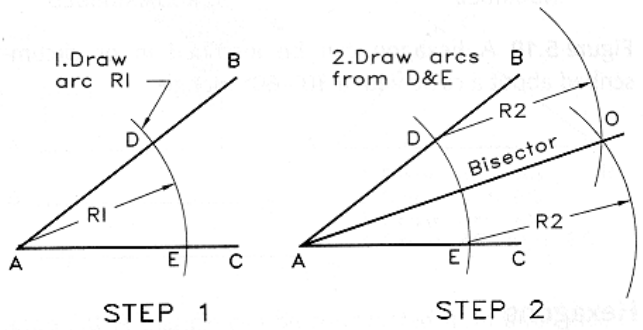
Geometry – Unit 1 Practice **Name: _____!**

Bisectors - Angles

G.CO.D.12 **Date: _____ Pd: ____**

You may bisect angles by using a compass and drawing three arcs as shown in below.



- Draw an arc from the vertex of the angle that intersects both sides of the angle.
- Draw two arcs that intersect each other from the new intersection points.
- Attach the vertex point and the point of intersection of arcs.

1) We know a perpendicular bisector creates 90° angles, using angle bisectors we can continue the process and create ____° angles, and then ____° angles, and then ____° angles…

2) Decide if each statement is true or false.

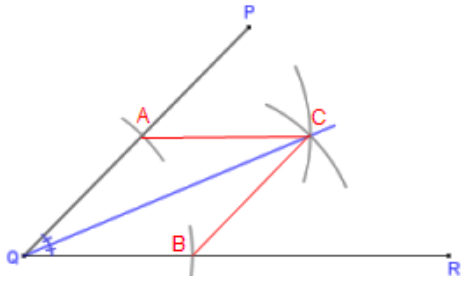
a) Every angle has exactly one angle bisector.

b) Any marking on an angle means that the angle measures 90°.

c) An angle bisector divides an angle into three congruent angles.

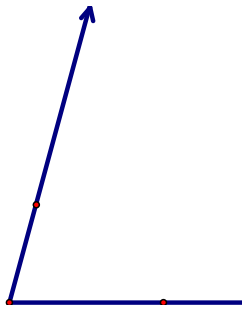
d) Congruent angles have the same measure.

3) The diagram below illustrates an angle bisector, identify <u>all</u> segments that must be congruent.

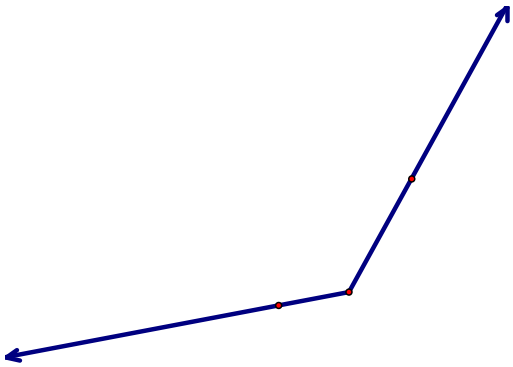


4) Copy the angle and construct an angle bisector:

a)

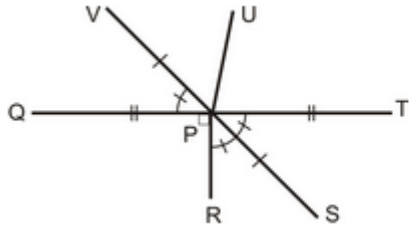


b)



Application:

5) Use the following picture to answer the questions.



a) What is the angle bisector of $\angle TPR$?

b) What is $m\angle QPR$?

c) What is $m\angle TPS$?

d) What is $m\angle QPV$?

6) Use the following information to answer the questions:

- *Q* is in the interior of $\angle ROS$
- *S* is in the interior of $\angle QOP$
- *P* is in the interior of $\angle SOT$
- *S* is in the interior of $\angle ROT$
- $m\angle ROT = 160°$
- $m\angle SOT = 100°$
- $m\angle ROQ = m\angle QOS = m\angle POT$

a) Make a sketch that illustrates all given information.

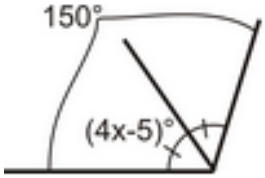
b) Find $m\angle QOP$

c) Find $m\angle QOT$

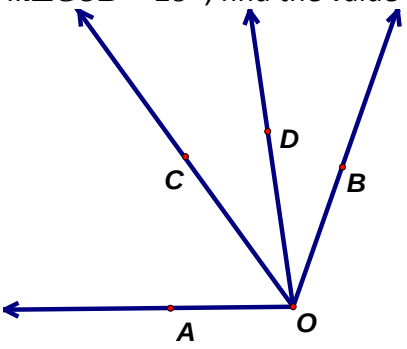
d) Find $m\angle QOR$

e) Find $m\angle SOP$

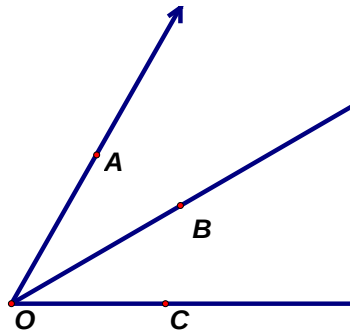
7) Find the value of *x*.



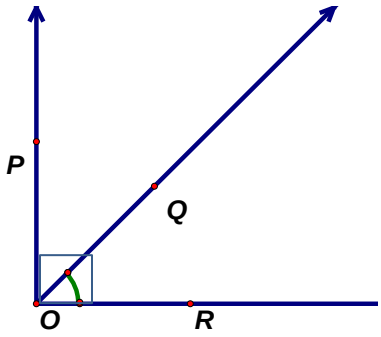
8) In the given figure $\overrightarrow{OC}$ bisects $\angle AOB$ and $\overrightarrow{OD}$ bisects $\angle COB$. If $m\angle AOC = (3y-4)°$ and $m\angle COD = 28°$, find the value of *y*.



9) In the given figure, $\overrightarrow{OB}$ bisects $\angle AOC$. $m\angle AOC = (7x+2)°$ and $m\angle COB = (5x-8)°$. What is $m\angle AOB$?



10) If $\angle POR$ is bisected by $\overrightarrow{OQ}$, what is the value of *x*?



11) $\overrightarrow{NP}$ bisects $\angle MNQ$, $\angle MNP = 6x-12$ and $\angle PNQ = 4x+8$. Find the value of *x* and $m\angle MNQ$.
(hint: make a sketch to organize and illustrate the given information)