Unit 1 – Geometry Basics   Grade: HS Mathematics/Geometry Honors

Course: Geometry Honors	Learning Goal: Students will be able to describe geometric figures, measure geometric figures, and understand equality and congruence of geometric figures.
Standards: MAFS.G.CO.1.1, MAFS.G.GPE.2.6, MAFS.G.CO.4.12	**Student Evidences**
4	Students can apply geometric figures to real-world situations. Students can apply the essentials of geometry to the real-world.	□ I can represent real world situations using geometric figures. □ I can design and present a project using technology to apply the essentials of geometry to the real world.
3	Students can use geometric shapes, their measures, and their properties to describe objects. Investigate the essentials of geometry relating segment postulates to prove congruent segments. Find the point on a directed line segment between two given points that partitions the segment in a given ratio.	□ I can find lengths of segments in the coordinate plane using the midpoint & distance formula. □ I can construct a congruent segment, the bisector of a segment, a congruent angle, and the bisector of an angle. □ I can use special angle relationships to find angle measures.
2	Students can use precise definitions of angle, circle, perpendicular line, parallel line, and line segment based on the undefined notions of point, line, distance along a line, and distance around a circular arc. Students can recall specific vocabulary terms: Undefined terms, line segment, endpoint, ray, congruent segments, midpoint, distance, segment bisector, acute, right, obtuse, straight angles, angle bisector, linear pair, vertical angles, polygon, convex, concave, adjacent, betweeness of points, n-gon, equilateral, equiangular.	□ I can recall specified vocabulary terms. □ I can name and sketch geometric figures. □ I can use segment postulates to identify congruent segments. □ I can name, measure, and classify angles. □ I can classify polygons.
1	Students can simplify expressions and solve equations. Students can solve for missing angles of complementary and supplementary angles.	□ I can solve multi-step equations. □ I can evaluate expressions with variables. □ I can solve find the complementary & supplementary measures of angles.

Kyle defines a circle as "the set of all the points equidistant from a given point."

Explain why Kyle's definition is not precise enough.

On a coordinate grid, $\overline{AB}$ has an end point *B* at (24, 16). The midpoint of $\overline{AB}$ is *P*(4, -3). What is the *y*-coordinate of Point *A*.

Bart drew a segment whose endpoints are P (2, 11) and A (4, 3). He then wanted to find the point located ¾ the distance from P to A. Explain to Bart, using complete sentences, how to locate the point. Be sure to give him the coordinates of the point in your answer.

What will be the result of Reuben's construction?

Ⓐ Ruben constructs a segment perpendicular to $\overline{AC}$.

Ⓑ Ruben constructs the bisector of $\overline{AC}$.

Ⓒ Ruben constructs an angle congruent to ∠B.

Ⓓ Ruben constructs the bisector of ∠B.

Denise constructed ∠DEF as shown below using her compass and straight edge.

MAFS.G.GPE.2.6 – Sample Questions

Line segment *JK* in the *xy*-coordinate plane has endpoints with coordinates (−4, 11) and (8, −1). What are **two** possible locations for point *M* so that *M* divides $\overline{JK}$ into two parts with lengths in a ratio of 1:3 ?

Indicate **both** locations.

Zoe found Point A located at (−7, 18), and Z is located at (9, −18). Where would Zoe find the coordinates of the point M that lies halfway between A and Z?
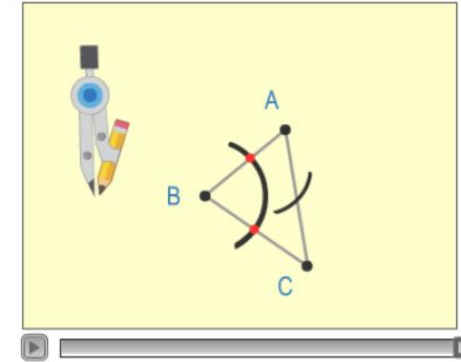
In order to complete her Geometry homework, Denise must construct an angle bisector. She constructed the bisector $\overrightarrow{EI}$ using the steps below.

1. Place your compass on vertex E and open it some width. Swing an arc that intersects both $\overrightarrow{ED}$ and $\overrightarrow{EF}$.
2. Label these points G and H respectively.
3. Place the compass on Point G and open it to swing an arc inside of ∠DEF.
4. ????????????
5. Label the point of intersection as Point I.
6. Draw a ray from the vertex Point E to Point I to create the angle bisector.

Which of the following is the missing step in Denise's construction?

A. Place the compass on Point I and swing an arc that intersects Point H.
B. Place the compass on Point E and swing an arc that intersects Point I.
C. Leave the compass the same width and swing a second arc from Point G to Point H.
D. Place the compass on Point H and, using the same width as previous, swing an arc that intersects the arc created in Step 3.

Points *A, B,* and *C* are collinear and *AB:AC* = $\frac{2}{5}$. Point *A* is located at (−3, 6), point *B* is located at (*n, q*), and point *C* is located at (−3, − 4).
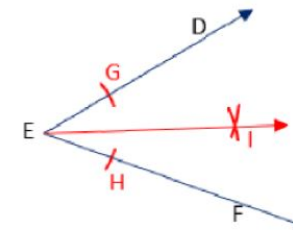
What are the values of *n* and *q*?

n = _____

q = _____