Geometry Regents Lomac 2015-2016 **Date** 9/22 **due** 9/23 **Angle Bisectors: Fold and Construct** **1.4R**

☐ **DO NOW –** On the back of this packet

Name _____

LO: I can bisect an angle by folding paper or using a compass and straightedge and explain how the process bisects the angle.

☐ (1) **Folding Angle Bisectors:**

angle diagrams

☐ Use the angles on the paper strip of angles to complete each item below.

☐ **Part A:** (1) Fold ∠A so that the sides of the angles meet exactly. (they should be touching)

THINK: If one ray is drawn shorter than another, can you still bisect the angle by folding the rays so they coincide (meet)? Hmmmmmm……..

(2) Crease the paper on this fold (the crease should go through the vertex, point A).

(3) Mark point W on the crease you made in the interior of the angle

(4) Use a straightedge and pencil to draw ray AW on the crease. Remember rays have an arrow.

(5) Mark the two adjacent angles in the diagram with congruence marks to show that they are congruent.

(6) Repeat steps 1 through 5 for ∠B (label the new ray BX),
∠C (label the new ray CY),
∠D (label the new ray DZ)

☐ **Part B:** You bisected each angle below. That means that each angle was divided into _____ _____ _____. Write the pair of angles that are the same for each diagram.

∠A: _____≅_____ ∠B: _____≅_____ ∠C: _____≅_____ ∠D: _____≅_____

☐ **Part C:** How do you know that the angles you listed above are congruent?

_____

_____

_____

☐ (2) **Constructing Angle Bisectors:**

compass highlighters

Use a compass instead of folding to verify that you have drawn the ray that bisects ∠EAF. Put a check mark in each box as you complete each step.

☐ On the diagram with ∠A, choose a location on $\overrightarrow{AE}$, draw a point and label it P.

☐ Point P MUST meet up with a point on $\overrightarrow{AF}$ (we'll call it point U) when you fold the angle. Use your compass to measure the distance from A to ___ and construct a circle centered at ____ that intersects $\overrightarrow{AF}$ (pink). The intersection of the circle and $\overrightarrow{AF}$ shows us the location for point U on $\overrightarrow{AF}$

☐ So far, we know that $\overline{AP}$ is the same length as _____.

☐ (2) continued

☐ The bisector of the angle follows the crease you made which goes through ____ _____ of the angle. To bisect the angle with a compass, we need to construct a point inside the angle that is (circle one)

closer to P closer to U the same distance from P and U

☐ To construct this point, set a distance on your compass (it doesn't matter what distance) and construct a _____ centered at point _____ (blue) and construct a _____ centered at point ____ (green) using the same radius measure for both circles. The point where the two circles _____ shows us a point that is equidistant from point _____ and point _____ because circle _____ and circle _____ have the same _____. Label this point M. Since point M is equidistant from the sides of the angle, it must be on the _____ of the angle which we creased and labeled ray _____ .

☐ When you constructed point M, was it on the crease you folded? ____ Describe briefly why it did or did not fall on the crease _____

☐ (3) compass highlighters

Constructing Angle Bisectors:

Use your compass and the process you followed in (2) to verify the other three angle bisectors with your compass and construction.

☐ (4)

