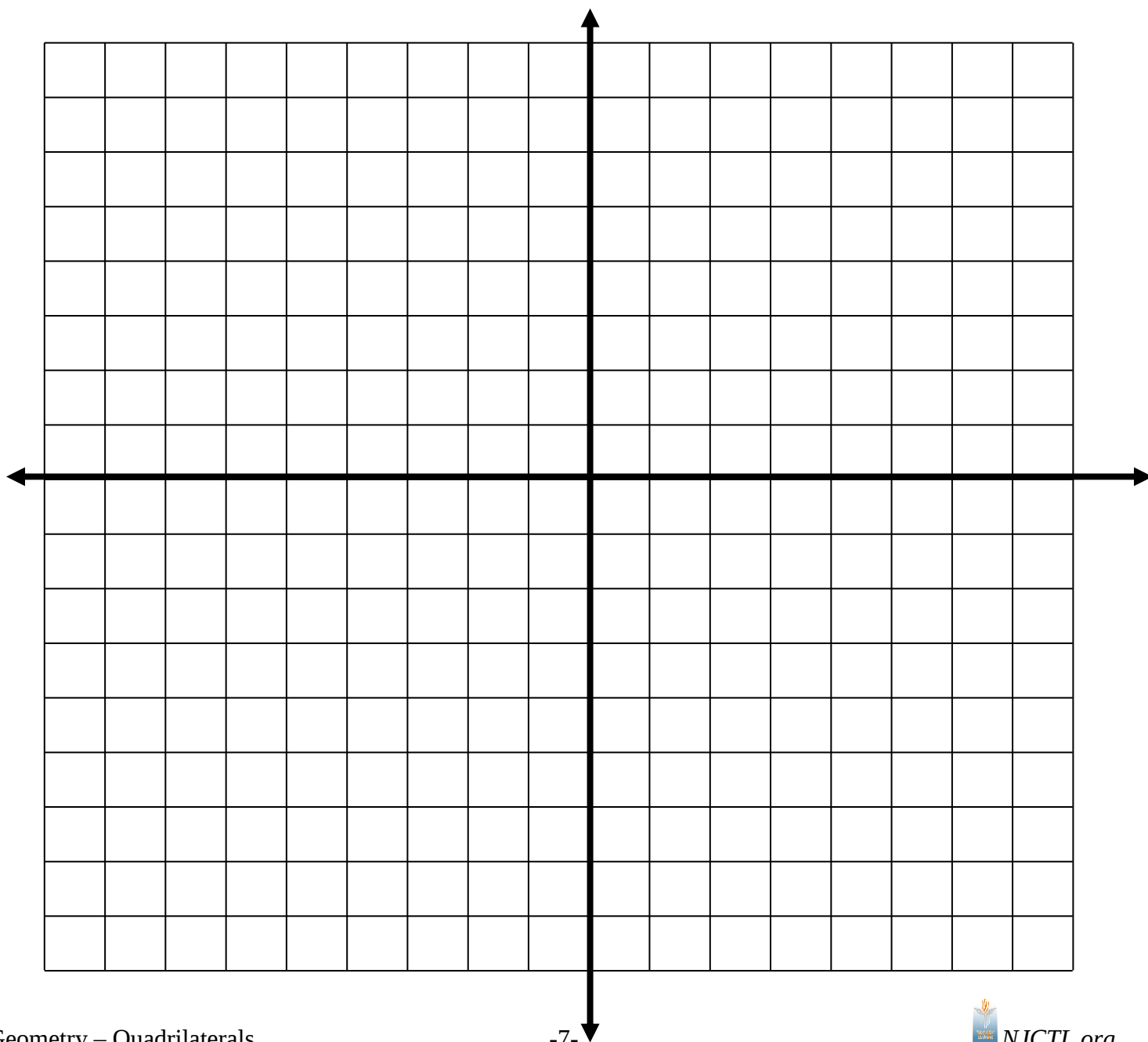
Manager: _____

Checker: _____

Directions: Below you are given a quadrilateral. You will be analyzing the sides and diagonals of the quadrilateral. Plot your points on the graph below and label them. Connect all vertices of the quadrilateral and draw the two diagonals. Calculate the slope of each side and of the two diagonals. Show your work on the back of this paper. Calculate the length of each side and of the two diagonals. Show your work on the back of this paper.

