### Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

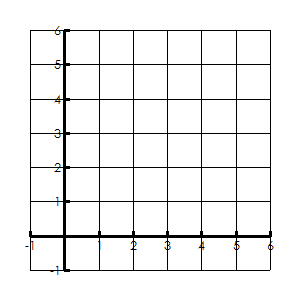
**Coordinate Geometry Proofs**

**Steps to Coordinate Proofs:**

1. Plot the points.
2. Look for key words.

Parallel, Perpendicular, Right Angles – Use \_\_\_\_\_\_\_\_\_\_\_\_\_ Congruent Sides – Use \_\_\_\_\_\_\_\_\_\_\_\_\_

**Example 1:**  The coordinates of **triangle BCD** are **B(4, 2), C(0, 2),** and **D(2, 4).**



Prove that the triangle is an **isosceles triangle.**

1. What is the question asking you about?

Parallel OR Perpendicular OR Distance

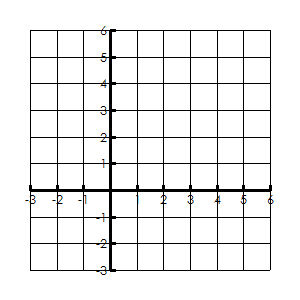
1. **BC=**

**CD=**

**DB=**

1. Is triangle BCD isosceles? How do you know?

**Example 2:** Triangle ABC has coordinates **A(-1, 3), B(5, 5),** and **C(4, -2).**



Prove that the triangle is an **equilateral triangle.**

1. What is the question asking you about?

Parallel OR Perpendicular OR Distance

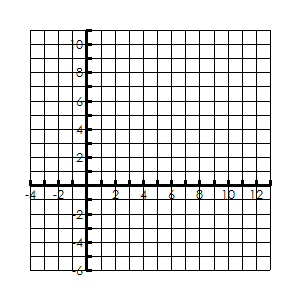
1. **AB=**

**BC=**

**CA=**

1. Is triangle ABC equilateral? How do you know?

**Example 3: A rectangle has two pairs of opposite sides that are congruent**.



Quadrilateral MIKE has vertices **M(4, 1), I(6, 4), K(12, 0),** and **E(10, -3).** Prove that Quadrilateral MIKE is a **rectangle.**

1. What is the question asking you about?

Parallel OR Perpendicular OR Distance

1. **MI=**

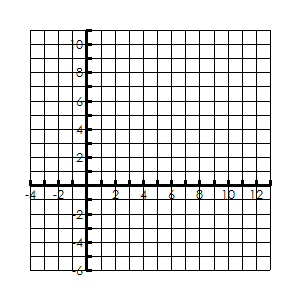
**IK=**

**KE=**

**EM=**

1. Is MIKE a rectangle? How do you know?

**Example 3b: A rectangle has 4 right angles**.



Quadrilateral MIKE has vertices **M(4, 1), I(6, 4), K(12, 0),** and **E(10, -3).** Prove that Quadrilateral MIKE is a **rectangle.**

1. What is the question asking you about?

Parallel OR Perpendicular OR Distance

1. **MI=**

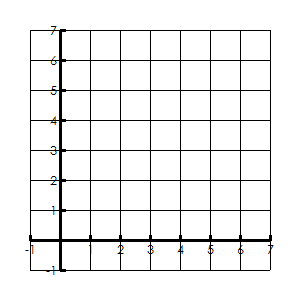
**IK=**

**KE=**

**EM=**

1. Is MIKE a rectangle? How do you know?

**Example 4: A square has four congruent sides**.



Quadrilateral DIAN has vertices **D(0, 5), I(3, 6), A(4, 3)** and **N(1, 2).**

Prove that Quadrilateral DIAN is a **square.**

1. What is the question asking you about?

Parallel OR Perpendicular OR Distance

1. **DI=**

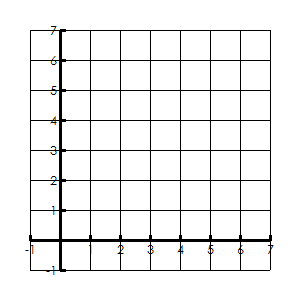
**IA=**

**AN=**

**ND=**

1. Is DIAN a square? How do you know?

**Example 4b: A rhombus has perpendicular diagonals.**



Quadrilateral DIAN has vertices **D(0, 5), I(3, 6), A(4, 3)** and **N(1, 2).**

Prove that Quadrilateral DIAN is a **rhombus.**

1. What is the question asking you about?

Parallel OR Perpendicular OR Distance

1. **DA=**

**IN=**

1. Is DIAN a rhombus? How do you know?