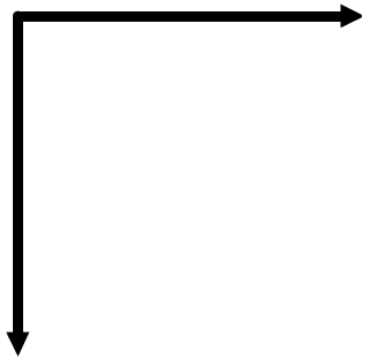
Exit Ticket

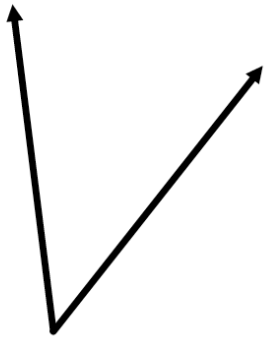
ON THE LAST PAGE

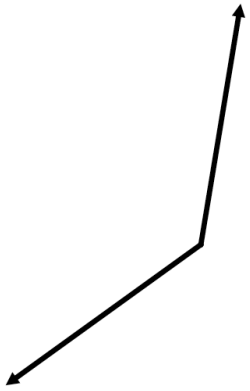
☐ (5) compass

Homework

(1) Bisect the three angles below with a compass and straightedge

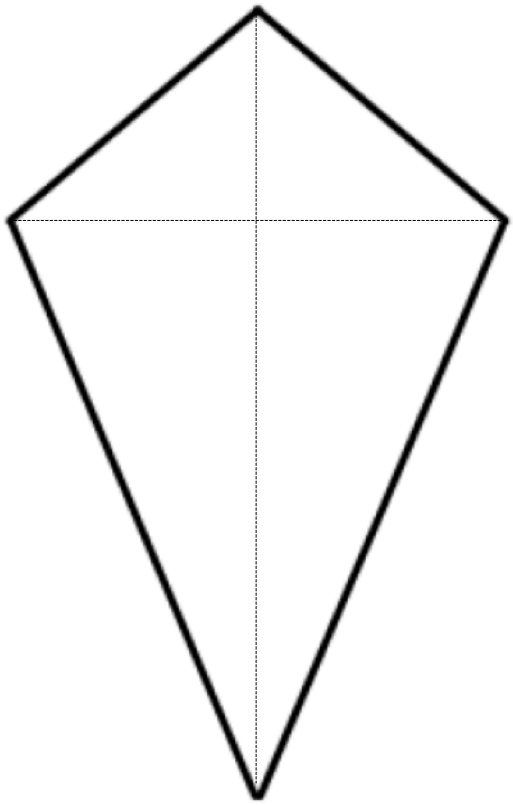






☐ (5) cont. ompass **Homework**

(2) The sticks of a kite are represented by the dashed lines in the diagram. Do either of the sticks bisect an angle of the kite? Construct angle bisectors as evidence to support your explanation.



☐ (5) **Homework**

cont. ompass

(3a) Construct circles A and B with the radius at right. 

A B

(3b) Construct circles A and B with the radius at right. 

A B

(3c) Construct circles A and B with the radius at right. 

A B

(3d) Depending on the given radius, how many points of intersection can two circles, A and B, have?

Exit Ticket **Name**_____ **Date** _____ _____ **Per**_ _____ **1.4R**

(1) The LO (Learning Outcomes) are written below your name on the front of this packet. Demonstrate your achievement of these outcomes by doing the following:

The steps used to bisect an angle are numbered and shown in the diagram. Complete the steps below.

Step 1: Construct _____ *to show all the points*_____

and mark and label _____ *and* _____

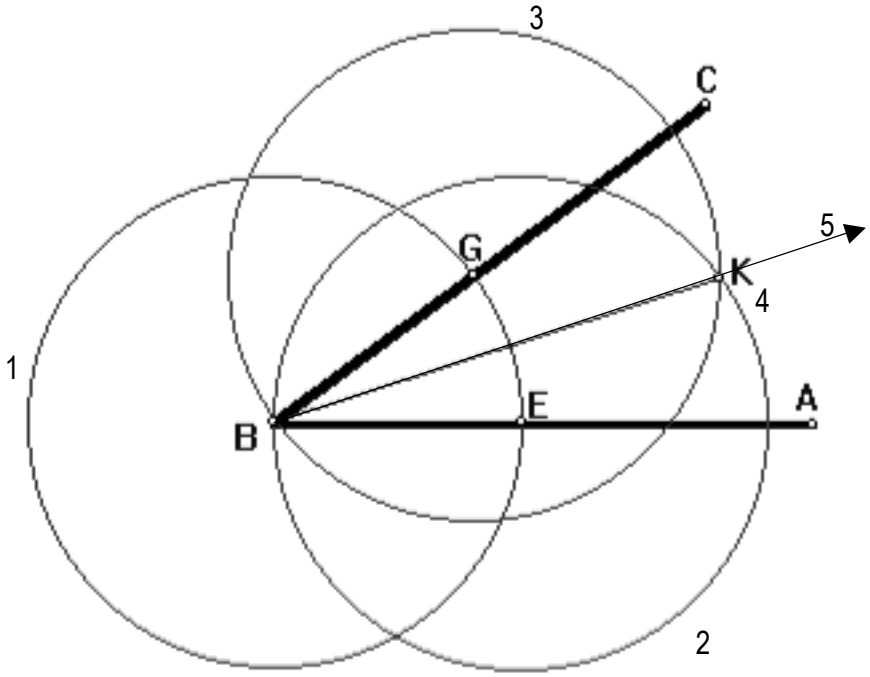
Step 2: Construct _____ *to show all the points*_____

Step 3: Construct _____ *to show all the points*_____

Step 4: Mark the point where _____

Step 5: Draw a ray by connecting _____ *and* _____

This bisects the angle because point B and point K are _____



DO NOW **Name**_____ **Date** _____ **Per**_____ **1.4R**

(1) Sketch OR construct: (a) a bisected segment (b) a bisected angle

(2) Describe why the cartoon below is supposed to make people smile. REALLY think about it.