Part 1:

D(1,3) Q(2,5) R(8,2) P(7,0)



Part 2:

D(1,3) Q(2,5) R(8,2) P(7,0)

		<u>Slope</u>	<u>Length</u>
✓	<u>Sides</u>		
1.			
2.			
3.			
4.			
✓	<u>Diagonals</u>		
1.			
2.			

Part 3:

Explain mathematically how you know that the quadrilateral is or is not each of the following types of quadrilaterals.

- Parallelogram
- Rectangle
- Rhombus
- Square

Quadrilaterals in the Coordinate Plane (D)

Group: _____

Time Keeper: _____

Recorder: _____

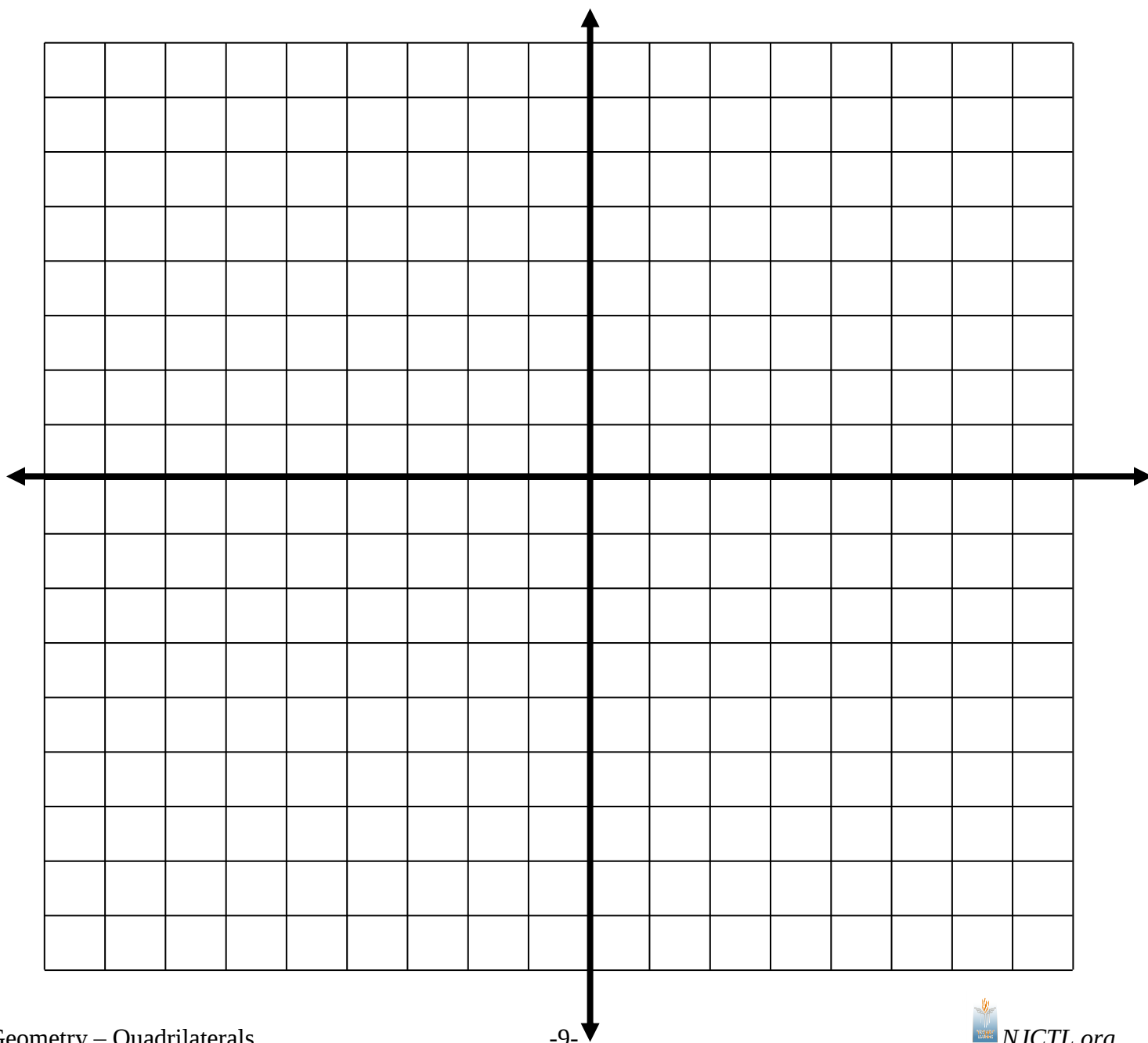
Manager: _____

Checker: _____

Directions: Below you are given a quadrilateral. You will be analyzing the sides and diagonals of the quadrilateral. Plot your points on the graph below and label them. Connect all vertices of the quadrilateral and draw the two diagonals. Calculate the slope of each side and of the two diagonals. Show your work on the back of this paper. Calculate the length of each side and of the two diagonals. Show your work on the back of this paper.

Part 1:

A(4,0) B(7,4) C(3,7) D(0,3)



Part 2:**A(4,0) B(7,4) C(3,7) D(0,3)**

		<u>Slope</u>	<u>Length</u>
✓	<u>Sides</u>		
1.			
2.			
3.			
4.			
✓	<u>Diagonals</u>		
1.			
2.			

Part 3:

Explain mathematically how you know that the quadrilateral is or is not each of the following types of quadrilaterals.

- a. Parallelogram
- b. Rectangle
- c. Rhombus
- d. Square

Quadrilaterals in the Coordinate Plane (E)

