Name _____ Date _____

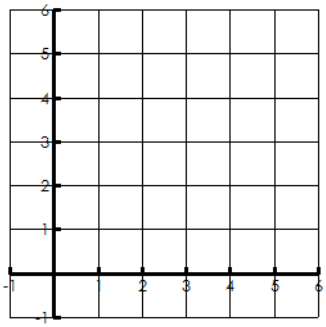
Day 1 – Proving All Parallelograms

Steps to Coordinate Proofs:

1. Plot the points.
2. Look for key words to determine whether to use the distance formula or slope formula.
   - 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.**



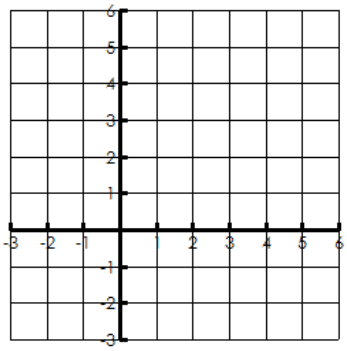
1. What is the question asking you about?
   Parallel OR Perpendicular OR Distance
2. **BC=**

   CD=

   DB=
3. 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
2. **AB=**

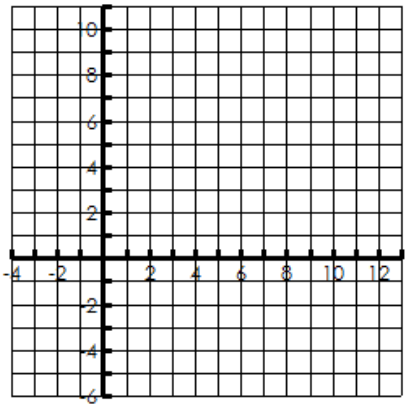
   BC=

   CA=
3. 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
2. **MI=**

   IK=

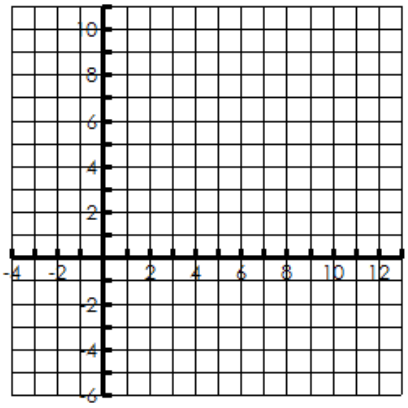
   KE=

   EM=
3. 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

2. **MI=**

   IK=

   KE=

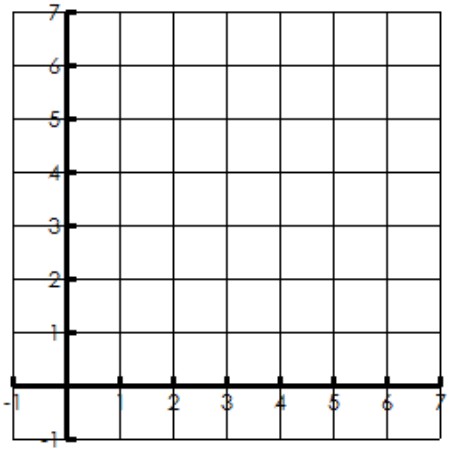
   EM=

3. 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

2. **DI=**

   IA=

   AN=

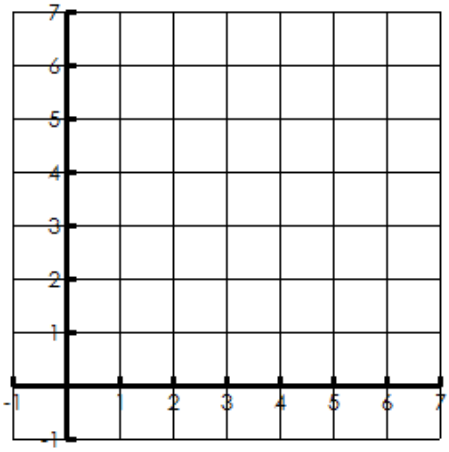
   ND=

3. 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

2. **DA=**

   IN=

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