**Warm up-** Look at the rules for Hats 1 to 5 in the table heading below. Before you find any coordinates, predict how each rule will change Mug’s hat.



Hat 1: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Hat 3: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Hat 2: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Hat 4: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Hat 5: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Stop\_\_\_\_\_\_\_\_**

**A.** Complete the table on Lab Sheet 2.2A and plot each hat on a separate grid.

1. Compare the angles and side lengths of the hats.

2. Which hats are similar to Mug’s hat? Explain why.

**B**. Write rules that will make hats similar to Mug’s in each of these ways.

1. The side lengths are one third as long as Mug’s. Rule: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

2. The side lengths are 1.5 times as long as Mug’s. Rule: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

3. The hat is the same size as Mug’s, but has moved right 1 unit and up 5 units. Rule: \_\_\_\_\_\_\_\_\_\_\_

**C.** Write a rule that makes a hat that is *not* similar to Mug’s.

Rule: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ How does your rule change Mug’s hat?

**D.** What must be true for a rule to produce a similar figure?

**E.** What rule will produce a similar figure that is ***congruent*** to the original figure?