Group: _____

Time Keeper: _____

Recorder: _____

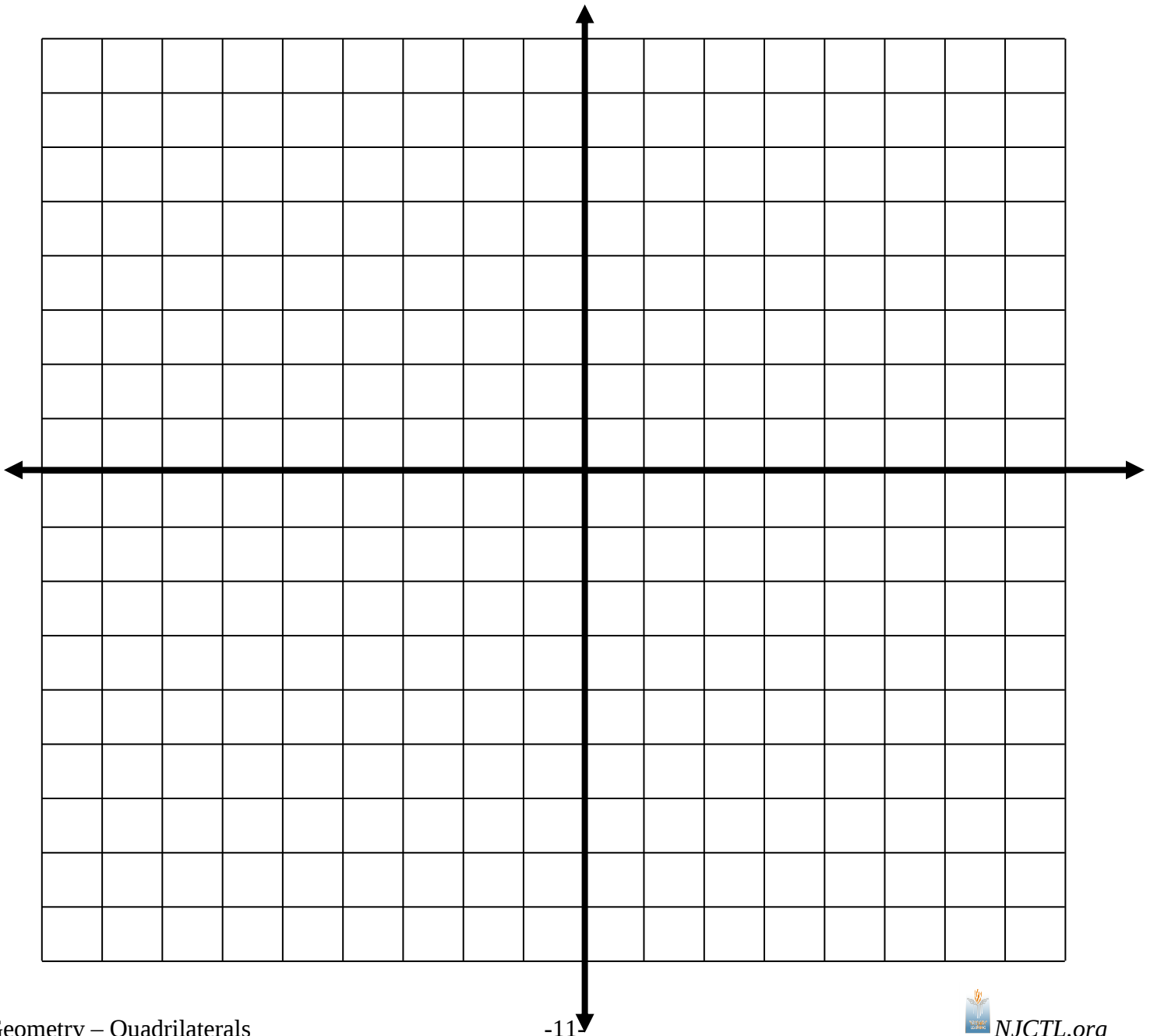
Manager: _____

Checker: _____

Directions: Below you are given a quadrilateral. You will be analyzing the sides and diagonals of the quadrilateral. Plot your points on the graph below and label them. Connect all vertices of the quadrilateral and draw the two diagonals. Calculate the slope of each side and of the two diagonals. Show your work on the back of this paper. Calculate the length of each side and of the two diagonals. Show your work on the back of this paper.

Part 1:

W(-3,-1) B(-2,2) G(3,2) O(2,-1)



Part 2:**W(-3,-1) B(-2,2) G(3,2) O(2,-1)**

		<u>Slope</u>	<u>Length</u>
✓	<u>Sides</u>		
1.			
2.			
3.			
4.			
✓	<u>Diagonals</u>		
1.			
2.			

Part 3:

Explain mathematically how you know that the quadrilateral is or is not each of the following types of quadrilaterals.

- Parallelogram
- Rectangle
- Rhombus
- Square

Quadrilaterals in the Coordinate Plane (F)

Group: _____

Time Keeper: _____

Recorder: _____

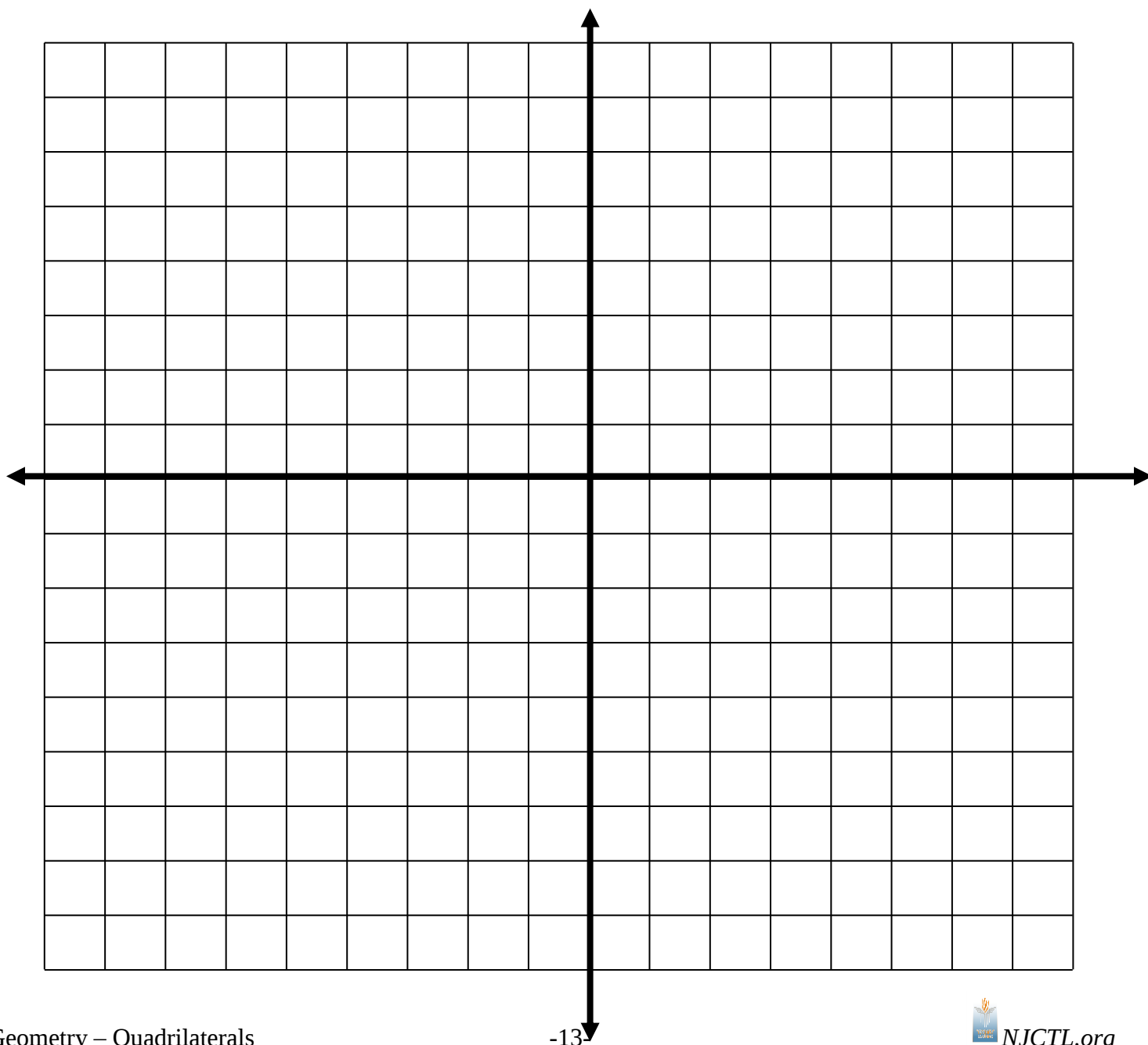
Manager: _____

Checker: _____

Directions: Below you are given a quadrilateral. You will be analyzing the sides and diagonals of the quadrilateral. Plot your points on the graph below and label them. Connect all vertices of the quadrilateral and draw the two diagonals. Calculate the slope of each side and of the two diagonals. Show your work on the back of this paper. Calculate the length of each side and of the two diagonals. Show your work on the back of this paper.

Part 1:

K(7,1) I(7,5) N(0,5) D(0,1)



Part 2:

K(7,1) I(7,5) N(0,5) D(0,1)

		<u>Slope</u>	<u>Length</u>
✓	<u>Sides</u>		
1.			
2.			
3.			
4.			
✓	<u>Diagonals</u>		
1.			
2.			

Part 3:

Explain mathematically how you know that the quadrilateral is or is not each of the following types of quadrilaterals.

- a. Parallelogram
- b. Rectangle
- c. Rhombus
- d. Square